



Abstracts

Plenary Session: Before the First 1000 Days: Before Conception and After Birth

INFLUENCE OF EARLY NUTRITIONAL FACTORS ON OBESITY IN THE OFFSPRING

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Childhood obesity is the most prevalent nutritional disorder during childhood. It develops in individuals with a genetic predisposition substrate and the presence of factors related with nutrition, sedentary behaviours and others as short sleep duration. During early periods of life, starting at conception and until the end of the second year, there is a large number of factors that could influence the development of obesity later in life: pre-pregnancy maternal body mass index (BMI), gestational weight gain, gestational diabetes, maternal malnutrition, maternal smoking during pregnancy, alcohol consumption during pregnancy, free sugars intake during pregnancy, low polyunsaturated fat (omega 3) intake during pregnancy, low physical activity levels during pregnancy, antibiotics consumption during pregnancy, high or low body weight at birth, lack of breast feeding, consumption of high protein content infant formulas, rapid infant weight gain, high protein, fat or free sugars intake during infancy, early introduction of complementary feeding and short sleep duration. From all these candidate risk factors, the ones more strongly associated with obesity development during childhood are maternal obesity before pregnancy, low birth weight and rapid weight gain during infancy. Perinatal factors also influence the expression of some genes related with obesity development. For instance, birth weight modifies the effect of the FTO gene polymorphism in the development of obesity and breastfeeding also modulate the effect of the PPAR-gamma 2 gene polymorphism on the excess of adiposity in adolescents. Interventions trying to prevent obesity should start as early as possible as the possibility to positively influence the early programming of the condition is optimal in this period.

Plenary Session: Before the First 1000 Days: Before Conception and After Birth

NUTRITION, CONCEPTION AND THE OFFSPRING EPIGENOME

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Our group has a long-standing interest in exploring links between early life nutritional exposures and long-term health outcomes. Much of our research centres on a rural community in The Gambia in Sub-Saharan West Africa.

A key focus is on epigenetics - the study of modifications to the genome that can affect gene expression without altering the underlying DNA sequence. Mounting evidence from animal and human studies suggests such modifications may mediate observed associations between early-life nutrition and later health and disease.

For our epigenetic studies we are able to exploit an 'experiment of nature' in rural Gambia whereby fluctuations in energy balance and maternal nutritional exposures show a distinct bimodal seasonal pattern. We have shown for example that season of conception and blood levels of key maternal nutritional biomarkers relating to one-carbon metabolism (B2, B6, cysteine and homocysteine) predict DNA methylation in infants at a number of metastable epialleles (MEs) - genomic regions where methylation is established stochastically in the early embryo, leading to systemic (cross-tissue) inter-individual variation.

I will give an overview of our work in this area and describe some of the interesting candidate MEs that we have selected for follow up in our population including a region at the *POMC* gene with links to obesity in children and adults.

Plenary Session: Before the First 1000 Days: Before Conception and After Birth

BREAST FEEDING AND GROWTH

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Breastfeeding has a marked effect on early growth and there are some indications that there are also effects on growth later in life. Breastfed infants grow faster during the first 2-3 months and have thereafter a slower growth velocity up to the age of about 12 months, compared to infants that are not breastfed. This growth pattern, which is regarded as optimal, is also reflected in differences in body composition. There are studies suggesting a modest reduction in risk of obesity, but some studies show no effect. The vast majority of studies of the effect of breastfeeding on growth are observational and it is therefore difficult to conclude on causality as residual confounding and reverse causation are likely to influence the associations. There is an increasing number of studies examining the association between composition of breastmilk and growth of the infant. Especially the content of macronutrients, human milk oligosaccharides and appetite related hormones seem to have an effect on growth. A better understanding of these associations are likely to improve our understanding on how breastfeeding is regulating short and long term growth. Future studies should include analysis of milk composition and measurements of body composition when possible. Furthermore, data should also be analyzed according to sex as several studies have suggested that the association between milk intake and composition and growth is different in boys and girls.

Plenary Session: Water, Sanitation and Hygiene (WASH) Interventions to Improve Child Health: Where Do We Go Now?

PATHWAYS LINKING WASH AND GROWTH

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The relationship between water, sanitation, and hygiene and child nutrition remains unclear, with mixed results from ecological and intervention studies. This presentation will provide an overview of key components of water, sanitation and hygiene (WaSH) and will outline the mechanisms and pathways through which WaSH may influence child nutritional status. Specifically, poor WaSH conditions may lead to diarrhea, environmental enteric dysfunction (a subclinical disorder of the small intestine), and intestinal parasitic infection. These in turn may result in undernutrition through appetite suppression, nutrient loss, malabsorption, and inflammation. Our understanding of these mechanisms provides a strong theoretical rationale for combining WaSH interventions to improve child nutrition. To illustrate how these relationships may operate in a real-world setting, the presentation will include results from a matched cohort effectiveness evaluation of a combined on-premise piped water and improved sanitation intervention in rural Odisha, India. We collected data in mid-2016 on anthropometry for children under age 5 (N=1826) in 45 intervention and 45 control villages. Children under age 5 living in communities that received the intervention had higher mean height-for-age z-score (HAZ) (+0.17 HAZ, 95% CI:0.03-0.31) compared to children in control villages. A structural modeling equation (SEM) approach quantified the direct and indirect intervention effects on HAZ through a complex system of divergent water, sanitation, and hygiene pathways. The results of the SEM analysis suggest that piped water and sanitation together influenced HAZ, and that both may be necessary for programs to impact child linear growth.

Plenary Session: Water, Sanitation and Hygiene (WASH) Interventions to Improve Child Health: Where Do We Go Now?

THE SHINE AND WASH BENEFITS TRIALS

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The WASH Benefits Bangladesh, WASH Benefits Kenya, and Sanitation Infant Feeding Efficacy (SHINE, Zimbabwe) trials were cluster-randomized controlled trials to test the independent and combined effects of improving household water and sanitation/hygiene (WASH) and improving infant diet on child stunting and anemia at 18 mo (SHINE) or 24 mo (WASH Benefits trials). In addition, 7-day prevalence of diarrhea at 12 and 18 or 24 months was a primary outcome of WASH Benefits and secondary outcome of SHINE. Together the three trials included more than 18,000 children; provided free pit latrines, soap, chlorine, and lipid-based micronutrient supplement; delivered behaviour change modules based on years of formative research and pilot testing, and grounded in behaviour change theory, and measured outcomes by standardized and supervised research staff.

WASH Benefits included 7 arms [sanitation, handwashing with soap, point of use water chlorination, all these interventions combined (WASH), infant feeding, WASH+infant feeding, and a double sized control arm (passive in Bangladesh, active in Kenya)]. Thus, it was also designed to compare the benefits of single or combined WASH interventions. SHINE was a 2x2 factorial trials (WASH, Infant feeding, WASH+infant feeding, and an active control).

In all three trials:

- The interventions were delivered with high fidelity and achieved substantial behavior change;
- The infant feeding intervention had a modest benefit but WASH had no effect on stunting;
- The infant feeding intervention improved haemoglobin but WASH had no effect on haemoglobin concentration.

In Bangladesh, all the intervention arms except water chlorination reduced diarrhea by a relative 30-40% from a very low prevalence (~5%); in the two Africa sites there was no effect of any intervention on diarrhea from a 10% prevalence in Zimbabwe and 27% prevalence in Kenya in the control arms.

This presentation will discuss:

- The stunting results which contrast to a very large published literature of observational studies demonstrating that these same household level WASH interventions are strongly associated with stunting;
- The differential results on diarrhea; and
- The reasons why the trial interventions may have failed to reduce stunting.

I will end with a summary of the implications of these trial findings for the WASH and nutrition sectors of global health.

Plenary Session: Water, Sanitation and Hygiene (WASH) Interventions to Improve Child Health: Where Do We Go Now?

WHERE NEXT? MIGHT WASH++ INTERVENTIONS WORK?

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Where Next? Might WASH++ interventions work?

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Most children living in poor environments in low- and middle-income countries suffer from various forms of malnutrition of which stunting and anemia represent the most easily detectable syndromes. It has long been understood that the etiology of such conditions is not solely dependent on primary nutritional deficiencies, and that there are numerous so-called 'nutrition sensitive' causes that exacerbate the shortages of nutrients. Key amongst these is the issue of poor hygiene. The first presentation in this session, by Dr Sinharoy, will outline the mechanisms and pathways by which poor hygiene impairs nutrient uptake and utilisation. Combatting these effects ought to be possible by the implementation of interventions to improve water, sanitation and hygiene (WASH). The second presentation, by Dr Humphrey, will summarise the outcomes from the WASH Benefits and SHINE Trials in Bangladesh, Kenya and Zimbabwe. These were very large cluster-randomised trials to test the effectiveness of improving WASH and promoting better infant and young child feeding (IYCF). IYCF had a small benefit in each trial but there was no effect of WASH nor a positive interaction with IYCF. This final presentation will try to examine some of the possible reasons for these very disappointing results. Data from The Gambia suggest that there is a very high threshold of WASH that must be reached before growth will respond, and that it may be necessary to introduce piped water into homes to achieve the benefit. The challenges around such WASH++ or Transformative WASH solutions will be discussed.

Plenary Session: Yearbook

THE PHYSIOLOGY AND MECHANISM OF GROWTH

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The physiology of growth in children is still not fully elucidated. In recent years, with the availability of new technologies, our understanding of the interactions between the genetic, epigenetic, internal (microbiome) and external environments and children's growth has increased.

The manuscripts published in peer-review journals in the past year (from July 1, 2017 to June 30, 2018) contributed to the expansion of our understanding of the physiology of growth and especially the interaction between nutrition and growth. The chapter covers various aspects in this field, including the effect of nutrition on growth, catch up growth in preterm and term infant, mechanisms of growth in the growth plate, the influence of nutrition and supplements on growth and puberty, and new tools to diagnose endo-genetic growth disorders.

Plenary Session: Yearbook

MALNUTRITION AND CATCH-UP GROWTH DURING CHILDHOOD AND PUBERTY

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This chapter of the 2019 yearbook reviews the most recent data on childhood malnutrition and catch-up growth, published between July 1, 2017 and June 30, 2018.

Two publications were selected for oral presentation. The first, by Krasevec et al., is a large cross-sectional study which evaluated the association between two indicators of dietary quality - dietary diversity and animal source food (ASF) consumption - and stunting. The analyses were based on data of 74,548 children aged 6–23 months, from demographic and health surveys in 39 different countries. The authors found a significant association both between dietary diversity and less stunting, and between the consumption of ASF and less stunting in infants aged 6-23 months. The number of food groups consumed and number of ASF on the previous day were associated with less stunting, in a dose response manner, even after adjusting for child, maternal, and household covariates.

The second publication by Christian et al. is a review on undernutrition in an under-studied population – adolescents. Normal adolescent growth, a process subject to endocrine control, is particularly sensitive to undernutrition. To allow for this process to take place, dietary requirements, including those for energy, protein, iron and calcium, increase. If dietary intake is insufficient, anemia and micronutrient deficiencies will emerge; while deficiencies that are treated may allow for catch-up growth. Because there is limited data on interventions for adolescent stunting, the needs of this unique age group are not sufficiently addressed. Different aspects of adolescent undernutrition and stunting are discussed, and directions for future research are highlighted.

Plenary Session: Yearbook

STUNTING OF GROWTH IN DEVELOPING COUNTRIES

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Stunting of Growth in Developing Countries

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This year's summary of the key publications in 2018 on stunting in LMIC countries covers a broad remit. The most important publications were the twin papers from the WASH Benefits Trials in Bangladesh and Kenya. These large and very well conducted cluster-randomised trials found a small benefit of improved infant and young child feeding (IYCF) but no benefit of improved water, sanitation and hygiene (WASH). These profoundly disappointing results have been covered elsewhere in the programme. The results from the SHINE Trial from Zimbabwe were published after the window for selection of YearBook abstracts had closed, but found almost identical results. A trial from The Gambia tested the impact of physician-prescribed lipid-based nutrient supplements given to sick children presenting to clinic. There was no benefit on the primary outcome of repeat clinic visits and only a very small effect on linear growth. In a post hoc analysis there was an increase in infections in the first 3 weeks of micronutrient supplementation which might be due to iron. Trial protocols for interesting interventions were published in the year and these will be summarised.

Plenary Session: Nutrition and Childhood Obesity

CHILDHOOD OBESITY-CLINICAL CHARACTERISTICS

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Background: The current understanding of pathophysiological and molecular basis of obesity has led to the idea that there is not a single type of this disease, but several types of "obesities", which need to be investigated and properly diagnosed in order to optimize patients' care, singularly during childhood.

Body: Throughout the talk we will try to summarize the classification of the different etiologies of obesity in childhood and adolescence according to their etiology; highlighting the most representative diagnoses in each group. In addition, we will remark the most important familial and personal background elements to be collected in childhood obesity focused clinical records, as well as the most significant characteristics that should be sought for when performing physical examination in these patients. Finally, on the basis of the increasing number and genetic heterogeneity of multiple cases of early onset obesity, a few of which are tributary for specific treatments either available or under development, a diagnostic strategy will be proposed.

Conclusion: Current management of childhood obesity, particularly of early onset obesity determines the need for accurate and patient focused background records and clinical examination. The identification of an increasing number of cases of obesity with a genetic origin and the investigational efforts in the development of drugs for the treatment of specific forms of obesity determine the need for more accurate etiological diagnosis of the different types of obesities.

Plenary Session: Nutrition and Childhood Obesity

GENETIC VARIANTS IN CHILDREN WITH NON-SYNDROMIC EARLY-ONSET OBESITY (EOO): CHARACTERIZATION AND TREATMENT

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TITLE: Identification of rare genetic variants in patients with non-syndromic early-onset obesity (EOO): Characterization and treatment.

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Background: Obesity is a highly heterogeneous disorder at both the clinical and molecular level. It also has a high heritability. At least 10 genes have been reported to cause monogenic severe obesity and these are mainly inherited in a recessive manner. More candidate genes have been identified in associated studies, but more information is needed regarding their direct effect on obesity. We aimed to determine the contribution to severe early-onset obesity (BMI > +3SDS, onset < 3years) of rare point mutations in selected candidate genes.

Results: A pooled DNA sequencing approach was used to screen 15 genes that are possible candidates for association with obesity in a cohort of 480 patients and 480 controls. The genes screened included: 1) those reported to be altered in patients with obesity (*LEP*, *LEPR*, *MC3R*, *MC4R*, *PCSK1*, *NTRK2* and *SIM1*) and 2) those with SNPs associated to obesity by GWAS

(*BDNF*, *FTO*, *NEGR1*, *GHSR*, *ADRB3*, *PPARG*, *PCSK2*, *PCSK1* and *TMEM18A*). Our focus was on very rare variants that were found in a single or few individuals in our cohort.

Of the 15 genes studied, 7 (*BDNF*, *FTO*, *MC3R*, *MC4R*, *NEGR1*, *PPARG* and *SIM1*) rare variants were differentially represented in patients and controls. Thirty rare variants in these 7 genes were found in 35 patients and 5 were found in 6 controls ($p < 0.0001$). The difference in probable pathogenic variants (15 variants in 17 patients and only 1 variant in a single control) was also significant ($p = 0.0001$). All variants were single allele changes, with no individual carrying more than one variant.

Conclusion: We found a higher burden of rare and probable pathogenic heterozygous variants in several candidate genes in patients with severe early-onset obesity compared to controls. These results emphasize the importance of the melanocortin pathway (including *MC3R*). They also highlight other genes that may carry highly penetrant obesogenic single allele variants such as *SIM1*, *PPARG* and *BDNF*.

Plenary Session: Early Microbiome Imprinting

GUT MICROBIOTA MODIFICATIONS. A 2019 UP-DATE

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The human microbiota is defined as organisms (bacteria, viruses, or eukaryotes) that are present in an environmental habitat, but mainly in the gut. A large number of studies indicated that alteration in gut microbiota composition and function, particularly in the early life, plays crucial role in health and disease. With the growing recognition of the role of gut microbiota, it is clear that gut microbiota may be a target for improving outcomes in subjects affected or at risk for certain diseases. To date, modification of gut microbiota via the provision of probiotics is the most extensively studied strategy. However, some recent studies questioned probiotic health benefits. New data are available on prebiotics, including human milk oligosaccharides, synbiotics, and postbiotics. This presentation will briefly discuss their effects on health outcomes and current controversies. Moreover, the effects of the administration of antibiotics in early life on chronic diseases, including allergies, overweight/obesity will be discussed. Gaining a better understanding of how microbiota is linked to health and disease is needed to develop next-generation modulators of the gut microbiota. The latter, once developed, need to be evaluated in well-designed and executed randomized controlled trials with clinically important outcome measures

Parallel Session: Human Milk Banking

SETTING UP A HUMAN MILK BANK IN A RESOURCE LIMITED SETTING

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Setting up human milk banks in resource limited settings

Currently most human milk banks (HMBs) provide donor milk to Hospital Neonatal Intensive Care Units in developed countries. Running of these HMBs requires considerable financial costs for the pasteurizer, testing of milk and donors.

These costs are prohibitive for resource limited settings. Given the well-documented benefits of breastfeeding especially for vulnerable infants it is vital that HMBs are made more accessible in developing countries. The availability of simple, easy to use, low cost, bench top mobile pasteurization devices are vital as the first start in making HMBs accessible.

Other issues to be discussed will be the minimum standards that will be acceptable for donor testing as well as for breastmilk testing.

Is there room for different guidelines for resource limited settings? Should resource limited settings concentrate on providing donor milk for the less vulnerable infants rather than the very vulnerable low birth weight infants which need more technical and sophisticated hospital care?

Most importantly we must not lose sight of the long term goal of HMBs which is to protect, promote and support breastfeeding – not simply to provide a substitute for formula milk. In special cases where mothers do not have enough milk, low cost pasteurisation systems can provide safe donor milk for a few days, while the mother is supported and encouraged to continue regular frequent expression to improve her supply and provide breastmilk for her infant. This is also helpful to sustain long term breastfeeding.

Recent literature and presentations at Human Milk Banking Conferences, appear to be focusing on improving technologies and quality control systems for human milk banks with little emphasis on supporting breastfeeding to decrease the need for donor milk.

Given differing circumstances in countries around the world, complicated, expensive technologies and strategies to find international one-size-fits-all human milk banking guidelines is costly and impractical. Money may be better invested on supporting breastfeeding and low cost human milk banks when and where they are most needed.

Parallel Session: Growth, Nutrition and Sport

EATING PATTERNS, FOOD INTAKE AND SUPPLEMENTS USE IN ADOLESCENT ATHLETES

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Adolescence is a period of significant changes, including fast growth and physical development as well as social, emotional and sexual development, which has implications on how adolescents view themselves and on their sporting achievements. In terms of nutrition, adolescence is an important time in establishing an individual's lifelong relationship with food.

Proper nutrition is especially vital for adolescents with a high activity level, as they experience numerous nutritional challenges, such as meeting nutrient needs for growth, maintenance of health, training and competing. Inadequate energy and nutrients consumption can cause growth retardation, delayed puberty, reduced accumulation of muscle and bone mass and increased susceptibility to fatigue, injury or illness.

According to the recent published data, Adolescent athletes usually do not adjust their nutrient intake to the demands of the training and do not meet nutritional recommendations. Many young athletes are using dietary supplements with the belief they will improve performance and health; however, may not always have reliable information. Special considerations in adolescent female athletes, mainly iron deficiency and disordered eating, should be addressed and studied.

To ensure that the adolescent athlete fulfils his or her potential (both, performance and physical growth), nutrition and eating patterns should be supported by a professional team. Further interventional RCTs are needed in this population.

Parallel Session: How to Achieve Optimal Growth in Preterm Infants

LONG TERM METABOLIC/ENDOCRINE OUTCOMES OF PREMATURITY AS CONSEQUENCE OF NUTRITIONAL MANAGEMENT

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Preterm birth is associated with long-term metabolic risks, such as abdominal fat distribution, insulin resistance, type 2 diabetes mellitus, and raised blood pressure. Early postnatal growth restriction is common among ill preterm infants, but should be avoided to enable the brain to develop optimally. In contrast, rapid weight gain in neonatal life and infancy could augment metabolic risks.

The evidence from nutritional intervention studies aimed at the reduction of the long-term metabolic sequelae of preterm birth will be reviewed. More individualized nutritional care, based on the assumption that the long-term metabolic risks can be mitigated by ensuring appropriate linear growth without excess fat mass accretion, seems warranted.

Parallel Session: How to Achieve Optimal Growth in Preterm Infants

LONG TERM COGNITIVE OUTCOMES OF PREMATURITY AS CONSEQUENCE OF NUTRITIONAL MANAGEMENT

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There is increasing evidence from preclinical and human studies that nutrition in the late foetal and early neonatal period has a significant impact on neurodevelopment across the lifespan. Large difference in intelligence between extremely or very preterm children and controls, which was stable in children born between 1990 and 2008. A fall in the weight z-score from birth to 36 weeks in very preterm infants could predict neurodevelopment. There is a positive association between nutrition during the first four weeks after birth and brain volumes. Moreover, a positive relationship between nutrition, white matter maturation at term equivalent age, and neurodevelopment in infancy. These findings emphasize the importance of a balanced protein, fat, and caloric content for brain development. Beneficial effects of breast milk on cognitive skills and behavior ratings have been demonstrated in term and very low birth weight infants. For every 10-mL/kg per day increase in breast milk ingestion, the Mental Development Index increased by 0.53 points, the Psychomotor Development Index increased by 0.63 points and the Behavior Rating Scale percentile score increased by 0.82 points. Brain imaging studies reveal increased white matter and sub-cortical gray matter volume, and parietal lobe cortical thickness, associated with IQ, in adolescents who were breastfed as infants compared to those who were exclusively formula-fed. Very preterm infants who received formula with an ω -6/ ω -3 ratio of 2/1 had better psychomotor development, compared with very preterm newborns who consumed formula with an ω -6/ ω -3 of 1/1. Therefore, formula milk with an arachidonic acid quantity double that of docosahexaenoic acid should be considered for feeding very preterm infants.

Parallel Session: What is the Link Between Nutrition and Growth?

STUNTING OF GROWTH IN THE FIRST FIVE YEARS OF LIFE: CAUSES AND NUTRITIONAL INTERVENTIONS

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Stunting of linear growth, a highly prevalent problem in children of low- and middle-income countries, is the result of the exposure of the fetus and/or young child to nutritional deficiencies and infectious diseases. Maternal undernutrition results in fetal growth restriction, and infectious diseases in pregnancy can result in preterm delivery. Both of these conditions are important contributors to stunting in early childhood, albeit their relative contribution varies by world region. After birth, growth faltering may begin at 3-5 months of life and becomes more prominent from 6 to 18 months. During this time, the young child is exposed to many infectious diseases, such as diarrhea, that have an adverse effect on growth. There is also increasing evidence that frequent ingestion of microorganisms results in damage to the small intestine. The resulting condition, referred to as environmental enteric dysfunction, even without clinical symptoms, may cause growth faltering. The complementary foods that the child receives in addition to breast milk are often inadequate in nutrients and energy, negatively affecting growth. Harmful exposure during pregnancy and the first 2 years of life, a critical period for growth and development, has led to a programmatic focus on this "1,000 days" in the life cycle. Dietary interventions, including nutrition education and for undernourished women provision of food supplements during pregnancy, result in improvements in fetal growth that position the newborn for healthier growth. Interventions in the first 2 years of life include promotion of exclusive breastfeeding for the first 6 months of life and continued breastfeeding for at least the first 2 years, nutritional counseling to assure adequate complementary feeding, and, if necessary in food insecure areas, the provision of supplemental food to be given to the child. Evidence shows that each of the interventions has a beneficial effect on the growth of the young child, yet that the effect is modest in relation to the degree of stunting observed in these underprivileged populations. Nevertheless, in recent years, reductions in the prevalence of stunting in some low-income countries show that substantial improvements are possible as a result of socioeconomic changes along with specific infection control and dietary interventions.

Parallel Session: What is the Link Between Nutrition and Growth?

STUNTING IS NOT A GOOD INDICATOR OF UNDERNUTRITION

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Background and aims: In the modern nutrition literature, the terms "stunting" and "undernutrition" are usually linked and synonymously used. Yet already during and after World War I, scientific evidence had accumulated that such a link is not valid. We aimed to further scrutinize the validity of this association. Methods: We re-analyzed fat tissue thickness and height in 5019 children and adolescents from Kolkata/India, and from 1715 Indonesian children, with up to 53% "stunted" children in the respective cohorts. Results: The data do not support current concepts defining chronic nutrient deficiency by measures of body height. Discussion: In view of evidence from social mammals, and historic data from several European populations we instead, strongly consider social-driven competitive growth strategies that regulate body height by other than physical biological factors. We suggest identifying growth inhibition caused by malnutrition by the combination of measurement of height along with indicators of energy balance such as triceps and subscapular skinfolds. This contribution intends to stimulate the debate why apparently healthy and well-nourished children raised in remote areas of former European colonies should grow according to references constructed for populations raised under distinctly different cultural, political, economic, and psychosocial circumstances. The data presented seriously question the inappropriate use of so-called global growth standards for child growth. Conclusions: We oppose the current misinterpretation of short stature as a proxy indicator for malnutrition. **Malnutrition leads to stunting, but stunting by itself does not indicate malnutrition.**

Parallel Session: What is the Link Between Nutrition and Growth?

WHY OBESITY INTERVENE WITH ACHIEVING GROWTH POTENTIAL

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Catch-up growth (CUG) in childhood is defined as periods of growth acceleration, after the resolution of growth attenuation causes, bringing the children back to their original growth trajectory. Sometimes, however, CUG is incomplete, leading to permanent growth deficit and short stature. In this talk I will present our studies aiming to investigate the mechanisms that limit nutritional-CUG. Specifically, we focused on the crosstalk between leptin, increased by re-feeding, and sex hormones, which increase with age. I will describe our recent studies on young male Sprague Dawley rats fed ad libitum or subjected to 10/36 days of 40% food restriction followed by 90–120 days of re-feeding. In vitro studies were performed on ATDC5 cells. We found that CUG was complete in body weight and humerus length in animals that were food-restricted for 10 days but not for those food-restricted for 36 days. In vitro studies showed that leptin significantly increased aromatase gene expression and protein level as well as the expression of estrogen and leptin receptors in a dose- and time-dependent manner. The effect of leptin on aromatase was direct and was mediated through the MAPK/Erk, STAT3 and PI3K pathways. The crosstalk between leptin and aromatase in the growth plate suggests that re-feeding during puberty may lead to increased estrogen level and activity, and consequently, irreversible premature epiphyseal growth plate closure. These results may have important implications for the development of novel treatment strategies for short stature in children.

Parallel Session: Nutrition and Disease

GENETIC SYNDROMES ASSOCIATED WITH FEEDING PROBLEMS (SILVER-RUSSELL SYNDROME, HETEROZYGOUS IGF1R MUTATIONS OR DELETIONS, NOONAN SYNDROME)

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Patients presenting with short stature, in whom a genetic cause is considered, a detailed history of the feeding pattern contributes to identify the underlying disease. Feeding problems are described as a well known feature in many syndromes, in particular in Silver-Russell syndrome (SRS), Bloom syndrome (BS) and IGF-I receptor mutations or deletions.

Feeding problems include poor sucking, vomiting, gastro-oesophageal reflux, poor appetite, slow feeding, oromotor issues and denial of food and result in low caloric intake and failure to thrive. Nasogastric tube feeding or percutaneous endoscopic gastrostomy is necessary to prevent severe weight loss in some cases.

Recently we evaluated a cohort of children with a defect of the IGF-I receptor. Typical features were born small for gestational age, short stature, small head circumference and increased IGF-I levels. 15 out of 19 cases experienced feeding problems. In patients with this phenotype *IGF1R* analysis should be considered.

The Nethine-Harbison clinical scoring system was developed to identify patients with SRS. The score includes birth size, height, relative macrocephaly at birth, protruding forehead, body asymmetrie and feeding difficulties. In the consensus statement (Wakeling et al 2016) recommendations for feeding and nutritional support are published. These patients benefit from growth hormone treatment regarding body composition, psychomotor development and appetite.

In children with BS significant feeding problems occur with apparent lack of interest in eating, gastroesophageal reflux and excessive vomiting. Children with BS show severe pre- and postnatal growth failure. The typical butterfly rash on the face which exacerbates by sun is not present during infancy but develops as they age. It is important to recognize this chromosomal instability syndrome because of a greatly increased risk of early onset of cancer.

Parallel Session: Nutrition and Disease

NUTRITION IN GLUTEN RELATED DISORDERS

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Coeliac disease is a permanent intolerance to gluten and related prolamins which develops in genetically predisposed individuals. Gluten is the main structural protein of

wheat with equivalent toxic proteins found in rye and barley. In coeliac patients, gluten causes a systemic autoimmune disease and results in the development of intestinal and extra-intestinal manifestations.

Several epidemiological studies have estimated a prevalence of one case per 130-400 individuals in the general population, with lower prevalence in Asian countries.

The only currently available treatment for CD is a life-long strict adherence to a gluten-free diet (GFD), which means to avoid consumption of wheat, barley and rye. Oats is considered to be tolerated by a majority of coeliac patients although their role in CD pathogenesis is still a matter of debate

Challenges for a strict adherence to a GFD:

Compliance with a gluten-free diet is very difficult in practice due to the widespread presence of gluten in Western diets.

Non Voluntary / Occult transgressions are frequently due to eating out and specially related to school catering, holidays, summer camps, social life (birth day parties, etc.); home confusing labeling of food products as well as contamination issues may be a real challenge for strict avoidance. Voluntary transgressions are frequently observed in adolescents, young children, adults not accepting the diagnosis or considering a GFD has a negative impact on their Quality of Life.

Also the higher costs of GF foods as compared to their gluten containing counterparts may hamper adherence

How to monitor adherence

CD specific serological markers are not reliable to detect occasional or small dietary transgressions. Even so no evident clinical symptoms have to be expected for occasional gluten intake due to sporadic voluntary non adherence or to inadvertently transgression because of, among other causes, contamination of food products.

The paucity of monitoring options means that serology remains widely employed as a marker of intestinal damage even though it correlates poorly with villous atrophy. In contrast with its excellent sensitivity for disease screening, serology does not detect small amounts of gluten

ingestion and the sensitivity of tTG IgA to detect persistent villous atrophy is typically less than 50%, although DGP antibodies may perform better.

Recently a new method for the detection of gluten immuno peptides in faeces and in urine by means of a highly sensitive anti-gliadin 33-mer MoAb has turned out as a powerful tool for recent dietary transgressions.

Non Coeliac Gluten/wheat Sensitivity (NCGS)

Besides CD, there are cases of gluten reactions, generally in the adult population, in which neither allergic nor autoimmune mechanisms can be identified. We define as non-celiac GS when individuals experience symptoms when eating gluten-containing products which improve on a GFD. NCGS is a condition distinct from CD as the small intestine is usually normal and no positivity for anti-tTG autoantibodies can be detected . As NCGS can be transitory experts recommend the gluten-free diet should be followed for a given period, eg, 12 to 24 months, before testing gluten tolerance again. Based on severity of symptoms, some gluten sensitive patients without celiac disease may choose to follow a gluten-free diet indefinitely. Recent studies raise the possibility that in addition to gluten, other grains' components, including amylase trypsin inhibitors (ATIs) and fermentable short-chain carbohydrates (FODMAPs) may trigger symptoms in GS. Oats can be considered safe also for NCGS subjects due to their lower prolamin content[61] and for their lower ATI innate immune stimulatory

activity . Whether it is gluten and/or other proteins in wheat that are responsible for the development of symptoms in NCGS patients remains to be determined. Therefore the term non-celiac wheat sensitivity (NCWS) is suggested by some authors as more appropriate than NCGS .

Parallel Session: Nutrition and Disease

NUTRITION AND GROWTH IN INFLAMMATORY BOWEL DISEASE

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Nutrition in Inflammatory Bowel Diseases

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Inflammatory bowel disease (IBD) is a term used to describe a group of diseases that includes Crohn's disease (CD) and ulcerative colitis (UC). Malnutrition and nutrient deficiencies are common in IBD and more so in CD. For decades, enteral feeding has been used as part of the nutritional therapy of IBD. Exclusive enteral nutrition (EEN) which is defined as the provision of 100% of an individual's nutritional requirements from a liquid nutritional formula either orally or via a feeding tube for about 8 weeks, is considered as efficacious as steroids in the induction of remission for luminal Crohn's disease in children and adolescents. The reason is not clear, but possible explanations include nutritional improvement effects, reduced antigenic load, bowel rest (elemental diet), provision of trophic amino acids, modification of gut flora, reduced gut permeability, reduced mucosal inflammation and supplementation of antioxidants. In a recent meta-analysis, in addition to a similar effect as steroids on induction of remission, EEN was shown to be more efficacious than steroids in inducing mucosal healing irrespective of disease phenotype. EEN can be given orally or via a nasogastric tube and repeated courses are efficacious though in a lesser extent than the first time. Currently, EEN is recommended as the first choice for inducing remission in pediatric patients with luminal CD.

Growth retardation is seen in up to 40% of children with (IBD), and as a result it may have long term effects on final adult height. Etiology may include undernutrition, metabolic dysregulation, inflammatory impact on hormonal growth axis and the effect of drugs such as glucocorticoids. Control of disease activity and minimizing the need for corticosteroid therapy are necessary measures in order to facilitate normal growth. Nutrition has a role in the prevention of growth retardation, however, it has an excellent effect on weight but less so on height.

Diet is important in the pathogenesis of IBD and there is accumulating evidence for the role of specific diets such as the CD Exclusion diet and the CD treat in induction of remission.

Parallel Session: Food Allergy - Current Opinions on Prevention and Nutritional Management

INTRODUCTION OF POTENTIALLY ALLERGENIC FOODS: SHOULD THE GUIDELINES BE THE SAME IN ALL COUNTRIES?

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Many countries have noted increasing rates of food allergy in recent years despite advice to parents to delay or avoid introducing allergenic foods to their infants. This has led to a change in focus, based on the concept of inducing tolerance in infants by oral exposure to food allergens. Data from cohort studies suggest that the risk of later allergy, including food allergy, may be increased if the introduction of allergenic foods is delayed; however, reverse causality is impossible to exclude. A number of randomised trials have now been conducted, with others ongoing, examining the effects of introducing allergenic foods to infants at different ages on the development of food allergy. These trials vary in a number of respects which are relevant when considering how their findings should be translated into practice: they were conducted in different populations (mostly from Western countries), at different risk of allergy, using different allergens in different forms and amounts, and with different ages at introduction.

Whilst there is now general agreement that the introduction of food allergens does not need to be delayed, and that they can be treated in the same way as other complementary foods, specific guidance must be tailored for the population for whom advice is intended. Important factors to consider include the foods and food allergens typically consumed by the population, the prevalence of food allergy, genetic and environmental factors that may influence sensitisation and allergy, and the individual infant's risk of allergy. The healthcare system and available resources, including availability of paediatric allergists are also important. Thus specific guidance on the introduction of allergenic foods should not be the same in all countries and settings.

Parallel Session: Food Allergy - Current Opinions on Prevention and Nutritional Management

IS THERE CONSENSUS ON THE USE OF HYDROLYZED FORMULAS FOR ALLERGY PREVENTION?

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Allergic disorders comprising of eczema, food allergy, allergic rhino-conjunctivitis and asthma, are among the most common chronic non-communicable diseases in children. They are associated with significant morbidity and rate of hospitalization, decreased quality of life of the whole family, and are imposing tremendous costs on the health system. A preventive approach is therefore of great interest, and various preventive measures have been described.

In early infancy, particularly in the first 3 months, the increased intestinal permeability coupled with the immaturity of the mucosal immune system enable access of food macromolecules across the mucosal barrier into the systemic circulation, raising the risk for the development of food allergy. This is the “physiological background” for a hypothesis on the potential preventive effect of feeding non-breast-fed infants at increased risk for allergy with the infant formulas in which proteins are hydrolyzed into the smaller, hence, potentially less allergenic molecules. As for the sources, main cow’s milk proteins – whey and casein - are used in the great majority of hydrolyzed products.

According to the extent of hydrolysis, formulas are divided into the extensively hydrolyzed (eHF) comprising of very small peptides with molecular weight below 3 kDa, and partially hydrolyzed (pHF) consisting of peptides mostly below 5 kDa. The eHF have been used for many decades in the treatment of infants with cow’s milk protein allergy but also in prevention of allergy, while the potential role of pHF is mainly in prevention. Besides on the molecular weight, the studies have shown that their allergenicity depends also on the method of hydrolysis and the protein source. There have been many studies comparing hydrolyzed formulas in respect to their molecular weight and also protein source. The results were summarized in several meta-analyses and were objects for several systematic reviews. However, the results obtained are not unequivocal, and therefore the use of hydrolyzed formulas for allergy prevention is still a matter of debate.

In the present lecture, the background for the potential role of hydrolyzed formulas will be introduced, a distinction in respect to the degree of hydrolyzes and protein sources will be presented, and results of the most important high quality studies and meta-analyses will be shown. Based on that, the current recommendations for the preventive use of hydrolyzed formulas in the high risk infants and in the general population will be discussed.

Parallel Session: Food Allergy - Current Opinions on Prevention and Nutritional Management

TREATMENT (DESENSITIZATION) OF FOOD ALLERGIES

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Food allergies are increasing and severely impact the quality of life of the children and their family. Until now, the standard treatment for food allergies was strict avoidance i.e. elimination of the allergenic food(s) from the patient's diet to prevent allergic reactions. Avoidance remains the mainstream attitude, but recent progress was made leading to new therapeutic options for food allergic children. The latter are mainly the so-called "immunotherapy", according to which allergic children are in contact with the offending food with the goal of a progressive desensitization to this food. Immunotherapy is a promising alternative to traditional avoidance. According to the route of contact between the patient and the allergen, interventions are labeled oral immunotherapy (OIT), sublingual immunotherapy (SLIT) and epicutaneous immunotherapy (EPIT). OIT and EPIT are currently in a process of pharmaceutical development by two different companies. This presentation describes the pros and cons of all methods.

Parallel Session: Food Allergy - Current Opinions on Prevention and Nutritional Management

GROWTH IN CHILDREN WITH FOOD ALLERGY

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Poor growth has been recognised by all of the current guidelines on food allergy as a symptom to consider with other atopic symptoms and a factor of concern for later health. To date, a low weight for height is more commonly reported than a low weight for age or weight for height. The mainstay of management of food allergies is dietary elimination. During early childhood, this may entail the elimination of nutrients essential for growth, including cow's milk. Poor growth has in the past mainly been blamed on dietary elimination and insufficient energy, protein intake and inappropriate replacement of nutrients that have been eliminated. However, data does not always support this notion that an energy deficit is at the heart of the problem. Although vitamins and mineral deficiencies are commonly reported, the association with growth is poorly studied in food allergies. Similarly, the role of atopic co-morbidities and ongoing inflammation is only now starting to be considered in the pathophysiology of disordered growth in children with food allergy. This presentation aims to provide an overview on the prevalence of undernutrition in food allergy and factors that need to be considered.

Oral Presentations Session 1: Childhood & Adolescence

HOW ACCURATELY CAN WE PREDICT OVERWEIGHT AT AGE 10-12 YEARS EARLY IN LIFE?

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Background: Childhood obesity is a worldwide public health problem. Tools for youth health care workers to predict childhood overweight/obesity from early age onwards are therefore urgently needed. In this study, we developed a dynamic prediction model which uses the information available from the first 4 months of life to predict overweight status age 11-12 years.

Methods: Data from the Amsterdam Born Children and their Development (ABCD) cohort study were used (N=3334). Overweight status at age 11-12 years was defined according to WHO reference (> 85th percentile, age and sex specific). Growth measurements were modelled with a non-linear skewed-normal mixed effect model for boys and girls separately. Additional maternal factors (pre-pregnancy body mass index (BMI), smoking during pregnancy, ethnicity, diabetic status and educational level), pregnancy outcomes (birth weight, gestational age) and infant factors (sex and duration of breast feeding) were added to the model as predictors. The predictions were based on empirical Bayes estimates. The optimal model was selected based on a cross-validated AUC score.

Results: Prevalence of overweight was 21.4% at age 11/12. The most optimal model contained: length and weight growth between 0-4 months, pre-pregnancy BMI, smoking during pregnancy, ethnicity, years of education and duration of breastfeeding. Sensitivity and specificity were 78% and 66%, respectively.

Conclusion: Prediction of overweight at age 11/12 years, based on information available during the first 4 months of life, is possible with decent accuracy. The risk prediction might facilitate early overweight prevention through for example communication of risk to parents.

Oral Presentations Session 1: Childhood & Adolescence

IDEAL CARDIOVASCULAR HEALTH AT AGE 5-6 YEARS AND CARDIOVASCULAR RISK IN PREADOLESCENCE

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Background- The American Heart Association has defined ideal cardiovascular health (ICH) based on the presence of both ideal health behaviors (diet, physical activity, weight status and smoking) and ideal health factors (glucose, total cholesterol and blood pressure levels). We extended this ICH-score with the following health behaviors: sleep duration, screen time and prenatal smoke exposure and evaluated its association with cardiovascular risk in children.

Methods- A total of 1,666 children aged 5-6 years were randomly selected from the prospective ABCD-cohort study. Data on health factors and behaviors were collected and ICH scores (classic and extended) were calculated by adding the number of scoring 'healthy' on each indicator. Children were followed-up till age 11-12 and cardiovascular risk (carotid intima-media thickness (cIMT), blood pressure, glucose, lipids) were measured.

Results- Thirty-three percent scored poor (score 1-5), 56% intermediate (6-7) and 11% good (8-9) on the extended ICH score. Healthy diet and cholesterol were the least prevalent. Neither the classic nor the extended ICH scores were associated with cIMT. A higher score on the extended ICH was associated with lower total cholesterol ($P<0.001$), BMI ($P<0.001$), systolic ($P=0.012$) and diastolic blood pressure ($P=0.011$). The classic ICH score was only associated with lower total cholesterol ($P<0.001$) and BMI ($P<0.001$).

Conclusion- Our findings suggest that extending the ICH score in young children with additional health behaviors might be more predictive for their cardiovascular health in preadolescence, compared to the classic ICH score. Further research with longer follow-up is needed to find out whether this persists into adulthood.

Oral Presentations Session 1: Childhood & Adolescence

POSITIVE CORRELATION, BUT NOT INVERSE CORRELATION BETWEEN LEG LENGTH AND BLOOD PRESSURE IN INDONESIAN PRIMARY SCHOOL CHILDREN

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Background : Leg length (LL), as the component of height can describe the nutritional status and growth wellbeing. It has inverse correlation with blood pressure (BP) in adult. Limited studies about their correlation in children and none were held in Indonesia.

Aim : to investigate LL and BP correlation in Indonesian children

Methods : This study measured 496 children (boys=241, girls=255) aged 6-12 years old in primary schools in Yogyakarta Province, Indonesia. LL was obtained from Relative Subischial Leg Length using calculation between total stature and sitting height to minimize the biases. Systolic BP (SBP) and diastolic BP (DBP) was measured using auscultatory method and defined in mmHg. Analysis of Kolmogorov-Smirnov, independent *t* test, Mann-Whitney, Spearman Correlation, and Linear Regression were performed. This study differs genders for the analysis.

Result : Based on the pediatric hypertension guideline from *American Academy of Pediatric* (2017), this study found 5,4% subjects had high SBP and 12.3% subject had high DBP. LL had positive and significant correlation ($p < 0.001$) with SBP and DBP in total sample, boys, and girls. One cm LL increment increases 0.284 mmHg SBP and 0.289 mmHg in boys, 0.179 mmHg SBP and 0.275 DBP in girls. These findings were different compare to the negative correlation between LL and BP in adult.

Conclusion : LL was significantly correlated with SBP and DBP among Indonesian children. Puberty onset, protein intake, and economic growth were hypothesized to explain opposite phenomenon about LL and BP correlation between adult and children.

Oral Presentations Session 1: Childhood & Adolescence

GUIDELINE FOR PREVENTIVE CHILD HEALTH CARE IN THE NETHERLANDS: DETECTING DISORDERS ASSOCIATED WITH A SHORT AND TALL STATURE

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Background and aims: Our aim was to develop a guideline for preventive child health care (PCHC) in the Netherlands in order to improve the early detection of disorders that induce short or tall stature in children aged 0-18 years.

Methods: We performed a systematic literature review, developed ethnic-specific target height (TH) formulas, constructed delayed puberty growth charts, and calculated specificity on several longitudinal data sets from the general population of children in the Netherlands. We updated the current Dutch guideline for short stature in children aged 0-10 years.

Results: We developed referral criteria for short and tall stature in children aged 0-3, 3-10 and 10-18 years. These criteria were based on single or multiple (crossing centiles) height standard deviation score(s) (HSDS) for several ethnic-specific growth charts, the distance between HSDS and TH SDS, neonatal factors (birthweight and -length, gestational age), and clinical symptoms (e.g. disproportions, dysmorphic symptoms, emotional deprivation, pubertal praecox, pubertas tarda, developmental delay, behavioral problems, macrocephaly). Several criteria were evidence-based, while other criteria were formulated based on expert opinions. The guideline also provides information on the cause of short and tall stature.

Conclusions: We developed a guideline for short and tall stature. This guideline will be implemented within the Dutch PCHC. Target groups include primary (e.g. syndromes: Turner, Noonan, Prader-Wili, Marfan, Sotos, Klinefelter, Fragile X- and Triple-X) and secondary (Growth hormone deficiency) growth disorders and Idiopathic short and large stature (familiar/non-familiar). More research is needed to investigate the diagnostic yield.

Oral Presentations Session 1: Childhood & Adolescence

INSIGHTS ON SNACKING: A REVIEW FROM NUTRITION SCIENCE AND CONSUMER TRENDS

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Snack consumption plays an important role in daily diets of children and adolescents. Often, snacks are linked to high amounts of sugar and/or saturated fat and are likely to foster weight gain. The development of novel (healthier) snacks requires a thorough consumer understanding. The study aimed to clarify children's and adolescents' needs by reviewing and summarising empirical research on snacking in a 2 to 18 year-old population, as well as global snacking consumer trend reports.

Multiple scientific literature databases were searched for documents published between 2006 and 2018. Also, consumer trend reports from different market research agencies were included. A total of 41 scientific papers from 11 countries (21 specifically focused on children and adolescents) and 17 trend reports from 15 agencies were analysed.

Our findings show that there is no global consensus regarding guidelines for the consumption frequency and nutrient composition of snacks. There is also no agreed scientific definition of snacking. Considering the latter, consumers' perception of snacks depends on multiple (external) factors. Findings show that boundaries between snacks and meals are blurring and frequencies of snacking are increasing, particularly in Western countries. Current trends are evolving towards more healthy, natural and convenient snacks; however, taste remains a priority for snacks for children.

Our insights may serve as a helpful input for the development of healthy snacks targeting children and adolescents, keeping the taste as the main challenge.

Oral Presentations Session 1: Childhood & Adolescence

NUTRIENT AND DIETARY IMBALANCES ARE PRESENT IN A EUROPEAN COHORT OF PATIENTS WITH CYSTIC FIBROSIS

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Background and aims: Optimal nutrition care in Cystic Fibrosis (CF) improves prognosis and survival. Increased caloric intake for this population should be prioritised by healthy food choices. This study aimed to assess nutrient and food groups' intake in European children with CF and to determine the relative contribution of each food group to total macronutrient intake and differences between CF centers.

Methods: Cross-sectional observational study in 207 children with CF from 6 European centers involved in MyCyFAPP (My Cystic Fibrosis mobile application) project, using a 4-day food record. Nutritional composition databases were specifically developed to obtain nutritional data, including macronutrients and food groups information.

Results: Overall, sugar intake ranged from 10.8 to 27.2% of the total daily energy intake in the centers and the saturated fatty acids represented >35% from total fat intake in all of them. These nutritional imbalances were associated with a low consumption of fish, legumes, fruit, vegetables and nuts, and an overconsumption of sweets and snack-processed products. In addition, food patterns differed greatly between centers.

Conclusions: Full characterization of nutrient and food groups' intake revealed dietary imbalances, especially high sugar and saturated fatty acid consumption. These findings can be used to develop upcoming educational tools and can set the basis for tailored improvement of adherence to the nutritional recommendations in CF.

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Oral Presentations Session 1: Childhood & Adolescence

THE ROLE OF NUTRITIONAL STATUS IN THE EVOLUTION AND PROGNOSIS OF CHILDREN WITH LIVER CIRRHOSIS

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Introduction. The cirrhotic evolution of chronic liver disease negatively influences nutritional status and development, especially in childhood, when the growth rate is maximal. The consequences of nutritional disorders in liver cirrhosis in the child are systemic: failure to thrive, growth and developmental disorders, increased susceptibility to infections - with long-term impact. In this regard, nutritional status is a component of the Pediatric End-stage Liver Disease (PELD) score for hepatic transplantation.

Material and methods. The study of 47 patients with liver cirrhosis of various aetiologies establishes the link between nutritional status, assessed by somatometric parameters in dynamics, with the evolution and prognosis of these patients.

Results and discussions. BMI shows an average value of 18.5 kg / m² to the lower limit of normal, demonstrating a somewhat deficient nutritional status within the study group. The improvement of nutritional status through dietary measures and hepatoprotective therapy was observed in 15 patients (33.6% of cases). At the same time, nutrition was modified in order to modulate the hepatic encephalopathy, assessed by psychometric testing. The prevalence of infectious episodes have also decreased in children with improvement of nutritional status.

Conclusions. Early identification and treatment of malnutrition in chronic liver disease has the potential to lead to better disease outcome as well as prevention of the complications of chronic liver disease and improved transplant outcomes. Mechanisms are both immune modulation (antiinfectious protection) and metabolic influences at systemic level.

Oral Presentations Session 1: Childhood & Adolescence

IODINE DEFICIENCY AMONG ITALIAN CHILDREN AND ADOLESCENTS: FIRST REPORT BASED ON 24H URINARY IODINE EXCRETION

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Iodine is a micronutrient essential for intellectual development in children. Despite monitoring the iodine status of children is crucial, Italian data on 24hour Urine Iodine Excretion (UIE) are lacking.

Objective

The aim of our study was to evaluate the iodine status of Italian school-age children and adolescents.

Design

The study population included 1270 healthy subjects (677 boys, 593 girls) aged 6-18 years from 10 Italian regions. UIE was measured in 24 hour urine collections . Daily iodine intake was estimated as UIE/0.92, based on the notion that approximately 92% of the dietary iodine intake is absorbed. The adequacy of intakes has been assessed according to Dietary Reference Values for iodine of the European Food Safety Authority (EFSA).

BMI and Urinary iodine concentration (UIC) were also measured for each subject.

Results

According to EFSA, 600/1270 subjects (47.2%) were found to have an inadequate iodine intake, with a higher prevalence of girls (54.6%) as compared to boys (40,2%) ($p<0.001$). With increasing age, a progressive increase in UIE ($p<0.001$) was observed, as well as a progressive increase of urinary volumes ($p<0.001$), a progressive decrease in the percentage of subjects with ioduria $< 100 \mu\text{g}/24\text{H}$ ($p<0.001$), without any significant difference in the percentage of subjects with UIC $< 100 \mu\text{g}/\text{L}$ ($p=0.016$). No significant association was identified between BMI and UIE ($p=0.603$) or UIC ($p=0.869$).

Conclusion

A sizable portion of our pediatric population, especially girls, is at risk of iodine deficiency. There is a risk for women to become pregnant in a suboptimal iodine status.

Oral Presentations Session 2: Obesity

PRIMARY PREVENTION OF FAT AND WEIGHT GAIN AMONG OBESITY SUSCEPTIBLE NORMAL WEIGHT PRESCHOOL CHILDREN. RESULTS FROM THE “HEALTHY START” RANDOMIZED CONTROLLED INTERVENTION.

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Background and aims: Successful treatment of obesity is well documented among children. The real public health challenge lies in understanding the primary drivers behind excessive weight gain among normal weight individuals. The aim of this primary prevention RCT was to examine if excessive weight and fat gain can be prevented among normal weight, but obesity susceptible, young children aged 2-6 years.

Design: Eligible children were identified based on information on either a high birth weight, maternal pre-pregnancy obesity, or maternal low educational level from national registries, and randomized into the intervention group, or the control group. Trained project staff took anthropometric measurements at baseline and follow-up. All overweight children were excluded from subsequent analysis (n=92), while all normal weight children were included (n=543). The intervention aimed to deliver improvement in diet and physical activity habits, optimization of sleep quantity and quality and reduction of stress in the family. Average intervention period was 1.3 years.

Results: Intention-to-treat analyses showed a higher gain in fat free mass ($\beta=0.35$ (95% CI 0.01;0.69, $p=0.05$)) and a lower gain in %-fat mass ($\beta=-1.96$ (95% CI -3.69;-0.23, $p=0.03$)) in the intervention group compared to the control group, but non-significant differences in BMI z-score gains ($p=0.29$). Intervention effects were generally larger in children < 4 years.

Conclusions: This primary prevention intervention, conducted among young normal weight children with a susceptibility to future obesity, suggested improved growth and body composition after 15 months intervention, especially among the youngest children.

Oral Presentations Session 2: Obesity

SONOGRAPHIC EVALUATION OF VISCERAL, SUBCUTANEOUS FAT AND HEPATIC ECHOGENICITY IN OVERWEIGHT AND OBESE EGYPTIAN CHILDREN AND ADOLESCENTS

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Background: Childhood obesity has been associated with clinical and metabolic complications. These complications are related mainly to the visceral adiposity. Ultrasound has a great value in assessing body fat. **Aim:** To assess ultrasonic measurements of subcutaneous and visceral fat and hepatic echogenicity in overweight and obese children and adolescents.

Methods: This cross-sectional study was conducted on 52 obese and overweight children and adolescents with simple obesity. Forty-one healthy non-obese, non-overweight peers were included as a control group for the ultrasonic parameters. Abdominal ultrasound was done to assess subcutaneous fat (SCF), visceral fat including; preperitoneal fat (PPF), intraperitoneal fat (IPF 1, IPF 2 & IPF 3) in addition to abdominal wall fat index (AFI) and liver echo pattern. Statistical analysis was done using the Statistical Package for Social Science (SPSS version 18).

Results and conclusions: Ultrasonographic indices (SCF, PPF, AFI, IPF1, IPF2, IPF3 and echogenicity) were significantly higher in the obese and overweight group than controls. All fat indices are correlated significantly with complications (hypertension, acanthosisnigricans, hyperlipidemia and echogenic liver).By using the ROC curve, the SCF PPF, IPF1, 2& 3 cutoff points equal11.6,5, 24.4, 32&18.9 mm respectivelyBinary logistic regression was done and revealed that SCF thickness is the most important independent predictor for complications with an accuracy reach up 85%. These cutoff values could be used in wide scale in further studies to show how much these sonographic indices are reliable in predicting such complications.

Oral Presentations Session 2: Obesity

EFFECTS OF AEROBIC EXERCISE ON BLOOD GLUCOSE IN OVERWEIGHT/OBESE CHILDREN: A META-ANALYSIS

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Background and aims: Aerobic exercise (AE) play important roles in the management of childhood obesity. However, effective interventions to prevent childhood obesity and reduce blood glucose are limited. The aim of this meta-analysis is to assess the effects of AE on blood glucose in overweight/obese children.

Methods: This study systematically searched the literature to identify controlled trials that assessed the effect of AE on blood glucose. The risk bias quality assessment was used to screen the articles. Apart from that, meta-analysis of the included studies was performed using the random-effects model. Data were analyzed using software Stata14.

Results: According to the inclusion and exclusion criteria, a total of 12 articles were included in this study, and none of selected articles had significant publication bias. The total sample size of the control groups and intervention groups included in the literature was 272 and 285, respectively. As shown by meta-analysis data, the decrease degree of blood glucose in intervention groups were greater than that in control groups (ES=2.452, 95%CI, $P=0.001$). Then, this study conducted a subgroup analysis by age (10-12 years old, 6-10 years old), total exercise time (≥ 12 weeks, <12 weeks) and exercise frequency (≥ 3 times/week, <3 times/week). Data showed that the the decrease degree of blood glucose in intervention groups were greater than that in control groups when total exercise time ≥ 12 weeks ($P=0.000$).

Conclusion: The AE was effective in improving glycometabolism health in overweight/obese children. Our findings provide important implications to tackle childhood obesity.

Oral Presentations Session 2: Obesity

ASSOCIATION BETWEEN ELECTIVE CAESAREAN SECTION WITH EARLY CHILDHOOD ADIPOSITY IS INDEPENDENT OF MATERNAL PRE-PREGNANCY BMI

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Background and Aims

Recent epidemiological studies suggest a possible link between Caesarean delivery (CD) and early adiposity, but the results have been inconsistent. The question becomes more important as the rate of CD has increased globally over the last decades. The purpose of this study was to test the association between CD, both in emergency and elective settings, and childhood adiposity.

Methods

From the Cambridge Baby Growth Study (2001-present), anthropometry outcomes including weight, height, BMI, and skinfold thicknesses were taken during infancy (N=1558). Out of these, 258 subjects were reassessed at childhood (age 7-10 years old), along with dual-energy X-ray absorptiometry (DXA) scans. These outcomes were then associated with elective and emergency CD, using vaginal delivery as controls.

Results

Of the 1558 singletons involved in the analyses, 445 were LSCS-born (233 elective). At birth, CD-born infants, both elective and emergency, had significantly higher BMI and sum skinfolds compared to controls. Postnatally, only elective CD had higher adiposity until 3, 12, and 24 months; but this difference was only observed at 24 months after adjusting for maternal covariates (including pre-pregnancy BMI) and birth weight-SDS, (B=1.63 for BMI-SDS and B=0.16 for sum skinfolds, both $p=0.04$). In childhood, elective CD-born subjects persisted their significantly higher size and adiposity (including waist circumference and percentage body fat measured by DXA).

Conclusions

Elective CD-born subjects were bigger with higher adiposity compared to emergency CD and controls, both during infancy and childhood, independent of maternal BMI. This could be due to an interplay between the different microbial exposure and the absence of labour stimulus.

Oral Presentations Session 2: Obesity

HOW DO VARIOUS TYPES OF PRENATAL AND POSTNATAL STRESS AFFECT THE CHILD'S BMI, WHR AND BODY COMPOSITION?

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Background and aims: Recent studies have shown that stress experienced by a pregnant woman and her child affects the child's body mass and composition, however, the results are ambiguous. The aim of the study was to assess the influence of stress on the child's BMI, WHR and body composition.

Methods: The sample included 262 girls and 285 boys, aged 6-12y. The body composition was assessed by the electric bioimpedance method (TANITA MC-980). BMI, WHR and WHtR were calculated on the basis of anthropometric measurements collected according to the standard guidelines. Mothers were asked questions about stressful events during pregnancy and in later life of their children.

Results: Stress experienced by mothers whose financial situation had been difficult during the pregnancy was associated with lower body fat ($U=5556$; $p=0.024$) and higher WHR in children ($F=4.9$; $p=0.03$), regardless of mothers' BMI before and after pregnancy. The analysis of the stress experienced by the child revealed a relation between family violence and lower body fat ($\chi^2=6.23$; $p=0.04$) or lower weight ($U=3776.5$; $p=0.026$) as well as an association between family problems and increased WHR ($U=16919.5$; $p=0.047$). There was also a relation between separation from the parents and lower WHtR ($\chi^2=8.9$; $p=0.012$).

Conclusions: Depending on the cause, stress may lead to lower body fat and WHtR, and higher or lower WHR. Therefore further studies are needed to explore the mechanisms of relation between different types of stress and body weight and composition in children.

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Oral Presentations Session 2: Obesity

GENE-NUTRIENT INTERACTIONS ON METABOLIC DISEASES: FINDINGS FROM THE GENUINE COLLABORATION – A STUDY FUNDED BY THE BRITISH NUTRITION FOUNDATION

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Background and Aims:

Metabolic diseases are caused by the interaction of overconsumption of energy, sedentary lifestyle and genetic susceptibility. Although several studies have examined the interactions between genes and macronutrients (i.e., nutrigenetics) on the development of obesity, the findings have been quite inconsistent. To address this issue, a large-scale study called *GeNuIne* (Gene-Nutrient Interactions) *Collaboration* was initiated through funds from the British Nutrition Foundation to perform gene-diet interactions on metabolic diseases using data from various ethnic groups.

Methods:

Nutrigenetic studies were conducted for the first time in the UK, South Asia, South East Asia, South America, Africa and Turkey. Twenty genetic variants, that were identified by genome-wide association scans for obesity, were chosen as candidates and genetic risk scores (GRS) were constructed using these variants. Dietary intake was assessed using validated food frequency questionnaires.

Results:

Nutrigenetic study in South Asians has shown that there were significant interactions between the GRS and carbohydrate intake on waist circumference ($P=0.031$) and waist to hip ratio (WHR) ($P=0.015$). Individuals who carried 8 or less risk alleles for metabolic disease had 7.47 % lower WHR measurements in the highest tertile of carbohydrate intake compared to those with 9 or more risk alleles ($P=0.035$). Findings from other developing countries confirmed the existence of heterogeneity in gene-diet interactions.

Conclusion:

The *GeNuIne Collaboration* is the first to provide evidence for gene–diet interactions on obesity in South Asians and has identified novel interactions in other developing countries, which can possibly be used for implementing personalising diets for each ethnic group.

Oral Presentations Session 2: Obesity

OBESOGENIC BEHAVIOURS MEDIATE THE RELATIONSHIPS BETWEEN PSYCHOLOGICAL PROBLEMS AND BODY MASS INDEX IN ADOLESCENTS

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Aims: To examine whether the associations between loneliness, anxiety and suicide attempt with body mass index were mediated by obesogenic behaviours.

Methods: This large-scale study is a cross-sectional secondary analysis of data from Global School-based Student Health Survey (2009-2014). Mixed-models examined the associations between obesogenic behaviour score (OBS), psychological problems and body mass index (BMI) through different sex. Sobel test was fitted for testing the mediation of OBS.

Results: In total, 105085 adolescents aged 11-18 years from 32 countries were included in the final analysis. After controlling for age, adolescents without loneliness reported lower OBS and BMI, OBS partially mediated the relationship between loneliness and BMI in both sex. However, the significant relationships between anxiety, suicide attempt and BMI, as well as the significant mediation of OBS (Sobel $Z = 3.350$, $p = 0.001$ for anxiety; Sobel $Z = 3.866$, $p < 0.001$), were only observed in females. Although loneliness was still associated with BMI in both sex after further adjustment of smoking and alcohol, the mediation of OBS was not significant anymore. In addition, the significant association between suicide attempt and BMI was also partly mediated by OBS (Sobel $Z = 2.836$, $p = 0.005$).

Conclusion: Findings suggest that adolescents with psychological problems may also display obesogenic behaviours, especially in females, which is likely to result in higher body weight. Besides, obesogenic behaviours management was possible to be potential factor to target in future interventions focus on reducing psychological problems among overweight/obese adolescents.

Oral Presentations Session 2: Obesity

APPETITE TRAITS AND OBESITY IN PRESCHOOL CHILDREN IN THE UK: A CROSS-SECTIONAL STUDY

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Background: Obesity is established early in life. In the UK one in five children start school overweight. We hypothesized that appetite traits were associated with obesity risk in preschool children.

Aims: To investigate associations between appetite traits and risk of obesity in preschool children.

Method: Children who participated in the Optigrow study investigating effects of early nutrition on growth and risk of obesity were followed up at preschool age. Appetite traits (enjoyment of food, food responsiveness, slowness in eating and satiety responsiveness) were measured using the Child Eating Behaviour Questionnaire. Height and weight were measured and BMI was calculated. Associations between appetite traits and obesity risk (BMI z-score) were examined using linear regression analysis adjusted for infant feeding, age, sex and maternal education.

Results: 147 children were followed up at age 2-5 years. Lower slowness of eating and satiety responsiveness were associated with increased risk of obesity. There were no associations between other appetite traits and obesity risk (Table 1).

Discussion: Findings are supported by previous studies. Mechanisms through which appetite traits influence obesity risk are unclear. However, one possible explanation is that slow eating rate promotes recognition of fullness as a meal progresses, and reduces the risk of overeating. Limitations include a cross-sectional design and small sample size.

Conclusion: Slowness in eating and satiety responsiveness are associated with lower obesity risk in preschool children. Prospective longitudinal studies would help inform the direction of these associations. Identification of children with obesogenic appetite traits may help form strategies to improve appetite regulation.

Oral Presentations Session 2: Obesity

TRACKING FAT MASS PERCENTAGE FROM INFANCY INTO CHILDHOOD

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Background and aims

Early infancy may be a critical window for programming of adult metabolic health. Body composition and fat mass percentage (FM%) during childhood are important determinants of later health. We investigated if FM% in early life tracks into childhood and if feeding mode influences tracking.

Methods

In 269 term born, healthy infants from the Sophia Pluto cohort (165 boys), FM% was measured at 3 and 6 months by PEA POD and at 2 and 4 years by DEXA. Odds ratio (OR) of remaining in the same quartile of FM% was determined over time.

Results

Infants in the lowest FM% quartile at 3 months remained in their quartile at 2 years (OR 3.694, $p=0.009$). The highest quartile tracked to 2 and 4 years (OR 2.718, $p=0.001$ and 3.429, $p=0.048$, resp.).

Infants in the lowest and third quartiles at 6 months remained in their quartile up to 2 years (OR 3.064, $p<0.001$ and OR 2.037, $p=0.030$, resp.). The highest quartile tracked to 2 and 4 years (OR 3.707, $p<0.001$ and OR 4.333 $p=0.024$ resp.).

Infants with exclusive breastfeeding (>3 months) tracked in the lowest quartile from 6 months to 2 years (OR 3.109, $p=0.034$). Exclusively formula fed infants tracked in the highest quartile from 6 months to 2 years (OR 4.407, $p=0.027$).

Conclusions

FM% tends to track through infancy into early childhood. Especially FM% in the highest quartile persist up to 4 years. FM% tracking is influenced by feeding mode. This could be an indication that final body composition is determined in early life.

Oral Presentations Session 3: Infancy

WEIGHT GAIN IN EARLY YEARS AND CHILD-TO-ADOLESCENT BMI TRAJECTORIES ACROSS BIRTHWEIGHT GROUPS: A PROSPECTIVE LONGITUDINAL STUDY

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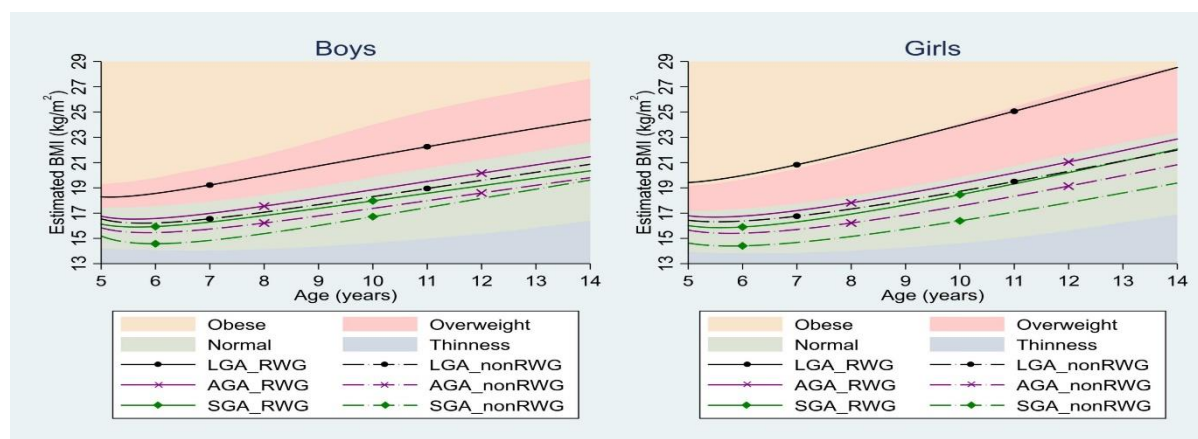
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Background Rapid weight gain (RWG) in early-life is associated with increased risk of childhood obesity and is common among low birthweight infants. Few studies have compared subsequent BMI trajectories of children experienced RWG to those of non-RWG children, across birthweight groups. We aimed to investigate the association between early-life RWG and subsequent BMI trajectory and whether the association differs by birthweight.

Methods We included term singletons from the UK Millennium Cohort Study ($n=10,637$). Mixed-effect fractional polynomial models were applied to estimate the association between RWG (an increase in weight z-scores between birth and 3y >0.67 using UK-WHO growth charts) and BMI trajectories (5-14y). Models were further adjusted for confounders and stratified by birthweight-for-gestational-age group.

Results Compared to their non-RWG counterparts, BMI trajectories of children with RWG differed: they had higher mean BMI at 5y, by 0.76kg/m^2 (95% CI:0.67-0.85) (boys) and 0.87kg/m^2 (0.76-0.97) (girls); appeared to gain BMI more rapidly; and had higher mean BMI at 14y, by 1.37kg/m^2 (1.17-1.58) and 1.75kg/m^2 (1.52-1.99), respectively. Differences persisted after adjustment and were particularly greater for children born large-for-gestational-age than those born small- and appropriate-for-gestational-age. Mean BMI trajectories for large-for-gestational-age children with RWG exceeded international reference curves for overweight (for obesity at some ages in girls).

Conclusions Children who had RWG in early-life continued to gain BMI more rapidly to adolescence, especially large-for-gestational-age children. Strategies for obesity prevention need to address factors during and before infancy and preventing excessive weight gain among infants who have already had adequate growth *in utero*.



Oral Presentations Session 3: Infancy

COMPARISON BETWEEN FECAL CALPROTECTIN, BIFIDOBACTERIA AND LACTOBACILLI STOOL COUNT IN EXCLUSIVELY BREASTFED INFANTS VERSUS FORMULA FED INFANTS

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Introduction: Colonization of the infant gut is critically important for healthy growth . Several factors influence colonization of gut microbiome. High calprotectin concentrations in stools of healthy neonates reflect an increase in granulocytes in the gut as part of the development of the gut-associated lymphoid tissue.

Aim: To detect relation between Fecal Calprotectin level and fecal bifidobacteria and lactobacilli levels in exclusively breastfed infants versus standard formula fed infants.

Methods: fifty full term infants aged 1 - 6 months were recruited . They were divided into Group A: exclusively breastfed infants(n=27), Group B: standard formula fed infants (n=23).

Anthropometric measurements , Detection of lactobacillus and bifidobacterium gene expression in stool using Real-time PCR and Fecal calprotectin was measured using ELISA

Results: The mean fecal calprotectin was $(315.2 \pm 506.8 \mu\text{g /gm})$, Breast fed infants had increased levels of fecal calprotectin $(546.6 \mu\text{g /gm})$ compared with formula fed $(43.5 \mu\text{g /gm})$. The median fecal lactobacillus level was $1.22 \log^{10}$ and the mean was $1.57 \pm 1.08 \log^{10}$, Breast fed infants had increased levels of lactobacilli compared with formula fed infants ($p = 0.028$). The median fecal Bifidobacterium count was $1.58 \log^{10}$. Breast fed infants had significant increased levels of bifidobacterium compared to formula fed ($p = 0.043$). Positive correlation was found between fecal calprotectin levels and bifidobacteria count

Conclusion: Exclusively breast fed infants had higher fecal lactobacillus, fecal bifidobacteria and fecal calprotectin than in standard formula fed infants in the first 6 months of life.

Oral Presentations Session 3: Infancy

RELATION OF BREAST MILK ADIPONECTIN LEVEL TO INFANT GROWTH

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Background: Studies on the physiology of breastfeeding revealed the presence of the adipokines as adiponectin in breast milk. In full-term neonates, during the first few days of life, serum and plasma adiponectin levels correlate positively with birth weight and length, neonatal adiposity. While, circulating adiponectin levels correlate negatively with the degree of adiposity in children aged between 5 and 10 years.

Methods: A cohort study where 50 infants and their mother were recruited. Questionnaire was done for maternal age, maternal diseases, gestational age, delivery mode, and type of feeding. Maternal body mass index and infant anthropometric measurements were calculated and breast milk adiponectin level was measured at 1st week, one month and at six months of age.

Results: Maternal body mass index ranged from (19-29). Infant weight z-score ranges were (-1.77-1.84), (-1.76-1.9) and (-2.02-1.62) at one week, one month and six months respectively. Infant length z-score ranges were (-1.45-2.72), (1.43-3.01) and (-1.61-1.54) at one week, one month and six months respectively. Breast milk adiponectin ranges were (12.8-38.4 ng/dl), (8.8-30.8 ng/dl) and (5.5-25 ng/dl) at one week, one month and six months respectively. Multiple linear regression analysis showed that Infant gender, Adiponectin, Maternal weight and Maternal BMI at one and 6 months are independent significant predictors of infant Weight Z score.

Conclusion: Human milk adiponectin was significantly associated with lower infant WAZ score at one month, with highly significant relation to lower infant WAZ score at six months. However, it was not associated with infant weight at baseline.

Oral Presentations Session 3: Infancy

UPDATE BY THE EUROPEAN FOOD SAFETY AUTHORITY (EFSA) OF THE TOLERABLE UPPER INTAKE LEVEL (UL) OF VITAMIN D FOR INFANTS IN THE EUROPEAN UNION

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The European Commission requested EFSA to update the previous UL for vitamin D for infants ($\leq$ 1 year), i.e. the maximum level of total chronic daily intake from all sources judged to be unlikely to pose a risk of adverse health effects. This request arose from changes in allowed amounts of vitamin D in formulae in forthcoming European Union legislation.

EFSA undertook a systematic literature search on daily vitamin D intake and adverse health outcomes (identified from previous assessments) or serum 25(OH)D (surrogate endpoint). A mixed effect meta-regressive model was used on aggregate data to estimate the relationship between daily supplemental intake and study-arm mean serum 25(OH)D concentrations. Simulations predicted the distribution of individual concentrations after adjustment for moderators. EFSA estimated the percentage of infants reaching a serum 25(OH)D concentration above 200 nmol/L at different intakes of vitamin D, considering that a lower concentration is unlikely to pose a risk of adverse health outcomes in infants.

Collected evidence on daily vitamin D intake and the risk of hypercalciuria, hypercalcaemia, ectopic calcification, abnormal growth patterns, was insufficient alone for deriving the UL for infants. The prediction models showed that the percentages of infants exceeding a serum 25(OH)D concentration of 200 nmol/L with vitamin D intake of 25 µg/day ($<$ 6 months) or 35 µg/day ($>$ 6 months) were negligible, taking into account the assumptions made.

EFSA kept the UL of 25 µg/day for infants aged up to 6 months and set a UL of 35 µg/day for 6–12 months.

Oral Presentations Session 3: Infancy

GUT MICROBIOTA FUNCTIONS ASSOCIATE WITH COGNITIVE OUTCOMES DURING INFANCY

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Background and aims: In the past few years, intestinal microbiota has emerged as a new influential factor in the neurodevelopment through the gut–brain axis. Here, we conducted a longitudinal study in full-term healthy infants where cognitive function assessed with Bayley III was associated with gut microbial composition, structure and metabolism.

Methods: Children at 6 months were categorized according to their Bayley scores within Composite cognitive scale (CCS) into two groups, above and below the median (50th percentile). Gut microbiota was analyzed using 16S rRNA gene sequencing using MySeq (Illumina). Of these infants, we assessed metaproteomics to 29 children. Statistical analyses were performed using *R* software and SPSS 22.0.

Results: Principal coordinate analysis based on weighted UniFrac metrics of β -diversity showed that the gut microbiota of infants clustered by CCS ($p < 0.014$), indicating significant phylogenetic dissimilarities in the microbial profile of highly abundant taxa. In main COG category, proteins involved in "Intracellular trafficking" were more abundant in children with below the median CCS while those involved in "Carbohydrate transport" were enriched in children with above the median CCS. In children with below the median CSS, there was increased abundance of "aspartate carbamoyl transferase" and "dihydroorotase". Interestingly, in children with above the median CSS "histidine ammonia lyase" was significantly enriched, an enzyme involved in histamine metabolism.

Conclusions: Gut microbiota composition seems to be linked to neurodevelopment outcomes during early life. Metaproteomic analyses suggested mechanisms that might underlie microbial effects on infant neurodevelopment.

Oral Presentations Session 3: Infancy

THE RELATIONSHIP BETWEEN WASTING AND STUNTING: A RETROSPECTIVE COHORT ANALYSIS OF LONGITUDINAL DATA IN GAMBIAN CHILDREN FROM 1976-2016

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Background and aims: The aetiological relationship between wasting and stunting is poorly understood, largely because of a lack of high quality longitudinal data from children at risk of undernutrition. Using retrospective growth monitoring records spanning four decades from clinics in rural Gambia we describe the interrelationships between wasting and stunting in children under two years of age.

Methods: Anthropometric data collected at scheduled infant welfare clinics were converted to z-scores, comprising 64,342 observations on 5,160 subjects (median 12 observations per individual). Children were defined as 'wasted' if they had a weight-for-length (WLZ) <-2 z-scores against the WHO reference and 'stunted' with a length-for-age (LAZ) <-2.

Results: Levels of wasting and stunting were high in this population, peaking at approximately (girls-boys) 12-18% at 10 to 12 months (wasted) and 37-39% at 24 months of age (stunted). Using time-lagged observations, being wasted was predictive of stunting (OR 3.2; 95% CI 2.7, 3.9), even after accounting for current stunting. Boys were more likely to be wasted, stunted and concurrently wasted and stunted, than girls, as well as being more susceptible to seasonally driven growth deficits.

Conclusions: We provide evidence that stunting is in part a biological response to previous episodes of being wasted. This finding suggests that stunting may represent a deleterious form of adaptation to more overt undernutrition (wasting). This is important from a policy perspective as it suggests we are failing to recognize the importance of wasting simply because it tends to be more acute and treatable.

Oral Presentations Session 3: Infancy

ASSESSMENT OF GROWTH AMONG INFANT FORMULA FED INFANTS

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Aim: To assess the outcomes of controlled randomized trials (RCT) that reported growth of infants fed new or modified infant formulas; infants fed standard formulas were controls.

Methods: PubMed and Google Scholar searches were used to identify candidate papers. Papers were included if they reported attained weight or weight gain of two groups of healthy term infants initially fed formula before 3 months of age. Analyses emphasized studies with recommended sample sizes. Differences in weight gain of formula groups were compared to differences between formula and reference breastfed infants as a nutritional measure. The difference in weight gain of male and female infants of 3.5 g/d over the first 120 days was the threshold physiological measure.

Results: Of 100 papers qualified with study design, about half were adequately powered, and about half included a reference breast fed infants. Ninety percent of these studies report no effect of the nutritional modification of the formula; exceptions were consistent with an expected outcome or reported only transient or single gender effects. Differences in weight gain between formula groups was smaller than differences between formula-fed and breast-fed infants. These differences were each smaller than differences between male and female infants.

Conclusion: Weight gain is insensitive to changes in formula composition. Expanding the age of initial formula feeding and inclusion of breastfed infants in assessments of new formulas would emphasize effectiveness over efficacy, and focus endpoints on physiologic differences between formula fed and breast-fed infants.

Oral Presentations Session 3: Infancy

EFFECTIVENESS OF MICRONUTRIENT-FORTIFIED INFANT CEREAL ON IRON STATUS, ANEMIA PREVALENCE, AND NEURODEVELOPMENT IN INFANTS IN INDIA

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Background and aims: Anemia affects ~80% of Indian children aged 6-23mo, with iron deficiency a common cause. Our objective was to assess the effectiveness of micronutrient-fortified infant cereal in improving iron status and neurodevelopment in young Indian children.

Methods: Open-label, longitudinal study in healthy infants aged 6mo (n=80; INT) who consumed for 6mo two 25g servings/d of micronutrient-fortified rice-based infant cereal (providing 7.5mg iron/d as ferrous fumarate). A static control group of children matched on key demographics, and who had not regularly consumed fortified cereals nor received the intervention (n=80; OBS), was enrolled at age 12mo for comparison. Endpoints included hemoglobin (Hb; primary), ferritin, soluble transferrin receptor (sTfR), anemia prevalence, anthropometry, and neurodevelopment (Bayley-III).

Results: Hb increased from 113.2±8.4 (6mo) to 118.1±10.2g/L (12mo) in INT ($p=0.001$); Hb at 12mo was higher in INT vs. OBS (adjusted difference 9.1±2.3g/L; $p<0.001$). Ferritin was higher in INT vs. OBS at 12 months, while sTfR levels were lower in INT. The prevalence of anemia decreased from 39% to 23% in INT; prevalence was 45% in OBS. Iron deficiency and iron deficiency anemia were significantly lower at 12mo in INT compared to OBS. INT had higher language, motor, social-emotional, and adaptive behavior composite scores at 12mo compared to OBS, with no significant difference in cognitive score. Growth parameters at 12mo were similar in INT and OBS.

Conclusions: Micronutrient-fortified infant cereal consumed for 6 months during complementary feeding was associated with better iron status, reduced anemia prevalence, and more favorable neurodevelopmental outcomes in young children.

Table: Iron status, anemia prevalence, neurodevelopment, and anthropometry (median [IQR], mean $\pm$ SD, or count) in infants receiving micronutrient-fortified infant cereal from age 6 – 12mo (INT) or a matched control group of 12mo old infants who received no intervention and did not regularly consume fortified infant cereals (OBS)

Parameter		INT		p-value ¹	OBS	p-value ²
		6 months (n = 78)	12 months (n = 64)		12 months (n = 80)	
Serum ferritin, ng/mL		33.5 (19.5,68.4)	22.9 (17.3,47.9)	0.005 ³	18.6 (10.3,41.2)	< 0.001 ³
Soluble transferrin receptor, mg/L		1.8 ± 0.5	1.8 ± 0.6	0.498	2.3 ± 1.2	< 0.001
Non-anemic, n (%)		48 (62%)	49 (77%)	0.108 ⁴	44 (55%)	0.007 ⁵
Mild anemia, n (%)		30 (39%)	14 (22%)	0.064 ⁴	15 (19%)	0.642 ⁵
Moderate anemia, n (%)		0	1 (2%)	NE	21 (26%)	< 0.001 ⁵
Severe anemia, n (%)		0	0	NE	0	NE
Iron deficiency, n (%)		8 (10%)	11 (17%)	0.065 ⁴	32 (40%)	0.003 ⁵
Iron deficiency anemia, n (%)		3 (4%)	4 (6%)	0.375 ⁴	21 (26%)	0.002 ⁵
Bayley-III scores	Cognitive	94.3 ± 12.8	94.4 ± 8.2	0.841	94.1 ± 7.5	0.849
	Language	112.8 ± 15.2	107.2 ± 11.6	0.001	100.5 ± 9.2	< 0.001
	Motor	96.9 ± 15.1	103.9 ± 8.7	< 0.001	99.1 ± 9.5	0.002
	Social-Emotional	87.4 ± 13.3	94.3 ± 8.0	0.001	90.6 ± 10.5	0.018
	Adaptive Behavior	92.0 ± 13.0	90.2 ± 9.6	0.254	81.3 ± 9.9	< 0.001
Weight-for-age z-score		-0.5 ± 0.8	-0.4 ± 1.0	0.400	-0.2 ± 0.8	0.213
Length-for-age z-score		-1.1 ± 0.8	-1.6 ± 1.0	< 0.001	-1.2 ± 1.5	0.054
Head circumference-for-age z-score		-0.3 ± 1.5	-0.9 ± 1.2	0.001	-0.9 ± 1.2	0.937

NE, not estimable; ¹ paired t-test (analyses of differences between 6 and 12mo values in INT) unless otherwise noted; ² t-test (analyses of differences between INT and OBS at 12mo) unless otherwise noted; ³ Wilcoxon signed-rank test; ⁴ McNemar's test; ⁵ Chi-square test

Oral Presentations Session 3: Infancy

EARLY INFANT FEEDING IN A PROSPECTIVE IRISH BIRTH COHORT: DATA FROM THE COMBINE STUDY

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Background and aims

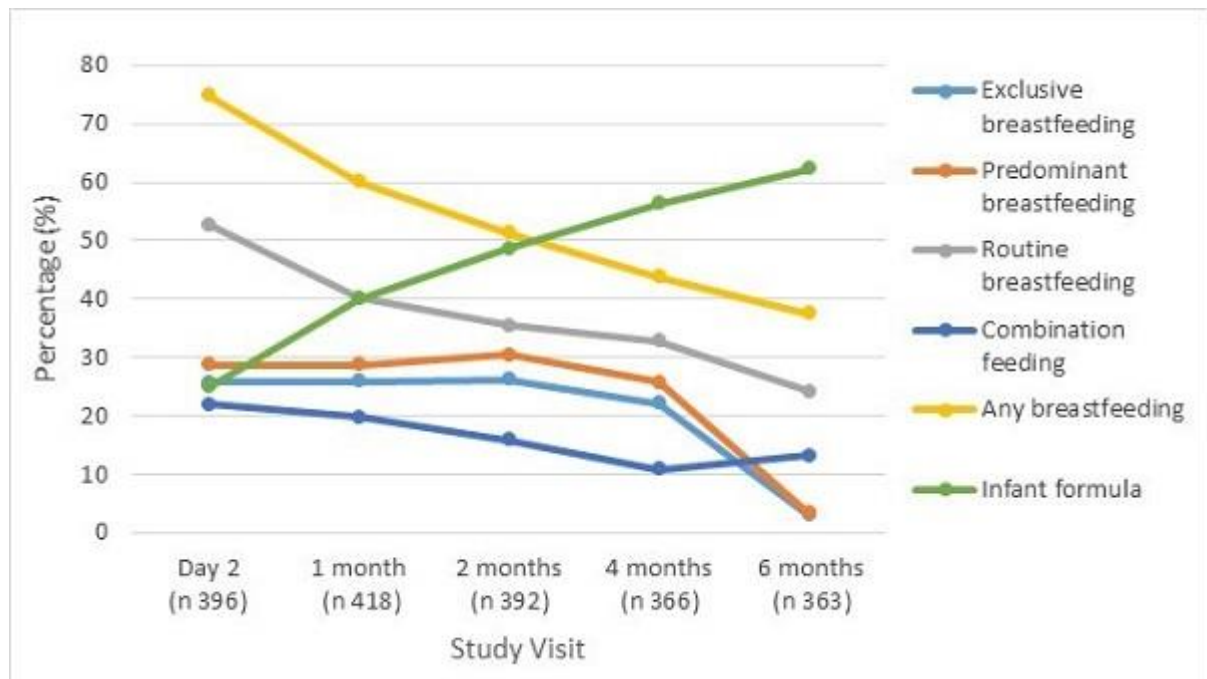
Exclusive breastfeeding to around 6 months of age is recommended for maternal and infant health. National statistics estimate that 58% of infants in Ireland are breastfed at discharge (Healthcare Pricing Office, 2017) but data on maintenance rates are not readily available. In the BASELINE birth cohort study, 75% of mothers were breastfeeding at discharge, but only 49% breastfed to any extent at 2 months and 25% at 6 months (O'Donovan 2015). Using frequent and detailed longitudinal data, we aimed to accurately capture current feeding practices.

Methods

In the COMBINE birth cohort study, research midwives collected infant feeding data at 5 time-points up to 6 months of age among 418 infants. Breastfeeding was defined as exclusive (breastmilk only), predominant (may receive other liquids such as water but no infant formula (IF)), routine (may have occasional IF or solid foods), combination (breastmilk, IF and/or solid foods) and any breastfeeding.

Results

Although 75% reported to have breastfed at day 2 (see figure), early cessation was common and 32% of the 175 mothers who ceased breastfeeding by 6 months did so within 2 weeks of birth. IF use steadily increased and breastfeeding decreased, with 38% reporting breastfeeding to any extent by 6 months. Exclusive breastfeeding decreased from 22% to 3% between 4 and 6 months; 95% had introduced solids by 6 months of age.



Conclusions

Compliance with breastfeeding recommendations remains low in Ireland and support should target both initiation and continuation of breastfeeding.

Oral Presentations Session 4: Neonatal & Prematurity

ENVIRONMENTAL AND INDIVIDUAL PREDICTORS OF 25(OH)D CONCENTRATIONS MEASURED FROM NEONATAL DRIED BLOOD SPOTS IN DENMARK: THE D-TECT STUDY.

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Background and aims: Environmental factors such as sunshine hours, temperature and ultraviolet radiation (UVR) are known to influence seasonal fluctuations in vitamin D concentrations. However, it is currently poorly understood which environmental factors or individual characteristics best predict neonatal 25-hydroxyvitamin D (25(OH)D) concentrations. The aims of this study were (1) to identify environmental and individual determinants of 25(OH)D concentrations in newborns and (2) to investigate whether environmental factors and individual characteristics could be used as a proxy for neonatal 25(OH)D concentrations.

Method: 25(OH)D₃ was measured from neonatal dried blood (DBS) spots of 1182 individuals born between 1993 and 2002. Monthly aggregated data on daily number of sunshine hours, temperature and UVR, available from 1993, were retrieved from the Danish Meteorological Institute. The individual predictors were obtained from the Danish National Birth register, and Statistics Denmark.

Results: The optimal model to predict 25(OH)D₃ concentrations from neonatal DBS was the one including the following variables: UVR, temperature, maternal education, maternal smoking during pregnancy, gestational age at birth and parity. This model explained 30% of the variation of 25(OH)D₃ in the neonatal DBS. Ambient UVR in the month prior to the month of birth was the best single item predictor of neonatal 25(OH)D₃ accounting for 24% of its variance.

Conclusion: Although this prediction model cannot substitute for actual blood measurements, it might prove useful for ranking individuals in a group according to 25(OH)D₃ status in large cohort studies.

Oral Presentations Session 4: Neonatal & Prematurity

IN UTERO EXPOSURE TO EXTRA VITAMIN D FROM FOOD FORTIFICATION AND THE RISK OF SUBSEQUENT DEVELOPMENT OF GESTATIONAL DIABETES: THE D-TECT STUDY

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Background and aims: The primary aim of this study was to assess whether exposure during fetal life to extra vitamin D from food fortification was associated with a reduction in the risk of subsequently developing gestational diabetes mellitus (GDM). Furthermore, we examined whether the effect of the vitamin D from fortification differed by women's season of birth.

Methods: This semi-ecological study is based on the cancellation in 1985 of the mandatory policy to fortify margarine with vitamin D in Denmark, with inclusion of entire national adjacent birth cohorts either exposed or unexposed to extra vitamin D in utero. The identification of GDM cases later in life among both exposure groups was based on the Danish national health registers. Logistic regression analyses generating odds ratios (ORs) and 95% confidence intervals (95% CIs) were performed.

Results: Women who were prenatally exposed to the extra vitamin D from fortification tended to have a lower risk of subsequently developing GDM than unexposed women (OR 0.87, 95%CI 0.74,1.02, P=0.08). When analyses were stratified by women's season of birth, exposed women born in spring had a lower risk of developing GDM compared to unexposed subjects (OR 0.68, 95%CI 0.50,0.94, p=0.02).

Conclusion: This study suggests that prenatal exposure to extra vitamin D from mandatory fortification may lower the risk of developing gestational diabetes among spring-born women.

Oral Presentations Session 4: Neonatal & Prematurity

SCREENING, PREVENTION, AND MANAGEMENT OF NEONATAL HYPOGLYCAEMIA AT POSTNATAL WARD

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Background and Aims:

Introduction:

There is limited consensus regarding screening newborns at risk of hypoglycemia, it is dangerous and can cause long-term neurodevelopment impairment.

Early feeding , keeping babies warm, early identification of babies at risk are the corner stone in management of Hypoglycemia

AIM:

To review the compliance of the postnatal wards with local guideline

Methods:

A retrospective study.

Inclusion criteria : Babies born in OLOL hospital, who are at risk of hypoglycemia , and were transferred to the pos natal wards after birth during January 2018

RESULTS

Total number of babies born in January 2018, and transferred to maternity wards after birth: 250.

Total number of babies included in the audit: 55(22%).

Total number of babies admitted to NICU with hypoglycemia: 2(3.6%).

Discussion:

Compliance with the new guideline was achieved.

Most babies of diabetic mothers and babies with maternal β - blocker use were monitored.

- Infants <2.5 Kg, $\geq$ 4.5Kg were monitored.
- ^{2nd} centile or > 98th centile for each gestation (BAPM centile table) and infants $\geq$ 42weeks did not have consistent monitoring that comply with the guideline.
- Local centile charts recommends plotting all babies born between 37-42 completed at 40 weeks.

RECOMEDATIONS:

- All babies born between 37-42 weeks completed, with birth weight <2.6Kg or >4.2 Kg, need glucose monitoring.

- · Re-education of the staff about the importance of screening of infants with any risk factors for hypoglycemia.
- · Where possible antenatal identification of infants at risk of hypoglycemia and education of parents and staff (GDM, β -blockers, and <37 weeks).

Consider introduction of glucose gel protocol to postnatal wards

Oral Presentations Session 4: Neonatal & Prematurity

SODIUM OVERLOAD OF VERY-LOW-BIRTH-WEIGHT INFANTS IS SUBSTANTIAL DURING THE FIRST WEEK OF LIFE

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Background and aims

Sodium intake, rather than fluid volume, has been suggested to be a major determinant of plasma sodium concentrations in very-low-birth-weight (VLBW) infants in whom hypernatremia is associated with complications, such as intraventricular hemorrhage.

ESPGHAN recommends a daily sodium supply of 0-3 mmol/kg during the first postnatal week. We studied the cumulative intake of sodium in VLBW infants during the first week of life.

Methods

The study cohort consists of 953 VLBW infants admitted to the neonatal intensive care unit (NICU) of the Helsinki University Hospital during years 2005-2013 (Figure1). All parenteral and enteral fluids administered during the first week were acquired from the NICU patient information system and sodium intakes were calculated. Sodium overload was defined as a sodium supply exceeding the recommended maximum intake of 3 mmol/kg/d.

Results

During the first week of life, 86% of the infants received sodium in excess compared with the recommended maximum intake of 3 mmol/kg/d. Sodium overload was significantly more frequent in Group 1 (99%) compared with Groups 2 (89%) and 3 (68%), $p < 0.001$. Group 1 received a significantly higher median cumulative sodium overload of 21.4 mmol/kg/wk compared with 10.6 and 2.5 in Groups 2 and 3, respectively ($p < 0.001$).

Conclusions

Sodium intake of the most premature infants was twice the recommended maximum intake in the first week of life. This may increase the incidence of complications.

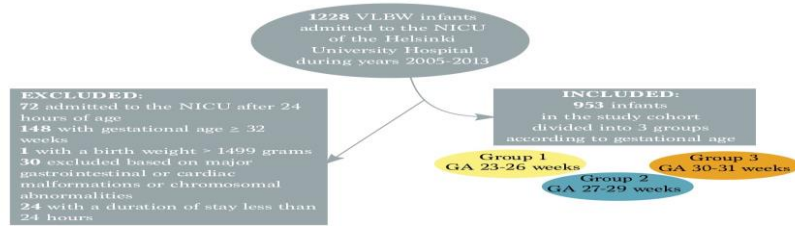


Figure 1.

Table 1.

Study groups	1 (23-26 weeks)	2 (27-29 weeks)	3 (30-31 weeks)	p-value
n	277	433	243	
Male, n(%)	139 (50.2)	234 (54.0)	107 (44.0)	0.044*
Birth weight (g), median(IQR)	760 (630-860)	1110 (960-1260)	1285 (1150-1400)	<0.001**
Small for gestational age, n(%)	27 (9.7)	59 (13.6)	81 (33.3)	<0.001***
Multiple births, n(%)	67 (24.2)	117 (27.0)	86 (35.4)	0.013*
Cesarean section, n(%)	151 (54.5)	305 (70.4)	180 (74.1)	<0.001***
Antenatal corticosteroid given, n(%)	260 (93.9)	410 (94.7)	237 (97.5)	NS***
Duration of ventilator support (days), median(IQR)	19.0 (7.0-39.0)	3.0 (0.9-7.0)	2.0 (0.4-3.3)	<0.001**
Died before age 28 days, n(%)	43 (15.5)	8 (1.8)	2 (0.8)	<0.001*

Abbreviations: *Chi-square test, **Kruskal-Wallis test, ***Fisher's exact test

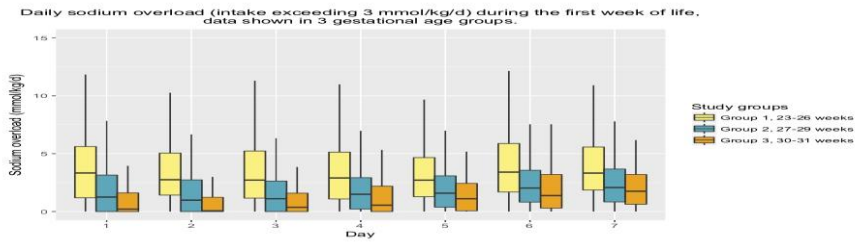


Figure 2.

Oral Presentations Session 4: Neonatal & Prematurity

SPECIAL BREAST MILK PRODUCTS PROVIDED BY A HUMAN MILK BANK

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BACKGROUND AND AIMS

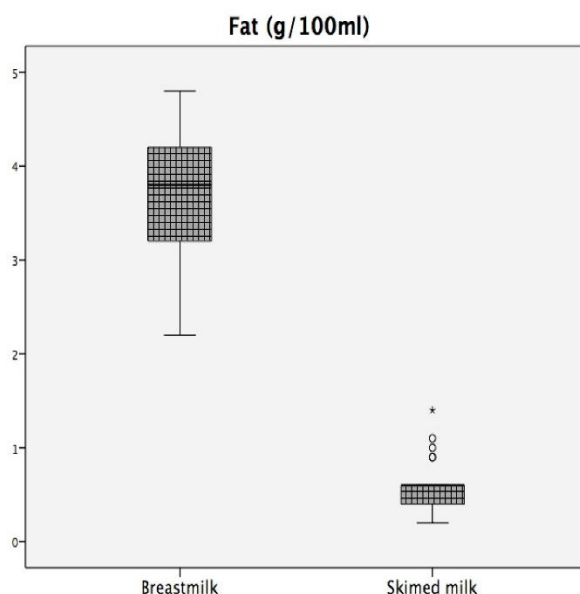
Human milk banks are centers dedicated to screen donors, storage, process and analyze and distribute donor human milk to receptors. Preterm infants are the main receptors of DHM, due to evidence of protection against Necrotizing Enterocolitis (NEC) with donor human milk compared to formula. Human milk banks have the resources to provide special breast milk products for other conditions, such as skimmed milk for the treatment of chylothorax, a condition where medical treatment comprises long chain triglycerides (LCT) restriction to avoid chyle accumulation.

METHODS

Samples of own mother's milk (OMM) were aliquoted in a laminar flow cabinet, and macronutrient analysis with a near infrared spectroscopy technology analyzer (Miris, Sweden) was performed before and after the processing. Milk was centrifuged at 3.000 rpm for 15 minutes at 2°C. The mothers followed the process to become donors and donated the remanent fat. The donated fat was analyzed and pasteurized according to the human milk bank protocol.

RESULTS

Results of fat composition is showed in graphic. Protein content is not modified in the process.



In two cases, bacterial counts in the pre-pasteurization sample exceeded the protocol acceptance level and fat was discarded. In the third case, fat results were optimal and was provided through the milk bank as a supplement for preterm babies with slow growth.

CONCLUSIONS

In this case, own mother's milk was used but human milk banks could provide donor skimmed human milk as a special product for chylothorax treatment and donor fat supplement for growth retardation.

Oral Presentations Session 4: Neonatal & Prematurity

PARENTERAL NUTRITION WITH CALCIUM AND PHOSPHORUS SOLUTIONS IN NEONATES

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Parenteral nutrition is a feeding regimen where the person is artificially fed. It's a technique widely used in preterm infants who normally present an inadequate intake of calcium and phosphorus during their formation. With this work, we intend to approach the extent to which parenteral nutrition with calcium and phosphorus solutions in neonates may be relevant and effective. We searched at the PubMed and Google Scholar under the terms "Parenteral nutrition solutions", "Parenteral nutrition and calcium and phosphorus solutions" and "Parenteral nutrition AND neonates". The temporal space was from 2010 until today, and the articles of the last space have become the most relevant, with a view to obtaining the most current view of the theme. We found 10 articles from which we eliminated 5, which contained a less suggestive abstract, and which proved to be short of our vision for work. We obtained five review articles, three of them having the most impact, relevant and studied for the work. These suggest that calcium and phosphorus are needed for bone metabolism and skeletal mineralization. They all demonstrated concordance and demonstrated that the amount of calcium and phosphorus are effectively important for the normal growth and development of preterm infants and that their solubility could be influenced by multiple factors. Thus, and depending on these factors, the recommended doses of calcium and phosphorus are 1-3 mEq/kg/d and 0.5-3 mM/kg/d. Our goal has been completed, as we have been able to realize what calcium and phosphorus solutions in premature babies are for.

Oral Presentations Session 4: Neonatal & Prematurity

NUTRITIONAL MANAGEMENT OF CHYLOTHORAX WITH SKIMMED BREAST MILK

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Neonatal chylothorax, a condition where linfa is accumulated in pleural space, can be congenital or acquired, secondary to surgery, pleural drainage, superior cava or subclavia vein thrombosis or rarely, linfatic circulation malformations. Drainage of the pleural liquid might be required and medical treatment comprises avoiding long chain triglicerides (LCT) to restrict chyle accumulation and facilitate lymph duct healing. Parenteral nutrition and feeding an enriched medium chain triglicerides (MCT) formula have been the classical approaches. Breast milk provides infants with outstanding benefits and is a natural source of relevant bioactive components, as immunoglobulins. Centrifugation of breast milk is an alternative to MCT formulas.

The treatment of three newborns is reviewed. Case 1 is a term newborn boy with a chylothorax secondary to congenital diaphragmatic hernia repair surgery. Case 2 is a term newborn girl with a prenatally diagnosed idiopathic chylothorax. Case 3 is a 27+1 weeks of gestational age preterm boy with an acquired chylothorax after interstitial emphysema pleural drainage. Mother's own milk was skimmed and provided as a sole diet or in combination with MCT enriched formula. Breast milk aliquots were prepared in a laminar flow cabinet, macronutrient analysis (near infrared spectroscopy analyser) was performed before and after the centrifugation of milk at 3.000 rpm for 15 minutes at 2°C. MCT supplements and vitamins were added to the infant's diet. The skimmed milk was administered for 9, 21 and 10 days in cases 1,2 and 3.

Outcome was favorable in all three cases and breastfeeding could be resumed after resolution.

Oral Presentations Session 4: Neonatal & Prematurity

INFLUENCE OF PROTEIN INTAKE IN THE FIRST WEEK OF LIFE ON DEVELOPMENT AT TWO YEARS OF AGE IN MODERATELY PRETERM INFANTS

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Background and aim:

Moderately preterm infants (MPT) are possibly at risk for neurocognitive developmental delay. The aim of this study is to identify the effect of early protein intake on neurocognitive development at two years of age.

Study Design:

We followed 101 MPT in a prospective cohort study during two years. We collected daily actual nutritional intake during the admission at the hospital. At the age of two a BSID-III-NL was taken to determine the neurocognitive development.

Results:

When uncorrected for prematurity, MPT with a protein intake on day seven of ≥ 2.5 g/kg/d scored, 8.9 points lower on motor skills ($p = 0.01$) and 2.2 points lower on gross motor function ($p = 0.004$), than MPT who had a protein intake of < 2.5 g/kg/d by day seven. When adjusted for prematurity, MPT with a protein intake on day seven of ≥ 2.5 g/kg/d scored 8.5 points lower on motor skills ($p = 0.02$) and 2.4 points lower on gross motor function ($p = 0.01$), MPT who had a protein intake of < 2.5 g/kg/day by day seven.

Conclusion:

In moderately preterm infants, a protein intake at day seven of 2.5 g/kg/d or higher, results in a significantly lower score on the BSID-III-NL on motor skills and gross motor function at two years of age. This might be adjusted to increased intake of specific amino acids, who can have detrimental effects in animal studies. Further research is needed.

Oral Presentations Session 4: Neonatal & Prematurity

HYPOGLYCEMIA SCREENING IN NEWBORNS IN THE NETHERLANDS (THE HYPONNL STUDY)

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Objectives: To determine incidence, severity and timing of neonatal hypoglycemia in different groups at risk. To study the influence of feeding regimes on hypoglycemia. To provide evidence on screening and prevention protocols during hospitalisation of these infants.

Methods: Multi centre retrospective cohort study, including all newborns at risk (gestational age $\geq$ 35 weeks, birth weight $\geq$ 1800 gram) screened for hypoglycemia (blood glucose level <2.6 mmol/L) between January 2012 and December 2016.

Results: Preliminary results of a single centre (2,055 included infants) show that the incidence of hypoglycemia in the at-risk population was 33.4%. For further analysis of subgroups see Figure 1. A total of 116 (17.4 %) hypoglycemic patients were administered intravenous glucose. Incidence, frequency and severity of hypoglycemia did not differ between subgroups of small for gestational age infants (p10-p5, p5-2.5, p<2.5) and large for gestational age infants (p90-95, p95-p97.7, >p97.7). Compared to standard supplemental feeding, breastfeeding with no or occasional supplemental feeding was associated with less hypoglycemia with an odds ratio of 0.56 (95% CI 0.42 – 0.74).

Conclusions: Hypoglycemia <2.6 mM is very common in infants with birthweights $<p10$, or $>p90$, infants of mothers using insulin and late-preterm infants (≥ 35 weeks). It results in intravenous glucose therapy frequently. Discriminating between different birthweight centiles does not significantly alter the incidence of hypoglycemia. The at-risk neonates should be screened routinely and preferably be exclusively breastfed.

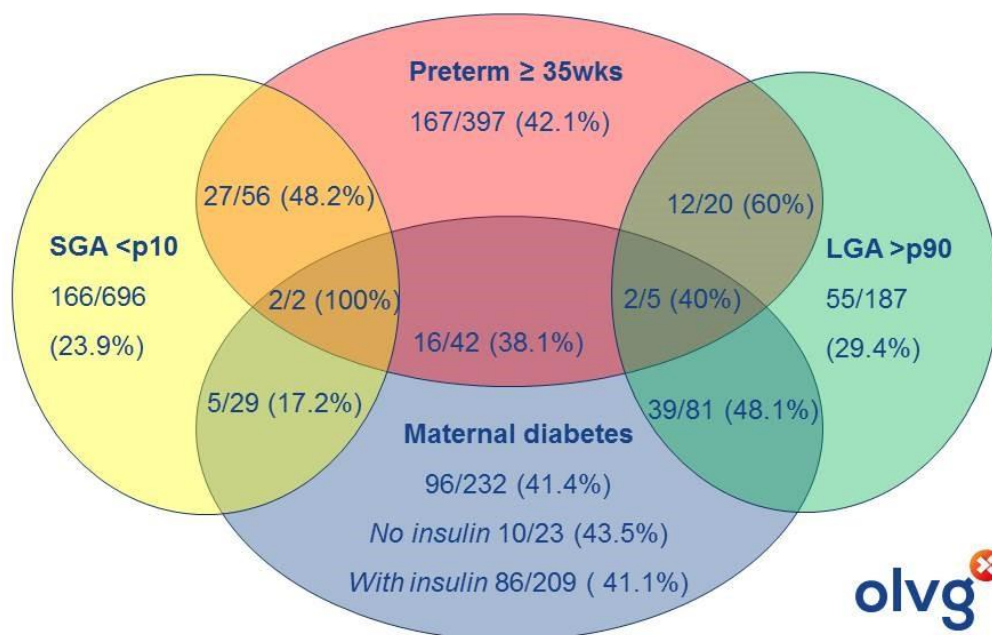


Figure 1. Incidence of hypoglycemia in newborns at risk.

Oral Presentations Session 5: Infancy II

ASSOCIATION BETWEEN INFANT MILK FEEDING AND INFANT GROWTH DIFFERS BY STUDY SETTING: SYSTEMATIC REVIEW AND META-ANALYSIS

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Background and aims: Infants fed formula milk have reportedly different growth rates compared to breastfed infants. We tested the hypothesis that this association varies by study setting.

Design: PubMed, Embase and CINAHL were searched for observational studies reporting weight gain (or baseline and follow-up weights) in formula-fed and breastfed infants. Differences in weight gain (g/month) between exclusively formula-fed infants and exclusively breastfed or partly breastfed infants at 0-3, 3-6 and 0-6 months were combined across studies using random-effects meta-analysis. Studies were grouped by setting (low-middle income or high-income country).

Results: We identified 11 studies (reporting 14 estimates) from low-middle income settings and 19 studies (reporting 22 estimates) from high-income settings. Between birth and 3mo, formula-fed infants grew 40.4 g/mo (95%CI: 13.6 to 67.2) faster than breastfed babies in high-income settings, but 46.4 g/mo (11.1 to 81.6) slower in low-middle income settings. In high-income settings, formula-fed infants also grew faster than breastfed babies between 3-6mo (60.2 g/mo; 35.2 to 85.1) and 0-6mo (52.8 g/m; 17.3 to 88.4). Among low-middle income settings, formula-fed infants grew faster than breast-fed infants between 3-6mo (93.5 g/mo; 45.2 to 141.7), but there was no overall difference between 0-6mo (-12.9 g/m; -102.1 to +76.2). There was substantial heterogeneity between studies even within similar income settings.

Conclusions: Formula feeding appears to have directionally opposite effects on early infant growth by study setting. Possible explanations include: differences in sanitation and infection risk, access to and relative cost of infant formula, and confounding structures.

Oral Presentations Session 5: Infancy II

DEVELOPMENT OF DIETARY TASTE PATTERNS IN EARLY CHILDHOOD AND ITS ASSOCIATIONS WITH MATERNAL AND CHILD CHARACTERISTICS

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Background: An important determinant of dietary intake in childhood is taste preference, which is established in early life. However, dietary taste patterns in early childhood are unexplored. We aimed to evaluate dietary taste patterns in children aged 1 and 2 years and to examine its associations with maternal and child characteristics.

Methods: Dietary intake of children aged 1 year (n=3,629) and 2 years (n=844) participating in the Generation R Study was assessed with two similar food-frequency questionnaires. Energy intake from five taste groups: 'neutral', 'sweet & sour', 'sweet & fat', 'fat', and 'salt, umami & fat' was assessed. Multivariate linear regression models were used to analyze associations with maternal and child characteristics

Results: In 1-year-old children, the majority of energy intake was obtained from 'neutral' tasting foods (64%), which was substantially higher than in 2-year-old children (42%). Energy intake from other taste groups was higher in children aged 2 years than 1 year. Higher child BMI was associated with higher energy intake from 'salt, umami & fat' tasting foods ($\beta=0.21\text{E}\%$ per 1 point increase in BMI z-score, 95%CI:0.05,0.38). Higher maternal educational level was associated with 1.0E% more energy from 'neutral' tasting foods (95%CI:-0.0,2.0), 0.5E% less from 'fat' (95%CI:-0.8,-0.2), and 0.9E% less from 'sweet & fat' (95%CI:-1.3,-0.4) tasting foods.

Conclusion: Dietary taste patterns become more intense and varied in taste during the first two years of life. Main determinants were child BMI and maternal educational level. Future studies are needed to examine associations of dietary taste patterns with growth and body composition in children.

Oral Presentations Session 5: Infancy II

HIGHER MATERNAL DIET QUALITY DURING LACTATION IS ASSOCIATED WITH LOWER INFLAMMATORY MARKERS IN BREAST MILK

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Objective: Animal studies have demonstrated that maternal diet influences breast milk macronutrients and bioactive components. However, no human studies have assessed the relationship between maternal diet quality during lactation and inflammatory markers in breast milk. The aim of the present study was to explore associations between maternal postpartum diet and levels of C-reactive protein (CRP) and Interleukin-6 (IL-6) in breast milk at 1 and 3-months.

Methods: Participants were 174 mother-infant dyads from the Mothers and Infants LinKed for Health (MILK) study, who provided breast milk samples. Maternal diet was assessed at 1-month postpartum using the Diet History Questionnaire II with Healthy Eating Index-2015 (HEI-2015) total and 13 subcomponent scores calculated. Mixed effects models were used to examine associations between maternal diet quality and log-transformed breast milk CRP and IL-6 at 1 and 3-months after covariate adjustment.

Results: Higher scores on the “Whole Grains” and “Dairy” components of the HEI-2015 were associated with lower breast milk CRP at 1-month only ($p=0.02$) and from 1 to 3-months ($p=0.04$), respectively. Higher scores on the “Greens and Beans” and “Added Sugars” components were associated with lower breast milk IL-6 at 1-month only ($p=0.03$) and from 1 to 3-months ($p=0.05$), respectively.

Conclusions: This is the first human study to report that higher maternal diet quality during lactation may be related to lower CRP and IL-6 concentrations in breast milk. Additional research is needed to replicate these findings and determine the implications of varying levels of these inflammatory markers on infant growth.

Oral Presentations Session 5: Infancy II

DEVELOPMENT OF THE MICROBIOME OVER THE FIRST THREE YEARS OF LIFE IN THE BABY CONNECTOME PROJECT - ASSOCIATIONS WITH FEEDING PRACTICE

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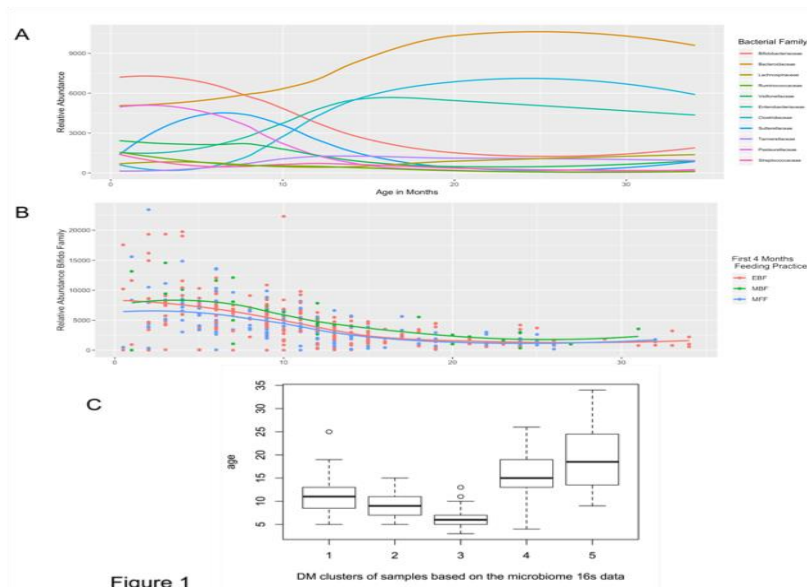
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Background and Aims: The gut microbiome is established and undergoes rapid changes early in life. Breastmilk is a potent modulator of the gut microbiota. The Baby Connectome Project (BCP) and BCP-Enriched utilize an accelerated longitudinal design to assess early feeding practice related changes in the composition of the gut microbiome in typically developing infants.

Methods: Sequencing of 16S rRNA amplicons was completed on 424 fecal samples (173 children, age: 0.5 - 34 months). Clustering of OTUs was done using the Dirichlet Multinomial Mixtures approach. Participants were grouped into exclusively breastfed (EBF), mixed breastfed (MBF), and mixed formula-fed (MFF) based on diet during the first four months of life.

Results: Results replicate previous work where early microbiota are dominated by Bifidobacteria, which decrease in abundance beginning around 4-5 months of age (coincident with the introduction of solid food) (Fig. 1A). Bacteroidaceae and others became the dominant families from five to eighteen months. The clustering analysis found five clusters that appear to be related to age (Fig 1B). Our preliminary analyses suggest that differences in Bifidobacteria based on feeding practice may exist early on, but appear to normalize (Fig. 1C).



Conclusions: Our study, consisting of a longitudinal cohort, 0 - 3 years old, supports strong influence of early feeding practice on development of the gut microbiota. Future work will identify additional modulators of the gut microbiota, and will link gut microbiota with brain and behavioral development. Supported by 1U01MH110274 and Nestec S.A.

Oral Presentations Session 5: Infancy II

MICROBIAL ASSOCIATION WITH THE AGE-ADJUSTED MULLEN SCORE IN A LONGITUDINAL STUDY OF CHILDREN'S EARLY LIFE - BABY CONNECTOME PROJECT (BCP)

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Background and Aims:

Microbial variation is associated with children's development. In BCP, longitudinal data allow investigation of microbial associations with cognitive development as indexed by the Mullen Scales of Early Learning (MSEL). Here we test their cross-sectional association and predictive relation.

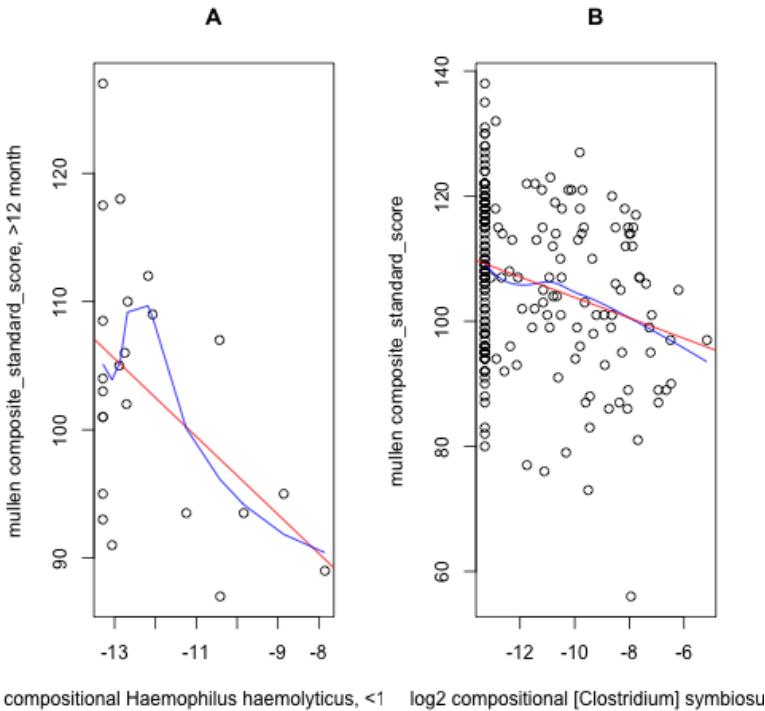
Methods:

Compositional percentages of 231 operational taxonomic units (OTUs) identified using 16S rRNA amplicon sequencing from 424 longitudinal fecal samples of 231 babies (1-3 years) were obtained. To account for age dependencies in the microbiome and MSEL we used the composite Standard (age adjusted) MSEL Score (SMS). For the 209 samples from 111 participants with both microbiome and SMS from same visit, we used linear mixed models (participant as random term) to test associations between SMS (the response variable) and compositional abundance for each OTU. Log-transformed percentage and age-adjustment may be considered. The predictive value of microbial abundance on SMS was further investigated in participants with >2 visits, with those <10 months as early visits, and those >12 months as late visits. Repeated early or late visits were averaged within subject.

Results: (1) 'Haemophilus haemolyticus' <10 month, may be predictive of later decreased SMS (Fig1A), nominal $P < 0.05$. (2) '[Clostridium] symbiosum' is significantly negatively correlated with SMS from the same visits, FDR $P = 0.067$ (Fig1B).

Conclusions: Our study suggests associations between bacterial abundance and young children's cognitive development. Other analyses assessing longitudinal trajectories can be potentially applied to this and other behavioral measures.

Supported by 1U01MH110274 and Nestec S.A



Oral Presentations Session 5: Infancy II

THE EFFECT OF 2'-FUCOSYLLACTOSE ON INFANT GUT MICROBIOTA AND METABOLITES IN A COLON SIMULATOR MODEL

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Background and Aims: Human milk oligosaccharides (HMOs) shape the evolving gut microbiota by acting as fermentable energy during infancy. Using a colon simulator, the effect of one HMO, 2'-fucosyllactose (2'-FL) on infant microbiota composition and metabolites was evaluated in comparison to galacto-oligosaccharide (GOS), lactose, or control without additional carbon source.

Methods: EnteroMIX® colon simulations were performed using nine faecal samples from infant donors. Total bifidobacteria were quantified by real-time qPCR, microbial composition analyzed by 16S rRNA sequencing, metabolites and 2'-FL levels detected by chromatographic methods.

Results: The effect of 2'-FL was evaluated both by combining all simulations and by subgrouping the data according to the velocity by which 2'-FL was fermented (fast and slow). 2'-FL increased the amount of bifidobacteria when all simulations were combined. High variability was observed in the microbiota compositions of both infant faecal samples and simulations. The overall effects of 2'-FL on the microbiota, short-chain fatty acids and lactic acid were more similar to the control when all simulations were combined whereas in the fast fermentations the effect of 2'-FL was closer to GOS and lactose.

Conclusions: The prebiotic effect of 2'-FL was demonstrated in this colon simulation model. The observed variability between simulations may be attributable to the difference in microbiota composition of faecal samples. The difference in 2'-FL consumption between simulations is an indication of its specificity to act as energy source for only certain microbes.

Oral Presentations Session 5: Infancy II

INFANT FEEDING PATTERN AND BMI TRAJECTORIES DURING THE FIRST YEAR OF LIFE: THE ABCD STUDY

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Background and aims: Infant feeding has been associated with growth during infancy and overweight during childhood. This study aimed to examine the association of infant feeding patterns (type of milk feeding and timing of solid introduction) with growth trajectories during infancy and the potential effect modification by maternal determinants (ethnicity, education and pre-pregnancy BMI). Additionally, we examined associations between growth trajectories and overweight prevalence at the age of 5-6 years.

Methods: Latent class growth analysis was applied to identify BMI trajectories among 4893 children of the Amsterdam Born Children and their Development (ABCD) study, separately for boys (n=2454) and girls (n=2439). Multinomial logistic regression was used to examine the association of infant feeding patterns with the BMI trajectories.

Results: Four distinct BMI trajectory classes (high, mid-high, mid-low and low) were identified in both sexes. Infants with a feeding pattern characterised by exclusive (B: -1.5, p<0.001) or partial formula feeding (B: -1.4, p<0.01; B: -1.1, p<0.01 for boys and girls respectively) combined with early complementary feeding were less likely to belong to low rather than high BMI trajectory. A high BMI trajectory during infancy was associated with overweight at 5-6 years of age.

Conclusions: Results of these preliminary analyses suggest that infant feeding patterns are associated with specific early growth trajectories which are indicative of risk for overweight during childhood. Further analysis are required to understand potential effect modification by maternal determinants on growth trajectories.

Oral Presentations Session 5: Infancy II

MATERNAL DIET QUALITY DURING PREGNANCY AND INFANT GROWTH AND BODY COMPOSITION IN EARLY POSTNATAL LIFE

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Objective: There is a limited understanding of maternal nutritional exposures during pregnancy that influence optimal infant growth and reduce lifelong obesity. The purpose of this study is to examine associations between maternal diet quality in pregnancy and offspring length-for-age (LAZ) and weight-for-length (WFL-Z) Z-scores from birth to 6-months, and body fat percent (BF%) at 6-months.

Methods: Participants included 277 mother-infant dyads from the Mothers and Infants LinKed for Health (MILK) study. Mothers completed the Diet History Questionnaire II in their 3rd trimester of pregnancy, from which Healthy Eating Index-2015 (HEI-2015) total diet quality scores were calculated. Infant LAZ and WFL-Z were assessed at birth, and 1, 3 and 6 months. BF% was measured via dual-energy X-ray absorptiometry at 6-months. Mixed effects models and linear regression models were used to examine associations between HEI-2015 total scores and infant LAZ/WAZ from birth to 6-months and BF% at 6-months, respectively, with adjustment for covariates including maternal pre-pregnancy body mass index, energy intake, age, race, education, and infant gestational age and sex.

Results: Higher HEI-2015 total scores during pregnancy were associated with higher infant LAZ from birth to 6-months ($\beta=0.02$, $p=0.02$). Higher HEI-2015 total scores during pregnancy were associated with lower infant WFL-Z from birth to 6-months ($\beta=-0.01$, $p=0.04$), and lower BF% at 6-months ($\beta=-0.07$, $p=0.01$).

Conclusions: Diet quality during pregnancy may play a pivotal role in fetal programming and early postnatal growth and body composition. Additional research is needed to investigate the interplay between maternal pregnancy diet, infant growth and later disease susceptibility.

Oral Presentations Session 5: Infancy II

PROTEIN REQUIREMENT IN INFANTS WITH COMPLEX CONGENITAL HEART DISEASE DURING THE EARLY POSTOPERATIVE PERIOD AFTER CARDIOPULMONARY SURGERY

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Objective: Adequate nutrition is an integral component of postoperative treatment in infants with congenital heart disease (CHD) following cardiopulmonary bypass (CPB). But actual protein requirement remains unknown. We aimed to assess protein requirement under optimal energy supply based on the directly measured resting energy expenditure (REE) in infants with complex CHD during the early post-CPB period.

Methods: 38 complex CHD infants were randomized into control group (standard protein formula, n=11), medium protein group (MP, 2.5 g/kg/day, n=14) or high protein group (HP, 4 g/kg/day, n=13). Energy supply was based on daily measurements of REE using indirect calorimetry. The nutrition protocol was fed via enteral feeding, commenced at 6 hours after CPB and throughout the 5 days in all the patients. Daily nitrogen balance was calculated.

Results: REE and energy intakes were not significantly different in 3 groups in the 5 days ($P>0.1$). In HP group, nitrogen balance was slightly positive except for postoperative day 1, while it remained negative in the other two groups in the 5 days, ($P<0.001$). The incidence of intolerable events was not significantly different in 3 groups.

Conclusions: Protein requirement is significantly higher than the current practice, being about 4g/kg/day, in infants with complex CHD during the early postoperative period after CPB. Early enteral feeding of adequate energy and protein to meet requirements starting at 6 hours is generally well tolerated.

Oral Presentations Session 6: Childhood & Adolescence II

IS HIGH OILY FISH INTAKE ACHIEVABLE AND HOW DOES IT AFFECT NUTRIENT STATUS IN 8-9-YEAR-OLD CHILDREN? – THE FISK JUNIOR TRIAL

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Most children do not meet dietary guidelines for fish intake. This might affect their nutrient status since fish is the main dietary source of EPA (20:5n-3), DHA (22:6n-3) and vitamin D but may replace dietary iron sources such as meat. We investigated if intake of 300 g/week of oily fish was achievable in children and whether it affected their nutrient status. In a randomized controlled trial, 199 Danish 8-9 year-olds received oily fish or poultry (control) to be eaten 5 times/week for 12 weeks. We measured dietary intake and analyzed fasting erythrocyte EPA+DHA, serum 25-hydroxyvitamin D (S-25(OH)D), blood haemoglobin and plasma ferritin. In total, 197 (99%) children completed the study with a median (IQR) intake of 375 (325-426) and 400 (359-452) g/week of oily fish and poultry, respectively. EPA+DHA intake increased by 749 (593-891) mg/day and vitamin D intake by 3.1 (1.6-3.8) µg/day in the fish group. This increased erythrocyte EPA+DHA by 2.3 fatty acid%-point (95%CI 1.9;2.6) compared to poultry (P<0.001). The fish group avoided the winter decline in S-25(OH)D (P<0.001) and had 23%-point less vitamin D insufficiency (winter subgroup analyses, n=82). Despite slight reductions in haemoglobin/ferritin within both groups (P<0.05), less than 3% had low values and the prevalence did not change or differ between the groups (P>0.14). In conclusion, intake of 300 g/week oily fish was achievable and improved children's EPA+DHA and vitamin D status, without markedly compromising iron status. These results justify public health initiatives focusing on increasing children's fish intake. (Supported by Nordea-fonden).

Oral Presentations Session 6: Childhood & Adolescence II

OILY FISH INTAKE AND CARDIOVASCULAR PHYSIOLOGY, PLASMA LIPIDS, AND GLUCOSE HOMEOSTASIS IN HEALTHY 8-9-YEAR-OLD CHILDREN: THE FISK JUNIOR RANDOMIZED TRIAL

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Fish oil improves cardiometabolic risk markers in adults, but results in children are inconsistent. Few children meet the recommended fish intake, and no randomized trials have investigated how fish affects children's cardiometabolic profile. We investigated if oily fish consumption affected markers of cardiometabolic health in healthy Danish children.

In a randomized controlled 12-week trial, 199 children (8-9 years) received ≈ 300 g/week of oily fish or poultry (control). We measured blood pressure, heart rate (HR), HR variability (HRV) by 3-hour continuous ECG-recordings, and collected fasting blood samples for analysis of erythrocyte EPA+DHA, plasma triacylglycerol, LDL- and HDL-cholesterol, glucose and insulin.

In total 197 children (99%) completed the trial. The fish group consumed (median (IQR)) 375 (325-426) g/week oily fish, resulting in 2.25 [95%CI: 1.88;2.62] fatty acid%-point higher EPA+DHA than poultry ($P < 0.001$). Triacylglycerol decreased by 0.05 [95%CI: 0.00;0.11] mmol/L ($P = 0.04$) and HDL-cholesterol increased by 0.07 [95%CI: 0.01;0.13] mmol/L ($P = 0.02$) compared to poultry; these effects showed dose-dependency with EPA+DHA. Additional analyses showed that triacylglycerol was reduced only in boys (-0.09 [95%CI: -0.16;-0.02], girls: 0.00 [95%CI: -0.07;0.07]) ($P_{\text{intervention} \times \text{sex}} = 0.07$) and HR was reduced mainly in girls (-3.4 [95%CI: -6.6;-0.2], boys: 0.7 [95%CI: -2.6;3.9]) ($P_{\text{intervention} \times \text{sex}} = 0.08$). Glucose homeostasis and blood pressure were unaffected. HRV data will be presented at the congress.

In conclusion, oily fish intake dose-dependently lowered triacylglycerol and increased HDL-cholesterol in Danish 8-9-year-olds, and triacylglycerol and HR effects tended to be sex-specific. The study indicates that even healthy children may benefit from oily fish intake, but potential sex-interactions should be explored further. (Supported by Nordea-fonden).

Oral Presentations Session 6: Childhood & Adolescence II

MODELLING OF CHILD GROWTH DATA FROM BIRTH TO SIX YEARS IN BENIN, WEST AFRICA. A COMPARISON OF THREE GROWTH MODELS

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Aims:

The aim of this paper was to find growth model(s) that best describe(s) the growth pattern in a Beninese population of children from birth to six years.

Methods:

This study compared the fit of three growth models (i.e. the Jenss model, the adapted Gompertz model, and the Reed model) on longitudinal weight and height growth data of boys and girls between birth and six years from a prospective cohort in Benin, West Africa. The goodness-of-fit of the models was compared using model residuals distribution over age, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC).

Results:

The Jenss model had the best fit for the weight of boys (Jenss vs. Reed vs. Gompertz model, AIC: 5550 vs. 5584 vs. 5860) and girls (Jenss vs. Reed vs. Gompertz model, AIC: 5568 vs. 5662 vs. 5847). The Jenss model also presented the closest better fit for the height of boys (Jenss vs. Reed vs. Gompertz model, AIC: 11858 vs. 11866 vs. 11930) and girls (Jenss vs. Reed vs. Gompertz model, AIC: 12835 vs. 12856 vs. 12887). BIC values provided the same ranks.

Conclusion:

Despite little differences between models, the Jenss model, presented the closest best fit to weight and height growth data from a semi-rural African setting.

Oral Presentations Session 6: Childhood & Adolescence II

THE NUTRITION AND NURTURE PROFILE OF EARLY CHILDHOOD DEVELOPMENT CENTRES IN THE BREEDE VALLEY, WESTERN CAPE

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Nurturing care ensures a good foundation for child growth and development. This study aimed to describe the nutrition and nurture profile of early childhood development (ECD) centres in the Breede Valley, Western Cape South Africa.

Mothers (n=276) of children attending 29 randomly selected ECD centres completed self-administered questionnaires. Children under age five (n=341) were weighed and measured. Interviews were done with 29 ECD centre managers/staff.

The mean age of marriage for mothers was 26.2 years (SD=4.36). Almost all mothers (96%;n=242/253*) received micronutrient-supplements during pregnancy and 82% (n=223/272*) gave birth in hospital with a skilled healthcare professional present. Mothers had an average of 1.95 children (SD=0.97). Most mothers (77%;n=206/267*) used contraception. About half of the mothers described their neighbourhood as safe (57%;n=155/271*) and clean (50%;n=137/272*).

The anthropometric profile of children were as follows: stunting - 13%; (n=42) overweight and obesity - 5% (n=16) and 4% (n=12) respectively; underweight – 6% (n=21) and severely underweight – 1% (n=2). The majority of children's immunizations (91%;n=236/260*) were up to date. Most children (89%;n=244/273*), were breastfed from birth. The mean amount of time spent breastfeeding was 13.32 months (SD=12.61). Most ECD centres provided meals for children. Security and safety were ensured by adult supervision. Responsive caregiving and early learning were cultivated through communication and relationship building and primary school preparedness was ensured through various early learning activities.(*missing responses)

The components of nurturing care, namely: health, nutrition, safety and security, responsive caregiving and early learning were mostly in place in ECD centres in the Breede Valley.

Oral Presentations Session 6: Childhood & Adolescence II

EFFECT OF DIET ON CHILD ALLERGIES

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Background. The prevalence of allergies has increased among children. This increase in prevalence might be related to diet. The present epidemiological research investigated the relationship between fruits and nuts intake and the prevalence of wheezing ever and eczema among preschool children.

Methods. This nested case-control study included 1,489 children of 4–6 year's age residing in Kaunas, Lithuania, who were recruited in 2007-2009 to the KANC new-borns cohort study. Responses to the questionnaire completed by parents were used to collect information on allergic diseases, diet and other factors. Association between diet and children's allergic diseases was estimated by multivariable logistic regression, controlling for covariate.

Results. Even 83.3% of all children ate fruits (6.2% - nuts) at least thrice per week. A significantly lower prevalence of wheezing ever was found among children who ate fruits at least thrice per week than among those who did not eat fruits (crude odds ratio: 0.44; 95% CI 0.22 to 0.87). Consumption of nuts 1-2 times per week was associated with lower prevalence of childhood eczema (aOR 0.56; 95% CI 0.35 to 0.89).

Conclusion. The results indicated beneficial effect of frequent consumption of fresh fruit on children allergies. These results might have important implication for children health.

Oral Presentations Session 6: Childhood & Adolescence II

ASSOCIATION OF AGE AND BMI WITH HYDRATION AND DENSITY OF THE FAT-FREE MASS FROM 4 TO 22 YEARS

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Introduction: Most body composition techniques assume constant properties of the Fat Free Mass (FFM), such as hydration (H_{FFM}) and density (D_{FFM}), to estimate FFM and Fat Mass regardless of nutritional status, which might lead to bias. **Aim:** To evaluate interactive associations of age and Body Mass Index (BMI) with FFM properties predictions in children and adolescents. **Methods:** Data from 936 (H_{FFM}) and 905 (D_{FFM}) assessments from subjects 4-22 years old from London, UK were analysed. H_{FFM} and D_{FFM} , were obtained from the four-component model. BMI z-scores were categorised into five groups. Differences between BMI groups were tested using one-way ANOVA with post-hoc Bonferroni correction. Predictive models for H_{FFM} and D_{FFM} were developed from age, BMI groups and sex using multi-linear regression. **Results:** FFM properties differed between BMI groups ($p < 0.001$, for H_{FFM} and D_{FFM}). Nearly 30% of the variability in H_{FFM} was explained by age and BMI groups, showing decreasing H_{FFM} values at older ages and higher BMI groups (Figure 1). In addition, ~40% of the variability in D_{FFM} was explained by age, sex and BMI groups, with increasing D_{FFM} values with older age, female sex and higher BMI groups (Figure 2). **Conclusion:** Nutritional status should be considered when assessing body composition in growing-age individuals using two-component methods, and reference data for H_{FFM} and D_{FFM} is needed for obese subjects. Further research is needed to explain intra-individual variability in

FFM properties.

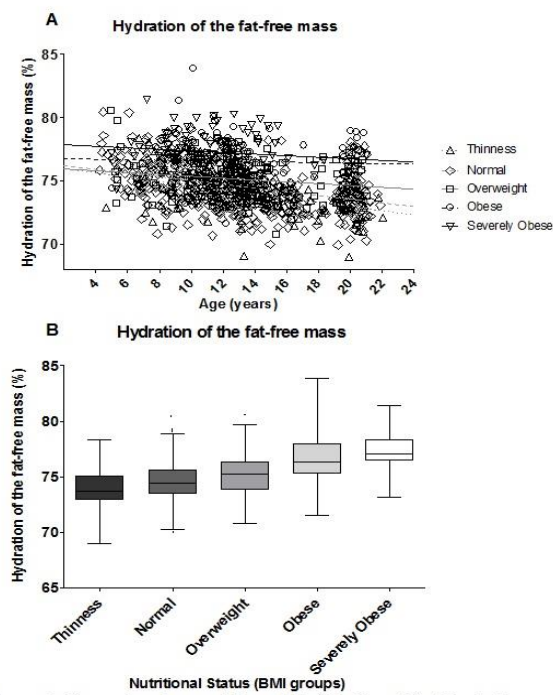


Figure 1. Dispersion by age (A) and distribution (B) of hydration of the fat free mass stratified by nutritional status groups.

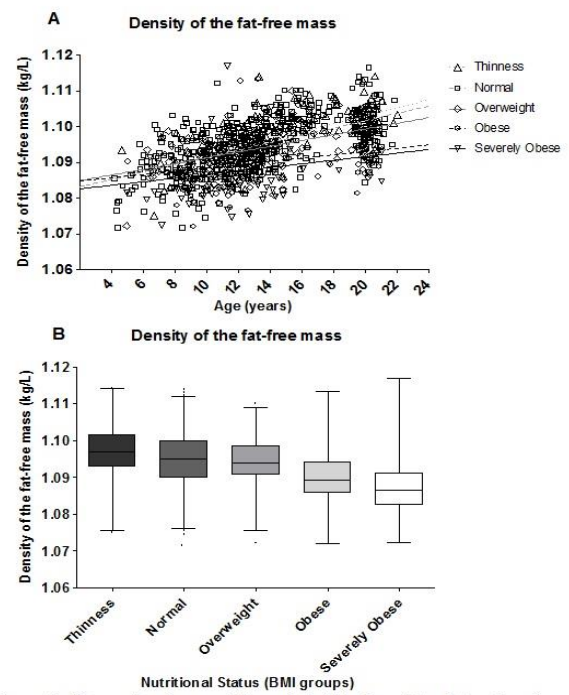


Figure 2. Dispersion by age (A) and distribution (B) of density of the fat free mass stratified by nutritional status groups.

Oral Presentations Session 6: Childhood & Adolescence II

NEONATAL VITAMIN D LEVELS AND COGNITIVE ABILITY IN YOUNG ADULTHOOD

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Background and aim: During pregnancy, vitamin D is transported from the mother to the fetus through the placenta in the form of 25-hydroxyvitamin D (25(OH)D), which in some studies have been associated with childhood neurodevelopment. We investigated if neonatal 25(OH)D₃ concentrations were associated with Børge Priens IQ test score (BPP) in young adulthood. Methods: In this nested cohort study, 25(OH)D₃ concentrations were measured in dried blood spots from 818 new-borns. We followed the children in the Danish Conscription Register, which holds information on test results from the BPP test on individuals who have been recruited for the mandatory draft board examination since 2006. Using natural cubic spline models, we investigated the crude and adjusted relationship between 25(OH)D₃ concentrations and BPP IQ test results. Results: The study population consisted of 95.8% men, with a mean age of 19.4 years. The median and range of the neonatal 25(OH)D₃ levels were 26.2 nmol/L (0 to 104.7 nmol/L). Results showed an association between neonatal 25(OH)D₃ levels and BPP IQ scores (p=0.02), and that the mean BPP IQ scores were low in offspring with the lowest neonatal 25(OH)D₃ levels after which the relationship equalized. Conclusions: Our results support the hypothesis that low levels of neonatal vitamin D might be detrimental to fetal brain development. Acknowledgement: The study was funded by the Program Commission on Health, Food and Welfare under the Danish Council for Strategic research (grant number 0603-00453B). The authors declare that they have no conflicts of interest.

Oral Presentations Session 6: Childhood & Adolescence II

LIMITATION IN ASSESSING IRON DEFICIENCY IN PRE-PUBERTAL OBESE CHILDREN

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Background and Aim: Obesity and iron deficiency are two of the dramatic global problem. In Egypt, there is an emerging concern of the increasing rate of overweight and obesity as well as iron deficiency (ID) and iron deficiency anemia (IDA) among school age children and adolescent. The diagnosis of ID or IDA is challenging especially in inflammatory conditions as obesity.

We aimed to assess combining the iron status indicator in ID and IDA evaluation in overweight and obese pre-pubertal children in Egypt.

Methods:

This study was conducted on children from three primary schools in Egypt. All children were subjected to anthropometric measurements and determination of iron status indicator; serum iron, total iron binding capacity, transferrin saturation, serum ferritin and transferrin receptor.

The total number of children assessed for obesity during screening phase were 2910 child. Of which 131 child were enrolled in this study. 96 child were obese (group 1). 35 child were overweight (group 2).

Results:

The prevalence of obesity was 23.6% among studied children. IDA contributes about 14.5% of obese and overweight children. Serum iron and transferrin saturation levels were lower in obese group (57.5 ± 11.8 & 17.4 ± 8.2) vs overweight ones (75.1 ± 16.9 & 20.8 ± 9.7) ($P=0.000$ & 0.048 respectively). On the contrary to what is expected the serum ferritin levels were high in both groups (obese and overweight). Transferrin receptor (sTfR) was elevated in obese vs overweight ones.

Conclusion:

It is necessary to screen children with elevated BMI for iron deficiency. The sTfR is regarded as a more stable marker of iron levels in such condition.

Oral Presentations Session 6: Childhood & Adolescence II

CONSUMPTION OF LOW PROTEIN DIET IN COMBINATION WITH INDOMETHACIN INDUCED GROWTH FAILURE AND GUT BARRIER DYSFUNCTION IN MICE.

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Background and Aims

Severe acute malnutrition (SAM) is often associated with an environmental enteropathy (EE). As mechanisms leading to growth failure in EE included increased intestinal permeability and gut inflammation, we aimed to develop a novel murine SAM model with these features.

Methods

Sixty C57BL/6 mice were fed with low protein (LP-5% protein) or control diet for 3 weeks. From D14 to D21, mice daily received Indomethacin (1 or 2.5 mg.kg⁻¹) to induce enteropathy. Body weight and linear growth were recorded. Gut barrier function (intestinal permeability, jejunal tight junction proteins (occludin, claudin-2) and inflammation (fecal calprotectin, TNF α , MCP-1)) were assessed. Data were compared by 2-way ANOVA (LP-indomethacin) and statistical difference between two treatment groups was calculated by using t-test or Mann-Whitney.

Results

LP diet or indomethacin treatment led to significant decreases in body weight, linear growth, occludin mRNA levels while LP diet or indomethacin treatment increased MCP-1 mRNA levels ($P < 0.05$ for all). Combination of indomethacin at 2.5 mg.kg⁻¹ and LP diet led to a (i) decreased body weight ($P < 0.0001$), (ii) decreased linear growth ($P < 0.0001$), (iii) increased gut inflammation (increased fecal calprotectin level ($P = 0.0012$); increased jejunal MCP-1 mRNA levels ($P = 0.02$), (iv) intestinal hyperpermeability ($P = 0.0627$ vs CT, $P = 0.0448$ vs LP), (v) decreased jejunal claudin-2 mRNA levels ($P < 0.05$).

Conclusion

This murine model exhibits (i) wasting, (ii) stunting and (iii) enteropathy such as an increased intestinal permeability and gut inflammation. This model may contribute to a better understanding of the mechanisms behind the role of environmental enteropathy in stunting.

Oral Presentations Session 7: Neonatal & Prematurity II

PROPORTION OF LUTEIN + ZEAXANTHIN AMONG THE TOP SIX CAROTENOIDS IN MATERNAL DIETARY INTAKE, MATERNAL SERUM, UMBILICAL CORD BLOOD, AND PLACENTA

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Background: Lutein + zeaxanthin (L+Z) are prevalent carotenoids in eye and brain, but it remains undetermined if they accumulate in placenta, a critical step to the provision of these carotenoids to the fetus. The purpose of this study is to observe variants of maternal to fetal transfer of these compounds.

Methods: An IRB-approved study enrolled an ethnically diverse group of mother-infant pairs (n=82) at a university hospital in the midwest US at time of delivery for collection of maternal serum, umbilical cord blood, and placenta samples. Proportions of L+Z means and proportions of cord blood to maternal serum were compared. Placental proportions were also examined. Mothers completed a food frequency questionnaire to assess intake of carotenoids.

Results: Xanthophyll carotenoids (L+Z, beta-cryptoxanthin) had the highest transfer rates. L+Z proportions were highest in placenta and umbilical cord blood. Theories for higher L+Z proportions in fetal compared to maternal blood are that neonates have higher proportions of circulating high density lipoproteins, a more frequent transporter of L+Z than remaining carotenoids. High L+Z presence in placenta is likely due to their high membrane solubility and stability. (Table 1)

Table 1: Proportions of Mean Carotenoid Levels within Diet, Blood, and Placenta					
	Maternal Dietary Intake	Maternal Serum	Placenta	Umbilical Cord Blood	Percent Cord: Maternal Serum
Lutein + Zeaxanthin	21.3%	17.4%	48.1%	28.6%	17.5%
Lycopene	38.8%	44.4%	25.4%	24.2%	5.8%
Beta-Cryptoxanthin	1.1%	11.8%	7.7%	20%	17.9%
Alpha + Beta-Carotene	= 38.8%	= 26.4%	= 18.8%	=27.2%	= 10.9%
	alpha: 4.4%	alpha: 6.0%	alpha: 4.2%	alpha: 12.8%	alpha: 22.5%
	beta: 34.4%	beta: 20.4%	beta: 14.6%	beta: 14.4%	beta: 7.5%

Conclusions: L+Z are prevalent in higher proportions in fetal compared to maternal blood. L+Z also remain the most prevalent carotenoids in placenta, though exact mechanisms and benefits require more research. Transfer of these compounds may impact fetal development and improved understanding is critical. Further investigation into receptor location and regulation in the placenta is planned.

Oral Presentations Session 7: Neonatal & Prematurity II

GROWTH VELOCITY: A USEFUL MEASURE FOR MONITORING THE TRANSITION PHASE FROM PARENTERAL TO ENTERAL NUTRITION IN PRETERM INFANTS.

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BACKGROUND and AIM: Progress has been made on nutrition of preterm infants but the transition phase from parenteral to enteral nutrition (TF) remain a critical period for the achievement of adequate growth. **AIM:** to evaluate if the weight growth velocity (GV, g/kg/d) is a useful parameter for monitoring the nutritional intakes during TF in VLBWI.

METHODS: Weight parameters and nutrient intakes were calculated during the TF. One-hundred-sixtyone VLBWI was categorized into GV tertiles during TF: G1: GV <10 (n=53), G2: GV 10-15 (n=24) and G3: GV >15 (n=84). The TF was divided in two main periods: parenteral nutritional intakes >50% (M-PNI) and enteral nutritional intakes >50% (M-ENI). The GV has been calculated by exponential model.

RESULTS: The mean weight and GA at birth were 1209±228 g and 30.0±2.2 weeks. No differences in basal characteristics and in comorbidities occurrence were found between groups. The mean parenteral energy and protein intakes during M-ENI was higher in G3 than G1 (42.3±22.0 vs 29.1±15.1 Kcal/kg/day and 1.69±0.9 vs 1.22±0.7 g/kg/day respectively; p<0.01). No differences were found between groups in enteral intakes. The duration of TF was longer in G1 than G2 and G3 (15.8±6.1 vs 11.5±5.6 and 10.6±4.4 days respectively, p<0.01). In addition G3 suspended parenteral nutrition earlier than G1 (33.8±1.7 vs 35.3±2.7 weeks CA respectively, p=0.005).

CONCLUSIONS: An adequate GV (> 15 g/kg/d), is supported by an high parenteral energy and protein intakes during M-ENI. Preterm infants with growth velocity >15 g/kg/day have a total parenteral nutrition duration shorter than the infants included in the other groups.

Oral Presentations Session 7: Neonatal & Prematurity II

PARENTERAL NUTRITION ARGININE SUPPLEMENTATION AND THE EFFECT ON EARLY IMMUNE SYSTEM DEVELOPMENT IN VERY PRETERM INFANTS

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Background and Aims

We have previously shown there is both overprovision of essential amino acids (AA) and underprovision of some conditionally essential AA, including arginine (Arg), in current neonatal parenteral nutrition (PN) formulations. We conducted a physiological study assessing a range of doses of arginine (6-15%) alongside routine PN to address arginine deficiency and investigate its role in immune function.

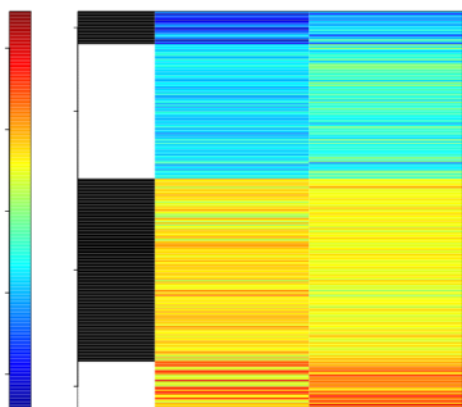
Methods

Very preterm infants (VPI) born <29 weeks' gestation and/or <1200g were eligible for PN. Infants were assigned to receive standard PN only or standard PN alongside a range of doses of arginine supplementation until day 10 (D10) of life. Blood samples were taken on day 3 (D3) and D10 of life. Plasma AA levels were measured using ion exchange chromatography and RNA was extracted and used for microarray and qPCR.

Results

The study included 26 infants with a mean gestation of 26⁺⁴ weeks' and mean birth weight of 855g. 8 infants received standard PN only (6% arginine), 12 received 12% arginine and 6 received 15% arginine. Plasma arginine levels were significantly higher on D10 of life in the supplemented infants (mean 72.8 v 45.5µmol/L, p=0.03). Microarray and qPCR validation experiments show significant changes in gene expression associated with immune system development between D3 and D10 of life (Image 1).

Image 1 – Heatmap D10/D3 and HighArg/LowArg



Conclusions

Arginine supplementation can reduce arginine deficiency in PN dependent VPI. Infants with normal (versus low) plasma arginine levels exhibit changes in certain immune pathways similar to the temporal changes seen from D3 to D10.

Oral Presentations Session 7: Neonatal & Prematurity II

THE QUALITY OF MATERNAL PROTEIN INTAKE AND INFANT'S ADIPOSITY.

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Background and aims: Maternal nutritional habits influence fetal growth. Aim: to evaluate the role of the maternal protein intake during pregnancy and lactation on modulating milk macronutrient content and maternal and infants body composition at 1 month after delivery.

Methods: We enrolled 76 exclusive breastfeeding mother/infant dyads. At 1 month after delivery we performed the analyses of fat mass%(FM) by air displacement pletismography (BOD-POD and PEA-POD) and analyses of milk macronutrient content by using Human milk analyzer (Miris AB®). Maternal dietary intake was assessed by a food frequency questionnaire (EPIC Study). All mother were categorized according with daily intake of vegetal origin proteins (PVO) as: G1(PVO $\geq$ 33%; n=28) and G2 (PVO<33%; n=48).

Results: No differences in maternal basal characteristics were found between groups [age: 33.9 $\pm$ 4.9 years, pre-pregnancy BMI and weight-increase (kg): 21.5 $\pm$ 2.9 and 12.4 $\pm$ 3.7 respectively, GA at delivery: 39.0 $\pm$ 1.2 weeks].

Maternal energy intakes were significantly higher in G1 vs G2 [2877 $\pm$ 448 vs 2044 $\pm$ 416 kcal/die respectively (p<0.001)].

Maternal FM and milk macronutrient content were similar between groups [G1: 34.5 $\pm$ 5.9 vs G2:34.6 $\pm$ 5.4%, proteins: 1.1 $\pm$ 0.2 vs 1.1 $\pm$ 0.1, lipids: 3.5 $\pm$ 1.1 vs 3.8 $\pm$ 1.2 and lactose: 7.4 $\pm$ 0.4 vs 7.2 $\pm$ 0.3 g/dl respectively for G1 and G2]. Infants weight was similar among groups at birth [3398 $\pm$ 401 vs 3368 $\pm$ 339 g] whereas it tended to be higher at 1 month [4637 $\pm$ 476 vs 4412 $\pm$ 588 g, p=0.09]. Infants FM % was significantly higher in G1 vs G2: 20.8 $\pm$ 4.0 vs 18.5 $\pm$ 3.9% respectively (p=0.01).

Conclusions: An higher PVO was associated to higher maternal energy intake and higher infants adiposity. Could different microbiota play a role in infants adiposity?

Oral Presentations Session 7: Neonatal & Prematurity II

IMPACT OF MATERNAL FOOD INTAKE ON CORD BLOOD HEAVY METALS AND NEONATAL ANTHROPOMETRIC OUTCOME

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Background and Objectives

Heavy metals are environmental pollutants, that can cross the placental barriers affecting the fetal health. This study assessed maternal and fetal exposure to Cadmium (Cd), Mercury (Hg), lead (Pb) and Arsenic (As), and the association between their levels and maternal food intake of different food items relating them to newborns anthropometric indices.

Subjects and Methods

In this cross sectional study, 113 pairs of mothers and their newborns at time of labor were recruited. Inductively Coupled Plasma Mass Spectrometry was used to assess levels of Cd, Hg, Pb and As, in maternal and cord blood serum samples. Full history, socio demographic data and food frequency questionnaire for dietary assessment were recorded.

Results

There was a significant, negative association between neonatal serum levels of As and Cd, and the neonatal birth weight ($r = -0.336, -0.386$; $p = 0.043; 0.024$, respectively). Maternal serum levels of As and Cd also had a significant, negative correlation with the neonatal birth weight ($r = -0.382, -0.372$; $p = 0.041; 0.019$, respectively). Positive correlation was detected between maternal vegetables intake and cord blood arsenic level ($p=0.0258$)

Conclusion

The current study provides a clinical evidence that increased maternal exposure to Cd and As has a great burden on fetal growth. These findings highlight the importance of monitoring populations at risk, and to enhance awareness. The different food stuff can influence the maternal and umbilical cord blood mercury levels. Strict measures should be taken to decrease environmental contamination of vegetables with attention to pregnant mothers.

Oral Presentations Session 7: Neonatal & Prematurity II

PRETERM FORMULA VERSUS EXPRESSED BREAST MILK FOR FEEDING PRETERM OR LOW BIRTH WEIGHT INFANTS

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The enteral nutrition for preterm or low birth weight infants are expressed breast milk or artificial formula. expressed breast milk may retain some of the non-nutritive benefits of maternal breast milk for preterm or low birth weight infants. However, feeding with artificial formula may ensure more consistent delivery of optimal levels of nutrients. Uncertainty exists about the balance of risks and benefits of feeding formula versus expressed breast milk for preterm or low birth weight infants.

Objectives

To determine the effect of feeding with formula compared with expressed breast milk on growth and in preterm or low birth weight infants.

Selection criteria

Randomised controlled trials comparing feeding with formula versus expressed breast milk in preterm or low birth weight infants.

Results Birth weight (1.69 vs 1.63 kg) and gestational age (30.9 vs 32.6 wk), in formula and EBM, respectively, were similar. Growth rates were slightly less in EBM than in formula infants, in the 1st month. There was a significant difference, growth growth up to three months in EBM vs formula (P = .04).

Conclusions. This trial supports the use of an expressed breast milk vs preterm formula to nourish preterm infants in the neonatal intensive care unit.

Oral Presentations Session 7: Neonatal & Prematurity II

HUMAN MILK MYCOBIOTA COMPOSITION: RELATIONSHIP WITH GESTATIONAL AGE, DELIVERY MODE, BIRTH WEIGHT

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INTRODUCTION: Regarding to the previous studies results and limitations, we hypothesized that human milk mycobiota with detailed metagenomic analysis, might be affected delivery mode, gestational age and birth weight status.

METHODS: Two milk samples have been collected (Day 7-15, Day 45-90) from 44 mothers (five different groups: normal spontaneous delivery-term (NS); caesarean deliveries-term (CS); premature (PT); small for gestational age (SGA); large for gestational age (LGA) groups. Metagenomic analysis have been performed.

RESULTS: Fungi are detected in 80 out of the 88 samples. At species level *Malassezia globosa*, *Aspergillus glaucus*, and *Penicillium rubens*; were “core” ones. Regarding to the number of fungal reads, in NS group show low levels of fungi at any time, unlike PT group which show low levels at the beginning but increasing after 45 days, just the contrary of the CS group which begin with high levels of fungi but normalize their number after time. While, most abundant species are *M.globosa*, *A.glaucus* and *P.rubens* among NS group, in contrary, in CS group, *Saccharomyces cerevisiae* is the most abundant group in transient human milk (45%), and disappeared in mature milk. In PT, SGA and LGA group, most abundant species are *A.glaucus* and *P.rubens* in transient and mature milk.

DISCUSSION: This is the first study of metagenomic analysis of human milk at species level fungi. Although fungi constitute only a very small part of the human milk microbiome (0.2%), we showed that the mycobiota composition changes according to the delivery mode and also different between the transient milk and mature milk.

Oral Presentations Session 7: Neonatal & Prematurity II

IMPACT OF DONOR HUMAN MILK ON PRETERM GUT MICROBIOME AND URINARY METABOLOME

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Background: Breast milk (BM) is a complex fluid that directly influences microbiota colonization and immune system maturation. When maternal milk is not available, pasteurized donor human milk (DHM) has become the best alternative, but its impact on preterm microbiota and metabolism are not well understood.

Objective: This study aims at the characterization of the impact of DHM vs. BM on the gut microbiome and urinary metabolome in preterm neonates admitted to a neonatal intensive care unit.

Methods: A prospective observational cohort study of 69 neonates in a NICU with <32 weeks of gestation and ≤ 1.500 g birth weight was conducted. Preterm infants were classified in 3 groups according nutrition type (OMM, DHM or formula). Preterm gut microbiome and urinary metabolic fingerprints were determined by 16S rRNA gene sequencing and liquid chromatography coupled to high resolution time-of-flight mass spectrometry, respectively.

Results: Preterm microbiota composition and urinary metabolic fingerprints were influenced by nutrition. Preterm neonates fed with BM showed a higher abundance of *Bifidobacterium* and lower of *Staphylococcus spp* compared to the DHM group. A total of 34 altered features were found be associated to microbial activity. From them, 21 were higher in BM preterm infants (e.g. 3-methyldioxyindole, methylgallic acid) while other 13 were higher in DHM (e.g. vanilloylglycine, hippuric acid).

Conclusions: Nutrition has a key impact on microbiota which is mirrored in metabolic fingerprints. The integration of microbiome and metabolome data allowed to gain new insights on the role of nutrition in preterm infants' health from a systems biology perspective.

Oral Presentations Session 8: Other

NEUROLOGICAL CONSEQUENCES OF NEONATAL IRON DEFICIENCY IN HIGH-RISK CHILDREN

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We previously identified maternal smoking, obesity, delivery by C-section and SGA as risks for neonatal iron deficiency. We aimed to investigate associations between neonatal iron deficiency and neurodevelopmental outcomes in the prospective maternal-infant Cork BASELINE Birth Cohort.

Ferritin concentrations were measured in umbilical cord sera and neurodevelopmental assessments were performed at 2 (Bayley Scales of Infant Development/Child Behaviour Checklist [CBCL]) and 5 years (Kaufman Brief Intelligence Test/CBCL).

In the cohort, median [IQR] cord ferritin concentrations were 200.9 [139.0,265.8] µg/L; 7.5% had neonatal iron deficiency (<76µg/L). Using the risk factors we previously identified (smoking, obesity, C-section delivery, SGA), as selection criteria, we conducted an *a priori* sensitivity analysis in 306 children. Of the 306 children identified as high-risk, 12.4% had neonatal iron deficiency. Those with neonatal iron deficiency had higher median [IQR] CBCL internal (9.0 [5.3,12.0] vs. 5.0 [3.0,10.0]), external (7.5 [4.0,14.8] vs. 5.0 [2.0,10.0]) and total problem (24.5 [15.3,40.8] vs. 16.0 [10.0,30.0], all $P<0.05$) scores at 5 years compared to those without neonatal deficiency. This adverse effect was especially apparent in children of obese mothers ($n=85$) who were iron deficient at birth, with a 5-year total problem score of 42.0 [24.5,54.5] compared to 16.0 [8.8,29.3] in those not deficient ($P=0.008$). Associations were robust to adjustment for confounding factors. No effect on cognition at 2 or 5 years was observed in these children.

This study has identified behavioural consequences of neonatal iron deficiency. Public health strategies targeting prevention, through improving nutrition and health in women, and early detection of neonatal deficiency are urgently required.

Oral Presentations Session 8: Other

ARE GLUTEN FREE PRODUCTS CONTRIBUTING TO INCREASED WEIGHT IN CELIAC DISEASE PATIENTS?

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Background and aims: Gluten-free diet is the lifelong therapy for patients with coeliac disease. A wide range of gluten-free products (GFP) is available in the markets, which mimic the characteristics of their gluten-containing counterparts (GCC). The aim of this study was assessing the nutritional composition of the GFP as compared to their GCC.

Methods: A cross-sectional study analysing the nutritional differences between 621 GFP and 600 GCC based on labelling information was conducted. Food items were categorized in one of 14 food groups. The first 6 ingredients were noted for each food item. A linear regression model was used to explain differences in nutritional composition between GFP and GCC.

Results: Flours and starchy ingredients used in GFP elaboration were mainly rice and corn flours and corn starch, being palm oil the most frequently added fat. In terms of nutrients, overall GFP had lower protein content than GCC, especially flour, bread and pasta. The GF bread group showed a statistically significant higher lipid and saturated fat content as compared to the GCC. Despite these common tendencies, high variability in nutrient composition was found between products from the same food category but different brands; for instance, the range in the protein content of GF flours was as wide as 0.4-20 g/100g.

Conclusion: GFP cannot be *a priori* considered as equivalent substitutes for their GCC, and close checking of the product label is recommended to achieve a balanced diet through healthy choices. The reformulation of the GFP with more healthy raw materials and ingredients is encouraged.

Oral Presentations Session 8: Other

NEW STATISTICAL METHODS TO OPTIMISE CHILDREN Z-SCORE CALCULATION

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Background and aims: Expressing anthropometric parameters (height, weight, BMI) as z-score allows for nutritional status assessment comparison of children and adolescents. The Centre for Disease Control and Prevention (CDC) growth charts and the CDC-LMS method for z-score calculation can be imprecise in some percentiles. The aim was to improve the accuracy of z-score calculation by revising the statistical method with the original data used to develop current z-score calculators.

Methods: z-score calculation model based on Gaussian Process Regressions (GPR) was designed and validated. Z-scores for weight-for-age (WFA), height-for-age (HFA) and BMI-for-age (BMIFA) based on this new calculation model were compared with WHO and CDC-LMS methods in 1) a set of z-score cut-off points, 2) a simulated population of 3000 children and 3) real observations from the MyCyFAPP cohort of 212 children.

Results: The new model based on GPR yielded a more accurate calculation of z-scores for standard cut-off points ($p < 0.001$) because of its ability to fit and adapt to data distributions with respect to CDC-LMS and WHO approaches. WFA, HFA and BMIFA z-score calculations based on the 3 methods using simulated and real patients showed a large variation irrespective of gender and age. Z-scores around 0 $\pm$ 1 showed larger variation than the values above and below $\pm$ 2.

Conclusion: GPR based calculation provides more accurate z-score determinations than CDC-LMS and WHO methods for standard cut-off points, thus, a better classification of patients below and above cut-off points. Statisticians and clinicians should consider the potential benefits of updating their calculation method for an accurate z-score.

Oral Presentations Session 8: Other

PRESCHOOL@HEALTHYWEIGHT: A PRESCHOOL-BASED INTERVENTION FOR PROMOTING HEALTHY EATING AND PHYSICAL ACTIVITY IN TODDLERS

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Background and aims

The aim of this study was to gain insight in the effect of a preschool-based intervention for Early Childhood Education and Care (ECEC) teachers on promoting healthy eating and physical activity in toddlers.

Methods

In a cluster randomized controlled trial, 37 preschools of child care organization Impuls in Amsterdam Nieuw-West, the Netherlands, were randomly allocated to an intervention or control group. In total, 115 female ECEC teachers (mean age: 42 ± 9 years) participated. The intervention for ECEC teachers consisted of two existing Dutch programs: 'A Healthy Start' and 'PLAYgrounds'. The practices and knowledge of ECEC teachers concerning healthy eating and physical activity and the level of confidence in promoting healthy eating and physical activity in toddlers was assessed at baseline and 9 months of follow-up. To examine the effect of the intervention linear mixed models were used.

Results

Preliminary analyses of the practices indicated that Activity-related-Teaching/Autonomy-Support was increased in the intervention group (mean difference: 0.181), but not in the control group (mean difference: -0.048; p-value group*time: 0.025). Food-related-Pressure-to-Eat was decreased in the intervention group (mean difference: -0.580), but not in the control group (mean difference: -0.158; p-value group*time: 0.014). No effect of the intervention was found on knowledge (p-value group*time: 0.24) and the level of confidence (p-value group*time: 0.98) of ECEC teachers.

Conclusions

The preschool-based intervention seems to increase Activity-related-Teaching/Autonomy-Support and to decrease Food-related-Pressure-to-Eat. No effects were seen on knowledge and level of confidence of ECEC teachers in promoting healthy eating and physical activity in toddlers.

Oral Presentations Session 8: Other

CHANGE IN BMI AND OVERWEIGHT FROM 2002 TO 2017 IN NORWEGIAN ADOLESCENTS

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Aim:

The aim of the study was to describe the change in Body Mass Index (BMI) z-score distribution and prevalence of overweight and obesity (OWOB) in Norwegian adolescents from 2002 to 2017.

Methods:

A cross-sectional study on health, socio-demographic factors and lifestyle was undertaken in 2002 and 2017 in 10th-grade students (aged 15-16 years). Based on weight and length reported by the participants, we calculated body mass index (BMI)-for-age Z-score (BMIz) and overweight and obesity (OWOB) as defined by the International Obesity Task Force. We compared the distribution of the BMIz and prevalence of OWOB in 2002 and 2017 in boys and girls.

Results:

The questionnaire was completed by 1675 (2002) and 1580 (2017) adolescents. The prevalence of OWOB increased from 10 to 15 per cent among girls (risk difference [RD] 0.05, 95% CI: 0.02,0.09), and from 18 to 21 per cent among boys (RD: 0.03, 95% CI: -0.01,0.07). The mean BMIz for girls increased from -0.07 in 2002 to 0.22 in 2017 (mean difference 0.29, 95 % CI: 0.18,0.39), and was unchanged at 0.19 among boys (mean difference 0.00, 95% CI: -0.10,0.10). The density plots revealed almost identical shapes of the distributions in 2002 and 2017 for both boys and girls.

Conclusion:

The change in BMIz among 15-16 year olds between 2002 and 2017 was observed only in girls; Contrary to previous knowledge, we find that the increase in OWOB is not due to a larger subpopulation in the upper percentiles, but rather a uniform right shift for the entire BMIz distribution.

Oral Presentations Session 8: Other

MY RAREDIET - NUTRITION ANALYSIS APPLICATION AND MOBILE APPLICATION FOR RESEARCH AND CLINICAL CARE

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My Rare Diet is a nutrition software application and mobile application for the use in research and clinical trials. Knowledge of patient's eating habits and accurate dietary information on foods consumed is needed to further understand the link between diet and health outcomes especially with chronic diseases which require close diet management. The use of three-day diet diaries is utilized to monitor food intake. These diaries are frequently inadequate in capturing what is actually being consumed. Novel methods of assessing dietary intake are required to reduce the participant burden in dietary surveys, improve participation rates and thereby improve the representativeness of the sample while minimizing the impact of measuring dietary intake on the patient or caregiver during the recording period.

Designed to address an unmet need and to assist with dietary management designed to increase adherence and compliance that leads to improved outcomes, we developed and validated a mobile app called MyRareDiet, which is designed to facilitate data collection, reduce study burden for families, be used to document nutrition intake and in the future connect this information with patient health outcomes.

MyRareDiet has two subsystems: Patient Portal and Researcher Portal. The primary goal of the Patient Portal is to help patients and caregivers easily track and monitor their own diet so they can meet their strict diet targets and restrictions, all resulting in improved adherence and compliance. The Researcher Portal is to facilitate diet-based involving chronic disease and especially rare disease populations and enable analysis of study results.

Oral Presentations Session 8: Other

THE STUNTING RISK ASSESSMENT TOOL: DEVELOPMENT AND EXTERNAL VALIDATION OF A NOVEL TOOL TO PREDICT RISK OF STUNTING IN CHILDREN BY SIX MONTHS OF AGE

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Background and aims: Globally, an estimated 151 million children under 5 years of age suffer from chronic undernutrition making it the most pervasive form of child malnutrition, with long term adverse effects. We sought to develop and externally validate a predictive algorithm that when applied in the first six months of life is able to predict stunting risk in a child at 3 years of age.

Methods: We conducted two separate prospective cohort studies in Vietnam, that intensively monitored children from early pregnancy until 3 years of age. The cohorts used for the development and validation of the tool included 1168 and 475 live-born infants, respectively. Multivariable logistic regression on child stunting at 3 years of age was performed for model development, and performance of the predicted risk of stunting using the resulting model, was evaluated in the validation data set.

Results: In the development sample of 1015 children with height for age z scores available at 3 years, 172 (16.9%) children were stunted. In the validation sample 70/426 (16.4%) were stunted. Key predictors in the final model were paternal and maternal height, weight change during pregnancy, infant sex, gestational age, and infant weight and length at 6 months of age. The concordance statistic in the validation data set was 0.88.

Conclusions: This predictive tool allows valid early life prediction of child stunting at 6 months of age, enabling effective preventive measures to be introduced at a time when the greatest impact is likely to be achieved.

Oral Presentations Session 8: Other

THE ROLE OF COMISS SCORE IN COW'S MILK PROTEIN ALLERGY IN INFANTS AND TODDLERS

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Background and Aims: Cow's milk protein allergy (CMPA) is the most common food allergy found in children under 3 years of age. The Cow's Milk-related-Symptom-Score (CoMiSS™) was developed to offer primary health care providers a screening and diagnostic tool for CMPA related symptoms. A score of 12 or higher helps identify infants likely to have CMPA. The aim of the study is to assess the accuracy of CoMiSS.

Methods: We prospectively evaluated 45 patients aged between 1 month- 2 year diagnosed with Non-IgE/IgE mediated CMPA using CoMiSS score, in Pediatric Department of Constanta Clinical County. The study was conducted between 1 January 2018 and 31 December 2018.

Results: Median CoMiSS score was 11 and score ≥ 12 was found in 24 patients (53%). In our study Non-IgE mediated CMPA is only characterized by scores <12 and IgE mediated CMPA is predominantly correlated with high scores. Children in the urban area were more likely to develop CMPA (80%) than those in rural areas (20%). Among the criteria of the CoMiSS score, crying, regurgitation and skin symptoms were frequently identified, unlike respiratory symptoms that were not so common. Failure to thrive and sleeping problems have been commonly found, although they are not a criteria for the CoMiSS.

Conclusions: Our study support the use of CoMiSS as a tool to predict CMPA in children aged less than 2 years. Further studies are needed to evaluate the CoMiSS.

Oral Presentations Session 8: Other

PARTIALLY HYDROLYZED WHEY-BASED FORMULAE WITH REDUCED PROTEIN CONTENT SUPPORT ADEQUATE INFANT GROWTH AND ARE WELL-TOLERATED

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Background and aims

Feeding should aim to provide nutritional and functional properties as close as possible to infant's requirements. The GIRAFFE study investigated the safety and tolerance of partially hydrolysed infant formulae with different protein content in healthy full-term infants.

Methods

Fully formula fed Infants were randomised ≤ 14 days of age to receive a standard partially hydrolysed whey formula until 16 weeks of age containing 2.27g protein/100kcal ("pHF2.27") or the same formula with 1.8 g or 2.0g protein/100kcal (hereafter "pHF1.8" and "pHF2.0"). Primary outcome was equivalence analysis of daily weight gain within margins of ± 3 g/d; comparison to WHO growth standards using a margin of -0.5SD, gastrointestinal tolerance parameters and number of (serious) adverse events were secondary outcomes.

Results

A total of 207 infants were randomised and 61 (pHF1.8), 46 (pHF2.0) and 48 (pHF2.27) subjects completed the study per protocol. Equivalence in daily weight gain (g/d) was demonstrated for the comparison of pHF1.8 vs pHF2.27, i.e. the estimated difference was -1.12 g/d (90% CI: [-2.72; 0.47]). The comparison of pHF2.0 vs pHF2.27 was inconclusive (-2.52 g/d (90% CI: [-4.23; -0.81])). However, all groups showed adequate infant growth vs WHO growth standards with numerically higher z-scores values in the pHF2.27 vs pHF2.0 and pHF1.8 groups until follow-up at 12 months of age. No relevant differences in other safety and tolerance outcomes were observed.

Conclusions

Partially hydrolysed whey-based formulae with protein levels of 1.8 and 2.0 g/100kcal are safe and support adequate growth similar to the WHO growth standard.

E-Poster Viewing: Childhood & Adolescence

OVERVIEW OF DIETARY INTAKE, PHYSICAL ACTIVITY LEVEL, BODY COMPOSITION AND LIPIDS CHANGES IN MALAYSIAN ADOLESCENTS: ANALYSIS FROM A COHORT STUDY

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Background: Growing obesity problem among Malaysian adolescents and being physically inactive are becoming a major health concern. A cohort study was conducted among adolescents (aged 13-years) attending 15 public secondary schools from the Central (Kuala Lumpur and Selangor) and Northern (Perak) Regions of Peninsular Malaysia.

Methods: This study is to identify the trends of self-reported physical activity (PA) levels, blood lipid profiles, and body composition (BC) indices from a cohort of 820 adolescents. The self-reported PA was assessed using a validated Malay version of the PA Questionnaire for Older Children (PAQ-C). Fasting blood samples were collected to investigate their lipid profiles. Anthropometrical measurements which include height, weight, waist, hip circumferences and body fat percentage were all measured using calibrated scale. The 7-day diet histories of habitual food intake were conducted by qualified dietitians and nutritionists. The data were collected in 2012 and 2014, respectively.

Results: It appears that obese adolescents in rural schools consumed more energy and sugar (1987.6 ± 374.0 kcal/d and 48.9 ± 23.0 g/d) (p-value <0.001) at baseline. A downward trend in the PA level was seen in all categories with a significant reduction among all rural adolescents (P = 0.013) and more specifically, PA among girls residing in rural areas dropped significantly (P = 0.006).

Conclusion: Female adolescents experienced more body fat increment with the reduction of physical activity. A structured intervention study for the adolescents is needed, as potentially negative health impact would be greater if it is not intervened early.

E-Poster Viewing: Childhood & Adolescence

FOOD ALLERGY

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Share of food allergies is quite high in the general structure of allergy morbidity (varies between 0.1% and 9,5%).

Goal of the work: foal of our work is study of prevalence of food allergies and risk factors in children's population in selected populations of Tbilisi and Kutaisi-Tskaltubo.

Materials and methods: studied population includes 3689 children (2013-2018) from 1-month to 15-year age. 2021 of them were girls and 1668 – boys (I group: children from 1 month to 6 years and II group – from 7 years to 15 years). At the first stage of epidemiological study, screening of 3689 children was conducted by means of the initial questionnaire filled in directly at a time of interviewing of the parents. Identification of the factors of causal significance was provided based on anamnesis data, comparison of general serum and specific IgE and in vivo allergologic diagnostics (prick-tests).

SPSS/V12.5

Results: Epidemiological studies showed that prevalence of food allergies in children's population (9.8% -Tbilisi; 7.9% Kutaisi-Tskaltubo;) was 21.08%. Average total IgE, im both cases, was 3-5 times higher than normal value and no statistically reliable difference between the groups was found ($p>0.05$). Only 6.5 of children with food allergies had IgE within normal limits. High frequency of late diagnostics was established ($p<0.001$).

Conclusion Thus, according to the obtained data, share of the manageable risk factors is high and this could provide basis for development of targeted and effective prevention measures for the children's population Food allergy is complex and versatile process requiring further study.

E-Poster Viewing: Childhood & Adolescence

FORMULA-BASED FEEDING OF CHILDREN AS A RISK FACTOR OF ARTERIAL HYPERTENSION

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Background and aims: Arterial hypertension (AH) in the whole world is one of the most important risk factors of the development of cardiovascular pathology and mortality not only among adult patients, but also children. According to the theory of metabolic programming of nutrition the origin of many CHD is formed at the early stages of development and linked with environment and nutrition.

The aim was to study the impact of the type of feeding on the development of arterial hypertension in children from 13 to 15 years old.

Methods. A clinical study of 425 school children in the age from 13 to 15 years old in Tashkent city was done within 2017 -2018. For the evaluation of AH risk in children we designed a stratification risk scale with calculation of absolute risk (AR), attributive risk (CAR), regulated intensive value (N), and integrated risk coefficient (X). Results. There were 323 (76%) children with normal arterial pressure (control group), among them 154 boys (47.7%) and 169 girls (52.3%). 72 (16.9%) children had high normal arterial pressure (HNAP), where there were 39 (54.2%) boys and 33 (45.8%) girls, respectively (comparison group). the basic group involved 30 (7.1%) children with AH, including 18 (60.0%) boys and 12 (40.0%) girls. Distribution of the children dependently on the AP level showed prevalence of children with normal AP;

Conclusions. Breastfeeding is the best method for provision of ideal nutrition for a healthy growth and development of infants; it is also a part of health with important consequences in adult life.

E-Poster Viewing: Childhood & Adolescence

A COHORT STUDY ON THE NUTRITIONAL STATUS OF SCHOOL GOING CHILDREN FROM NUTRITIONALLY DEPRIVED URBAN AND RURAL POPULATIONS OF PAKISTAN

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Malnutrition is globally increasing public health concern among children and Pakistan is no exception. Children are an asset to their nation and their health is integral for the progress of any country. Malnutrition affects school children influencing their growth, development and school academic performance.

The tenet of the current cohort study was to assess the nutritional biomarkers of school going children of age 12-15 years. A sample size comprising of 180 school going children was stipulated from the targeted urban and rural population. The experimental subjects were evaluated for hematological assessment through laboratory standard procedures.

The fallouts of investigation unveiled that both rural and urban populations were experiencing nutritional challenges however; on account of awareness paucity the rustic population was nutritionally more compromised. Hematological tests elucidated 16.7% and 7.8% cases for high glucose level, 35.6% and 27.8% cases for low hemoglobin levels, 87.8% and 97.8% cases for normal erythrocyte sedimentation rate (ESR), 14.4% and 15.6% cases for low calcium indices, 98.9% and 56.7% cases for low bone mineral density (BMD), 12.2% and 4.4% high white blood cell count (WBC), 20% and 14.4% low red blood cell count, 71.1% and 72.2% normal mean corpuscular volume (MCV), 76.7% and 74.4% low hematocrit (HCT) values, 68.9% and 75.6% mean corpuscular hemoglobin concentration (MCHC) among the rural and urban population respectively. The above mentioned outcomes can serve as a way forward for policy and law maker institutions to curtail or curb the possible barricades in the way of healthy nutritional status in these areas.

E-Poster Viewing: Childhood & Adolescence

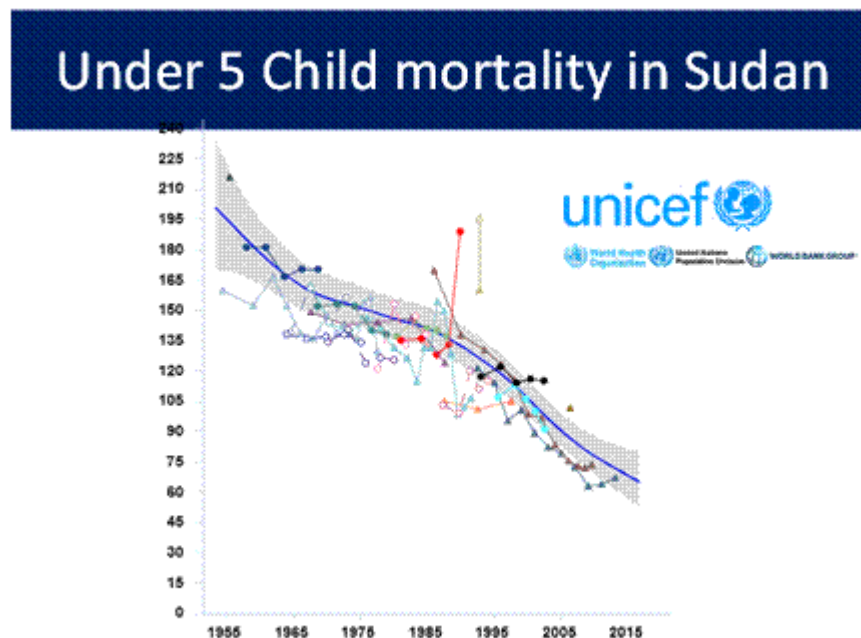
CHILDHOOD NUTRITION AND FEEDING PRACTICES IN SUDAN

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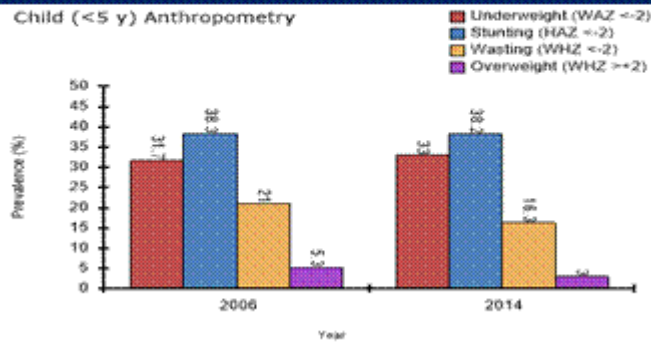
Abstract:

- Globally in 2016, 155 million children under 5 were estimated to be too short for age, 52 million were estimated to be wasted. About 40% of infants 0–6 months old are exclusively breastfed. less than a fourth of infants 6–23 months of age meet the criteria of dietary diversity and feeding frequency that are appropriate (<http://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>)
- The situation in Sudan is summarized in the following diagram



There is no progress in competing protein energy malnutrition during the last 10 years.

Malnutrition Prevalence in Sudan



Sudanese mothers of malnourished children were more likely to be pregnant, and had poorer housing, sanitation and water supply, a lower income and food expenditure and less education than controls. Differences in food availability could account for the relative retardation of growth and lack of subcutaneous fat in marasmus compared to kwashiorkor. https://www.researchgate.net/publication/20698873_Protein-energy_malnutrition_in_northern_Sudan_Prevalence_socio-economic_factors_and_family_background [accessed Oct 07 2018].

The ready to feed food items in common use for infant feeding were found to be poor in caloric and protein content and not suitable for under 5 children. Modification to improve these feeds were discussed. A feeding formula was introduced for hospital use which resulted in lowering mortality from 42% to less than 5%.

Gezira Formula evidence based medicine

Before Treatment



6 weeks after treatment



E-Poster Viewing: Childhood & Adolescence

IRON CONTENT AND FATTY ACIDS PROFILE OF GROWING-UP FORMULAS COMMERCIALIZED IN ABIDJAN, COTE D'IVOIRE

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BACKGROUND AND AIMS: Growing-up formulas are often considered as an alternative to cow milk for toddlers and children aged over one. It seems important to assess the nutritional benefits of these formulas, particularly regarding iron and essential fatty acids. This study aimed to: i) identify commercial characteristics of growing-up formulas commercialized locally ii) determine iron content; ii) evaluate the fatty acids profile.

METHODS: The study included an investigation in supermarkets, open markets and pharmacies of Abidjan. The analytical step was performed on samples sold in Abidjan. Iron content was determined by Atomic Absorption Spectroscopy. Fatty acids profile was assessed by Gas Chromatography.

RESULTS: Five different brands of growing-up formulas are commercialized in Abidjan in pharmacies and supermarkets. Designation of all brands was followed by the number "3". For some brands, mention of specific nutrients was reported. Four brands out of five, showed similar iron content around 7 mg/100g⁻¹, very close of the content displayed on the packaging. The fatty acids profile showed the presence of eight different fatty acids among which four unsaturated ones. The presence of only one essential fatty acid, linoleic acid could be noted. Omega-3 α -linolenic acid could not be detected although its presence is reported on the packaging of all brands.

CONCLUSION: The study showed iron content close to the one reported on the packaging while fatty acids profile was different. Further study must be done to assess other specific mineral content and identify essential fatty acids.

E-Poster Viewing: Childhood & Adolescence

VITAMIN D SUPPLEMENTATION IMPROVES SERUM IRON LEVELS OF ARAB ADOLESCENT BOYS, NOT GIRLS

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Both vitamin D and iron deficiencies are common in the Middle East. The present study determined for the first time whether vitamin D supplementation can affect iron levels among Arab adolescents. A total of 200 Saudi adolescents with vitamin D deficiency [serum 25(OH)D <50nmol/l] were randomly selected from the Vitamin D-School Database of King Saud University in Riyadh, Saudi Arabia and were allocated to receive either vitamin D tablets (1000IU/day) (N=100, 42 boys and 58 girls; mean age 14.4±1.0 years) or vitamin D-fortified milk (N=100, 62 boys, 38 girls; mean age 14.8±1.4 years). Anthropometrics, glucose, lipids, serum iron and 25(OH)D were measured at baseline and after 6 months. Within group analysis showed that post-intervention, serum 25(OH)D significantly increased and a parallel increase was observed in serum iron (p-values <0.001 and 0.002, respectively) in the intervention group. These changes were not observed in the control group. Between-group analysis showed a clinically significant increase in serum 25(OH)D (p=0.003), parallel to the increase in serum iron (p-value<0.001) in favor of the intervention group. Stratified to sex however, the significant increase in iron levels was observed only in boys (p<0.01). In conclusion, vitamin D supplementation modestly increases serum iron levels in Saudi adolescents but more so in boys, highlighting the dimorphic beneficial effects of vitamin D supplementation with respect to iron status. Further studies to include major other iron indices are needed to confirm present findings.

E-Poster Viewing: Childhood & Adolescence

EVALUATION OF IODIZED SALT AND IODINE INTAKE AND DETERMINATION OF IODINE DEFICIENCY IN SCHOOLCHILDREN IN THE REGION OF RABAT

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Introduction: Iodine deficiency has several adverse effects on growth and human development, causing organic disorders commonly known as iodine deficiency disorders (IDDs). Among school-age children, an estimated 29.8% worldwide suffer from iodine deficiency. As a way of fighting IDD, salt iodization remains the best way to increase iodine consumption in a community, this is how it is adopted by several countries in the world, including Morocco; whose IDD is considered moderate.

The Aim: The purpose of this study is to determine the level of salt and iodine intake by children in the Rabat capital of the country, and to assess the percentage of iodine deficiency in these children, this pilot study will be used in the preparation of the future National IDD Survey in Morocco.

MATERIAL AND METHODS: This is a cross-sectional study of 280 children and adolescents aged 6 to 18 years. Anthropometric data and a questionnaire on food frequency were collected. Urinary excretion of sodium and iodine has been measured in the urine collected over 24 Hours, and evaluated respectively, by plasma mass spectrometry by coupling inductive and by spectrophotometry following the Sandell-Kolthoff reaction, creatinine excretion was used to validate the completeness of urine collection.

Results and Statistical Analysis: The mean values observed for the salt were 5.7 ± 0.2 g/day, and $96 \mu\text{g/l}$ for excretion of iodine. 70% of children have iodine deficiency, 50% of whom consume more than 5g/day recommended by WHO.

Conclusion: the majority of children who consume more than the recommended intake of salt, which is supposed to be fortified with iodine, suffer from iodine deficiency.

E-Poster Viewing: Childhood & Adolescence

STUNTING CAN BE CORRECTED DURING CHILDHOOD

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Background: Growing short has been started in the womb of malnourished mothers, indicated by having low birth weight and grew in deviation curve. Critical window of growth taken place at first 1000 days of life. This study was conducted to investigate the influence of early growth, towards the growth of pre-puberty's period.

Methods: The study design was retrospective, utilizing Indonesian Family Life Survey panel data of 1993, 1997, 2000. Study population was Indonesian households covering 13 out of 27 provinces in 1993. Sampel was children, age 0-2 years old at the baseline, followed up at age of 4-6 and 7-9 years (pre-puberty). The data analysis was done for Multivariate Logistic Regression.

Results: Early growth at age of 0-2 year was appointed growth of pre-puberty. Factors corelated to stunted at early life were poverty (OR=1,78; 95%CI=1,06-2,99), urban settlement (OR=2,92; 95%CI=1,74-4,90), poor environment (OR=1,84; 95%CI=1,10-3,09). Short at age of 4-6 years corelated to short at early age (OR=3,73; 95%CI= 2,160-6,343). Growth pattern of stunted (S) and normal (N) at early age (02) and age of 4-6 years (46) showed, 77,1% of 02S_46S stayed stunted (OR=27,43; 95%CI=11,68-64,43). As much as 59,5% of 02N_46S experienced growth faltering becoming stunted (OR=14,00; 95%CI=5,95-32,95). Children whose 02S_46N account for 84,3% grew normally (OR=1,48; 95%CI=0,55-4,00; p=0,441) at pre-puberty. Growth improvement were generally supported by the economic improvements.

Conclusion: Stunting can be corrected during childhood. Efforts on stunting intervention should be focused at the first 1000 days of life; if necessary be followed up until age of five years.

E-Poster Viewing: Childhood & Adolescence

NUTRITIONAL STATUS AND QUALITY OF LIFE IN CHILDREN AND ADOLESCENTS WITH HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION

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Background and Aims: The growth and cellular immune function of human immunodeficiency virus (HIV) infected children is impaired by their nutritional status. The majority experience nutrition deficits and malnutrition, but with longer follow-up body fat redistribution, altered lipid levels and insulin resistance are being described. The aim of the study was to assess Nutritional status in HIV-infected children and adolescents.

Methods: Cross sectional study. A sample of 31 HIV-infected children and adolescents was assessed based on anthropometry (weight, height, body mass index (BMI), triceps skinfolds and upper arm circumference), body composition obtained by electrical bioimpedance and expressed as fat mass index (FMI) and lean body mass (LBM); dietary intake (recall 24 hours) and HRQoL (Kidscreen 27). Statistical analysis IBM® SPSS® v.25.

Results: Z-scores of BMI: 25% overweight and 7,1% obese. Dietary intake of vitamin A, D, E, folate, iron, calcium, potassium, magnesium, fiber, zinc, sodium, sugar, protein, energy sodium and sugar do not correspond to DRI's. Differences by gender were found in physical well-being ($p=0,003$) and psychological well-being ($p=0,046$), with males being associated with better well-being. Higher BMI z-score values were associated with lower values of resistance, reactance and fiber intake.

Conclusions: Children's and adolescents are now living with HIV as a chronic disease, which is related with an increased risk of cardiovascular disease (CVD) that has been shown to be associated with unhealthy dietary patterns. Nutritional intervention is necessary to optimize health status, including the dietary intake of macronutrients and micronutrients, BMI z-score and ensure a good quality of life.

E-Poster Viewing: Childhood & Adolescence

ADVANCING CHILDHOOD DEVELOPMENT AMONG VULNERABLE GROUPS THROUGH AN INTEGRATED NUTRITION-EMPOWERMENT MODEL: A SOUTH AFRICAN REGIONAL CASE STUDY

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Background and aims

In South Africa, ca. 15% of children under the age of 6 years have been reported as stunted or chronically malnourished. The current paper describes and investigates an integrated 4-level strategy focusing on community upliftment, empowerment, nutrition and transformation piloted in selected areas of the Eastern Cape Province of South Africa

Methods

The study follows a mixed-method approach by collecting case-study data through observations, interviews and focus groups during the roll-out of a community nutrition program by a prominent South African enterprise during a six-month period from May-December 2018. Feedback is primarily provided through narratives and descriptive statistics.

Results

Key observations underline a general lack of understanding of malnutrition and its effects among community and a mindset favoring cost. Monitoring of growth abnormalities, the role of traditional health services, secondary selling, unavailability of clean water and misinterpretation of labeling and preparation instructions were furthermore reported

Conclusions and Recommendations

The utilization of NGOs to fast-track distribution of products and knowledge, respect for unique cultures and customs in targeted communities were emphasized. Educational material and approaches have shown to be of particular importance as well as shelf product shelf-life and quality. Sensitivity toward the particular cultural narrative in communities have emanated as a pivotal construct to ensure success. The case study reported on is put forward as a viable and sustainable strategy to enhance and support community nutrition in rural and marginal-urban areas.

E-Poster Viewing: Childhood & Adolescence

THE PERCEPTION AND EFFECTIVENESS OF AFRICAN HERBAL MEDICINE AS A NUTRITIONAL SUPPORT FOR ADOLESCENT HIV/ AIDS CLIENTS AT KATH HOSPITAL GHANA

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At the HIV/AIDS clinics at (KATH), patients are introduced to both orthodox pharmaceutical medications and alternative herbal medications. The clinics use plant parts and animal parts as a nutritional support in the management of HIV/AIDS diseases.

Facts

The prevalent rate of malnutrition related death among HIV infected patients in Ghana has increased drastically to 66% among adolescent and university students for the past 3 years.

Aims and Objectives

This research was geared toward how adolescent patients perceive and understand the effectiveness of alternative herbal and traditional herbs medicines to promote the nutritional status of clients suffering from HIV/AIDS in our sub region.

Methods

A cross sectional study was conducted in January --August, 2018 among 920 adolescent Ghanaian clients suffering from HIV/AIDS. Both interviews and self-administered structured questionnaire were used to collect information.

Analysis

Analysis skill of SPSS was used. Out of 950 distributed questionnaires, 920 clients returned with a response rate of about 97.0%. Majority of the participants (70%) were in the age group below 25years and (30%) above 26 years.

Recommendations

The study recommends the manufacturing of alternative and traditional medicine to support the nutritional status of our clients.

Conclusion

Clients were fully aware of different kinds of nutritional support medications. However, health care givers make little education on the nutrients supplements in the management of HIV/AIDS.

E-Poster Viewing: Childhood & Adolescence

ASSESSMENT OF PSYCHOSOCIAL DEVELOPMENT IN BREASTFED CHILDREN AT 6 YEARS OF AGE

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Background: Breast-fed children develop fewer psychological, behavioral and learning problems as they grow older

Aim: To determine the relationship between the duration of breastfeeding and psychosocial development in children at 6 years of age

Participants and methods: A cross sectional study conducted over 200 children, who were at 6 years old age and admitted to an educational institution. Children with chronic mental or motor disability, chronic medical diseases, psychic diseases and children suffering from congenital anomalies were excluded from the study. Overall breastfeeding duration and exclusive breastfeeding were reported. Assessment of child personal history and maternal personal and sociodemographic history followed by assessment of intelligence level using Pictorial Intelligence Test (prepared by/Ahmed Zaki Saleh, 1987) and Strength and difficulties questionnaire (SDQ) that included 5 scales (Emotional symptoms, conduct problems, hyperactivity, Peer relationship problems, Prosocial behavior)

Results: Caesarean sections and birth order affect exclusivity and duration of breastfeeding. Children with exclusive breastfeeding had a better academic achievement and IQ than artificially fed. Children with exclusive breastfeeding had less emotional symptoms and total difficulties than all other groups. A significant negative correlation between breastfeeding duration and emotional symptoms, conduct symptoms and total difficulties but a significant positive correlation with prosocial behavior.

Conclusion: Breastfeeding improves psychological health of children with a positive effect on children's intelligence and academic achievement.

Keywords: Breastfeeding; intelligence; psychological; behavior

E-Poster Viewing: Childhood & Adolescence

FOOD WASTE QUANTIFICATION IN A SCHOOL MASS CATERING UNIT

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Introduction: food waste entails ethical, economical, environmental and nutritional implications, mostly at a school level. A collective feeding unit should guarantee the supply of secure and nutritionally appropriated meals and the benefits of its ingestion may not always be guaranteed if the inherent waste proves to be too high. To evaluate the food waste resulting from a lunch in a mass catering unit from the school sector. Materials and methods: an observational, cross-sectional study with an impact on the analysis of the food waste of meals of students from high school, during a twelve days period study. For the quantification its level of leftover and remain, the physical method of weighing and visual estimate was considered. Results: it was verified a waste of 35,12% concerning to the 2840 served meals (soup and dish), corresponding to an index of leftover and remain of 8,13% and 29,38% respectively. The association between the protein component and the waste generated determined a remain index of 35,80% for the fish and 27,54% for the meat, without statistical significance. The soup included a leftover and remain index of about 20,14%-23,58%, respectively, without a relevant association with the consistency presented. The association between the number of meals served and the protein component wasn't meaningful enough to establish a relationship. Conclusions: it is imminent the need to implement a system that controls food waste, with the active participation of a nutritionist that ensures its effectiveness and develops awareness actions with the school community for the current problem.

E-Poster Viewing: Childhood & Adolescence

POTATOES CHIPS: WHAT REMAINS AFTER INDUSTRIAL PROCESS - IMPLICATIONS TO ADOLESCENTS' HEALTH

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Adolescents the major consumers of potato chips according last food consumption survey in Portugal. With this work, we intend to understand the technological process that goes from the potato "in natura" to potato chips, and if during this process there are nutritional losses. We aim to understand if this product is interesting from a nutritional point of view and suitable for a healthy eating pattern. Industries were contacted to characterize technological process and scientific research was conducted in online platforms since 2002. At the beginning of the process, the potatoes undergo a process of selection, washing, peeling, selection by calibre, cutting according to the desired form, drying of excess water through air, frying, convection to remove excess oil, inspection of irregularities in the potatoes after frying, flavoring with salt and flavors, so that their flavor and consistency are more appealing, packing and storage. The potatoes chips go through a process of frying at high temperature, 180°C, that has the ability to decrease the amount of water in the food suffering chemical reactions that release acrylamide, a substance harmful to health. Potato chips have no nutritional benefit attending unsaturated fatty acids, high energy density, trans fatty acids and high salt content, being an unhealthy option to consider in adolescents food pattern.

E-Poster Viewing: Childhood & Adolescence

MATERNAL AND PATERNAL FACTORS RELATED TO CHILD HAPPINESS IN SELECTED URBAN AND RURAL AREAS OF INDONESIA

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This cross-sectional study aims to explore factors related to child happiness, focusing more to parents' involvements. Pre-defined metro cities (Medan, Jakarta and Makassar), and its two-tier cities (Balige-Toba, Cirebon and Makale-Tanatoraja) were selected to represent urban and rural. A 296 apparently healthy children aged 2-5 years old and their parents were recruited in March-April 2018. Child happiness and its related factors (nutritional status, child appetite, quality of sleep, child bonding and care, mothers and fathers), were assessed by using standard measures and validated questionnaires. Chi-square test, unpaired-t and / or Mann-Whitney test, and Principal Component Analyzes were applied. The study found 10% and 12% of children were not feeling every day and/or almost every day. However, the perfect score of children-mothers bonding and good score of children-father bonding were found when they were doing together activities. Nutritional status of the children was 9% underweight, 12% stunted and 5% wasted. The average of appetite score was 7.4 (range 0-10) and 12% of the children experienced suspected and/or sleep disturbance. Factors associates for child happiness were mothers' effort to make child feeling happy/energetic (mothers' perspective), and child enjoyed school activities and having quality time and bonding together with parents (fathers' perspective). Child happiness relates to many important factors including maternal and paternal factors to support child potential growth and development.

E-Poster Viewing: Childhood & Adolescence

ESTABLISHING CROSS-SECTIONAL REFERENCE VALUES OF WEIGHT AND ITS STATUS AMONG THE KHASI TRIBAL ADOLESCENT GIRLS OF MEGHALAYA, INDIA

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Growth charts are a valuable reference tool in clinical settings for assessing and monitoring individual growth. A cohort of 490 Khasi adolescent girls aged 11+ to 17+ years in the state of Meghalaya were randomly selected from two towns- Nongpoh, and Shillong, in two time periods, March–April 2003 and June 2008 respectively. Percentile values for weight were derived as follows: 3rd percentile, –1.881; 5th percentile, –1.645; 10th percentile, –1.282; 25th percentile, –0.674; 50th percentile, 0.0; 75th percentile, 0.674; 85th percentile, 1.036; 90th percentile, 1.282; 95th percentile, 1.645; and 97th percentile, 1.881 (Cole 1990). Required weight centile curve was defined in terms of the L, M, and S curves as follows: $C100'a(t) = M(t) [1 + L(t) S(t) Z'a]1/L(t)$. The z-score values like for -3 to +3 after WHO MGRS Group (2006) based on their same values were calculated to assess their health status, and to facilitate to assess their health status of a population of similar nature. In this paper an attempt has been made to explore the establishing weight reference and evaluate their health status by weight-for-age Z score with reference to its own reference values corresponding to the respective ages; and WHO (2007)-, Indian-, and CDC references. The girls in the lower range of age group suffer from thinness in higher proportion while evaluated based on WHO (2007)-, Indian-, and CDC references than with its own reference values.

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E-Poster Viewing: Childhood & Adolescence

VITAMIN D STATUS OF SCHOOLCHILDREN (7-9Y) LIVING IN RURAL REGION OF MOROCCO

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Background and aim: Vitamin D deficiency has an effect on the growth and development of children and also has a major implication on adult health. In Morocco, studies were focused in adults rather than children in whom the lack of information is a serious limitation. Thus, the objective of our study is to determine vitamin D status in Moroccan schoolchildren.

Methods: A total of 239 Children in age school (7-9 years old) were enrolled in the study. Anthropometric characteristics were measured and fasting blood samples were taken to assess vitamin D as 25(OH)D concentration by HPLC.

Results: The mean of the weight and the height was 22.9±2.9 kg and 121.6±5.5 cm respectively. The prevalence of vitamin D deficiency was equal to 25.9% (25(OH)D < 30 nmol/L) while 24.3% were insufficient, a significant difference was recorded between boys and girls (p=0.007).

Conclusions: This study showed that vitamin D inadequacy is prevalent among the school children living in a rural area of Morocco. Those children need appropriate interventions to address eventual risk of poor vitamin D status consequences.

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E-Poster Viewing: Childhood & Adolescence

CHANGING VITAMIN D STATUS OF CHILDREN VISITING A TERTIARY CARE HOSPITAL IN NORTH INDIAN PROVINCE OF PUNJAB

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Introduction: Hypovitaminosis D is common in children in developing countries. Though majority of population in India lives in areas receiving ample sunlight throughout the year, vitamin D deficiency is very common. However except for a few studies data is scarce. Hence this study was undertaken to know the incidence of vitamin D deficiency in Punjabi children.

Material & Methods: This was a retrospective study in which case records of all the children whose 25-(OH)D levels were sent from pediatric OPD of Dayanand medical college and hospital between Jan 2011 and Jan 2015 were analysed. 25(OH)D levels were categorized as deficient if <20ng/ml, insufficient if between 20-30 ng/ml, sufficient if between 30-60 ng/ml and toxic if >70 ng/ml. Values less than 4 ng/ml were categorized as severe deficiency.

Results: More of male children underwent vitamin D level checkup as compared to female children. Number of patients has kept on increasing in each age group (table 1). A shift of vitamin D levels was observed over the time from deficient to insufficient to sufficient levels (table 2). No. Of children with severely deficient vitamin D levels has also shown a decreasing trend over these four years (table 3). Children with high levels of Vitamin D (>70 ng/ml) has also increased over the years (table 4). Vitamin D deficiency has shown a decreasing trend over these years (table 5).

Conclusions: Widespread subclinical and pre rachitic vitamin D deficiency in children should be diagnosed by serum 25(OH)D levels and these levels should be maintained above 20 ng/dl to obtain optimal health benefits.

E-Poster Viewing: Childhood & Adolescence

SOCIO-ECONOMIC DETERMINANTS OF CHILDHOOD MORTALITY: A STUDY ON ORAON LABOURERS OF ALIPURDUAR DISTRICT, WEST BENGAL, INDIA

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Background: Fertility and mortality have been considered as key health indicators of a population. Childhood and adolescent death percentages are still very high in developing countries like India. Several confounding factors are responsible for these early deaths.

Aim: Present study tried to find out the factors those are associated with childhood mortalities (deaths of under-five).

Materials and Methods: Cross-sectional data have been collected on fertility, mortality and socio-economic characteristics from ever-married Oraon women. Descriptive statistics was done. Cox proportional hazard analysis was carried out to find out the confounding factors of fertility and mortality of the population.

Results: The study found that both fertility and mortality rates of the population was high. The hazards analysis indicates that age, marriage age, educational status, occupations of women were the most influencing factors of childhood mortality rates.

Conclusion: The present study indicates that several socio-economic factors are influencing the health of women and thereby controlling the under-five mortality rates. Educational qualification of women is one of the most influencing confounding factors that had a significant impact on mortality rates of Oraon labourers.

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E-Poster Viewing: Childhood & Adolescence

DIETARY CHARACTERISTICS AND DISEASE SEVERITY AMONG SICKLE CELL CHILDREN IN ACCRA, GHANA

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Background: Nutrition is often compromised in sickle cell disease (SCD) especially when coupled with severity of the disease. This is of grave concern since it affects nutritional status. The aim of the study was to assess dietary intake and its relationship with disease severity among sickle cell children.

Methods: This was a cross sectional study carried out in 120 sickle cell children aged 3-12 years at the pediatric outpatient department of Princess Marie Louise hospital in Ghana. Children with the help of their parents were asked to recall all foods and drinks consumed for the past 24 hrs preceding the survey. Disease severity was assessed based on the past one year using clinical outcomes such as past admission, recurrent painful episodes and haemoglobin levels. Anthropometric measurements were taken to assess malnutrition.

Results: More than one-third (38%) of the children were malnourished. Nutrient intakes were below recommendations especially calcium and the antioxidant nutrients, vitamin C and E. Low nutrient intakes was significantly associated with severity of SCD among the children ($p < 0.03$).

Conclusion: Malnutrition is associated with severity of sickle cell disease among affected children. There is the need to provide specific dietary recommendations for sickle cell patients due to increased nutrient requirements. Dietary management should focus much on calcium-rich foods and antioxidants nutrients particularly vitamin C and E to improve nutritional status.

E-Poster Viewing: Childhood & Adolescence

IMPACT OF A NUTRITIONAL INTERVENTION ON FOOD CONSUMPTION AND ADHERENCE TO THE MEDITERRANEAN DIET IN ATHLETES ADOLESCENTS

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Background and aims. Several studies have indicated that young athletes do not follow the nutritional advice, leading to energy and nutrients inadequacies in their diet. To evaluate the impact of a nutritional intervention (NI) on food consumption and adherence to the Mediterranean diet (MD), in athletes adolescents.

Methods. Eighty athletes aged 11 to 17 years attending school in Oran city. Anthropometric parameters and eating habits were evaluated. The NI program, for 6 months, was based on a typical meal for young athletes, approaching MD. Food consumption by a 24h recall, and Kidmed index were determined before and after NI.

Results. The body mass index of athletes was 21 ± 3 (kg/m²). Total energy intake was 2369 ± 581 vs 2601 ± 416 Kcal/d after NI. Protein intake increased from 81 to 90g/d, that of carbohydrates was high after NI (319 ± 71 vs 365 ± 72 g/d). Fiber intake increased from 20 to 24g/d. A poor MD adherence was found in 61% of athletes, this value was decreased to 21% after NI. Breakfast was absent in 14% of athletes vs 10%. Fast-foods were consumed at least once a week or more by 84% of athletes vs 79% after NI. Sweets consumption was noted in the majority of athletes (93% vs 89%). In addition, regular consumption of fish was found in 39% vs 93% after NI. Having a 2nd fruit was present daily in 33% vs 65% after NI.

Conclusion. Athletes adolescents present a poor adherence to the Mediterranean diet, and nutritional intervention seems to improve adherence score and their food consumption.

E-Poster Viewing: Childhood & Adolescence

IMPACT OF NUTRITIONAL EDUCATION AND INTERVENTION ON DIETARY AND PHYSICAL BEHAVIORS, AND CARDIOMETABOLIC RISK IN SCHOLAR ALGERIAN CHILDREN

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Background and aims. Bad eating habits, physical activity low level and sedentary behavior have been associated with increased dyslipidemia, abdominal adiposity and overall cardiometabolic risk in childhood. The impact of nutritional education and intervention was evaluated on dietary habits, physical activity and cardiometabolic risk in school children.

Methods. Children (n=222), aged 7-10 years, received questionnaires on food habits and physical activity. Daily energy intake (DEI) was estimated using 24 hours recall, followed by 3 days recall and record. Children were instructed to follow-up nutritional advices at d0, d30, d90 and d180. Blood pressure and biochemical parameters were measured at d0 and d180.

Results. Children presented normal weight (NW) 63%, 19% overweight (OW), 9% obese (O) and 10% thinness (T). At d0. DEI (Kcal/d) represented 2008, 1780., 2211, and 2567 in NW, T, OW and O, respectively, while daily energy expenditure (DEE) was 1898, 1794, 1807 and 1989 Kcal/d respectively. There was no difference in proteins, lipids and carbohydrates intakes between NW, T and OW. High lipids and low carbohydrates consumption were noted in O vs NW. Blood pressure and glycemia were higher in OW and O groups than NW, whereas, no difference was observed in other parameters. At d30, decreased DEI and increases DEE were noted in NW, OW, and O, and remained unchanged at d90 and d180. Low values of total cholesterol, C-LDL, triacylglycerols and uric acid were noted in OW and O at d180.

Conclusion: Nutritional education can change positively sedentary and eating behavior, and lipid profile.

E-Poster Viewing: Childhood & Adolescence

EFFECT OF GLUTEN FREE DIET ON WEIGHT, HEIGHT, AND BMI IN RECENTLY DIAGNOSED CELIAC CHILDREN

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Background and aims

To assess the evolution of nutritional status after starting gluten-free diet (FGD) in recently diagnosed celiac children.

Methods

Seventy two patients (47 girls, 25 boys) diagnosed with celiac disease (CD) between September 2016 and June 2018, were prospectively followed up. CD diagnosis was established in presence of villous atrophy after duodenal biopsy and positive antitranglutaminase and/or antiendomysium autoantibodies

Weight/age, height/age and BMI were assessed every 3 months and expressed in SDS. WHO Child Growth Standards were used as reference.

Hemoglobin level, mean corpuscular volume (MCV), and serum calcium level, were determined at diagnosis of CD and after 6 month of GFD.

Results

Mean age at diagnosis of CD was: $5, 4 \pm 4, 1$ y.

mean weight/age, height/age and BMI at diagnosis of CD and after respectively 3, 6, 9 and 12 months of GFD are shown in table 1.

Duration of GFD \ Anthropometric parameters	At starting Of GFD	3 months	6 months	9 months	12 months
Weight/age (SDS)	-1,27	-0,85	-0,75	-0,68	-0,37
Height/age (SDS)	-1,46	-1,47	-1,24	-1,17	-0,94
BMI (SDS)	-0,79	-0,19	-0,26	-0,47	-0,20

Table 1: Evolution of anthropometric parameters on GFD (GFD : gluten free diet)

Mean hemoglobin was $10,68 \pm 2,01$ g/l at diagnostic and $10,83 \pm 1,69$ g/l after 6 months of GFD. Mean MCV was: $74,01 \pm 13,05$ μ 3 at diagnosis, and $71,65 \pm 13,44$ μ 3 after 6 months. Serum calcium was $86,93 \pm 16,0$ mg/l at diagnosis and $89,1 \pm 10,93$ mg/l after 6 months.

Conclusions

Our study showed improvement of BMI but absence of statural catch-up after 1 y of GFD. There was not significant improvement of hemoglobin and MCV on GFD only, which could be suggestive of iron supplementation.

E-Poster Viewing: Childhood & Adolescence

COEXISTANCE OF DIABETES MELLITUS TYPE 1 AND CELIAC DISEASE: FRIENDS OR ENEMIES?

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Introduction:Type 1 diabetes mellitus (T1DM) and celiac disease (CD) are autoimmune diseases and have similar genetic patterns. Increased prevalence rates of celiac disease (CD) are described among individuals with type 1 diabetes mellitus (T1DM).

The significant increase of diabetic associated morbidity and mortality, emphasize the importance of early diagnosis of CD and appropriate treatment with gluten-free diet. In patients with both T1DM and CD, dietary compliance can be challenging, adherence to the GFD among CD patients with diabetes ranges from 25-78%

Case reports:The authors describe clinical serological and genetic picture of 4 patients who were diagnosed with CD and T1DM. The clinical presentation of CD was diverse: in one case CD preceded T1DM, in other one the diagnosis of CD was concurrently with T1DM, in the others CD was diagnosed after several years of onset of T1DM. They emphasize the importance of serological screening for other autoimmune condition in children with T1DM, regarding the increasing risk of morbidity and mortality due to association of both autoimmune disease. In T1DM, undiagnosed CD may be associated with unstable blood glucose levels, a greater risk of hypoglycemia, and increased risk of retinopathy and nephropathy. Furthermore, the authors discuss about the beneficial role of GFD in improving weight, ferritin level, depression scores and quality of life in these patients.

Discussion: Prevalence of CD among children with T1DM is significantly higher than in non diabetic children. In patients with both T1DM and CD, dietary compliance can be challenging and these patients requires specialized follow-up and dietary counseling.

E-Poster Viewing: Childhood & Adolescence

GESTATIONAL DIABETES AND OFFSPRING'S SUSTAINED ATTENTION AT 6 YEARS OLD

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Gestational diabetes (GDM) is important not only for mother's health, but also because it seems to program the offspring having higher risk to develop neurologic problems in the future. We aimed to evaluate the impact of maternal GDM on children's attention at 6 years of age.

Methods: 170 children from the PREOBE Follow-up study were re-visited at 6 years old. 66 were born to healthy normal weight pregnant women (NW), 32 to overweight, 25 to obese and 47 born to GDM mothers. From those born to GDM mothers, 18 were born to NW-GDM, 15 to overweight-GDM and 14 to obese-GDM pregnant women. Children's sustained and selective attention was assessed by the Continuous Performance Test (CPT).

Results: Children born to GDM mothers have higher number of commissions than those born to NW mothers ($p < 0,001$, $\text{padj.} = 0,037$) and to non-GDM mothers (altogether) ($p = 0,019$, $\text{padj.} = 0,003$ by maternal age, weight gained during pregnancy and pre-gestational BMI); GDM children showed lower attention index than children born to non-GDM ($p = 0,033$). Similar commissions' results were demonstrated when comparing the 3 GDM groups respect to non-GDM normal weight mothers ($p < 0,001$, $\text{padj.} = 0,031$ by maternal age and weight gain during pregnancy).

Conclusion: Maternal GDM seems to predispose their offspring to develop attention problems (impulsivity) at 6 years old. Actions to prevent/control GDM will help to decrease prevalence of later children behavior problems.

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E-Poster Viewing: Childhood & Adolescence

FACTORS THAT INFLUENCE STUNTING IN CHILDREN AGED 6 – 59 MONTHS IN KAPIRI-MPOSHI, DISTRICT, CENTRAL PROVINCE, ZAMBIA

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Background

Stunting has remained a challenge in Zambia. Poor nutrition in early life of children below the age five has a great effect on stunting. This paper looked at other factors that can influence stunting among children aged 6 – 59 months.

Methods

A cross-sectional survey was conducted in Kapiri-Mposhi district among 100 children aged 6 – 59 months. This study was part of the macro study Implementation of Nutrition-sensitive Agriculture in the Central Province of Zambia.” We looked at four factors, which included, the Mothers age, level of mother’s education, Family size and marital status. These factors were compared to the nutrition status of children (Stunting).

Results

We used descriptive and binary logistic regression analysis to assess the factors that influence stunting. The prevalence of stunting was found to be 21%, wasting was 9% and underweight was 2%. This study found that Children who were born from teenage mothers were likely to be stunted ($P<0.02$) than those from older mothers. In addition, we also found that there was a significant relationship between family size and stunting ($P<0.01$). Most families that had over eight member were likely to have stunted children than those we had less. This study did not find any association between the mother’s level of education or marital status and stunting in Kapiri-Mposhi district.

Conclusion

Family size and mother’s age are associated to stunting in Kapiri-Mposhi district.

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Conflict of Interest

I have no conflict of interest to report in relation to this presentation.

THE SHORT-TERM EFFECTS OF GONADOTROPIN-RELEASING HORMONE ANALOGS ON WEIGHT-STATUS, EATING HABITS AND PSYCHOLOGICAL PARAMETERS IN GIRLS WITH PRECOCIOUS/EARLY-FAST PUBERTY: A PROSPECTIVE OBSERVATIONAL STUDY

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Background and aims: We aimed to evaluate the short-term effects of gonadotropin-releasing hormone analogs (GnRHa) on anthropometric measurements, adiposity, eating-habits and psychological parameters in girls with precocious/early-fast puberty.

Methods: Sixty-one girls (8.5 ± 0.9 years) were recruited. Thirty-four precocious/early-fast puberty (PP/EFP) and 27 pre-puberty girls served as controls. Outcome measures assessed at baseline and after 4-months (GnRHa-treatment in precocious/early-fast puberty group) included anthropometric and body-fat measurements, 3-day food-diaries, Child Eating-Behaviour-Questionnaire, Quality-of-life, self-esteem, body-image and state-anxiety questionnaires.

Results: At baseline, girls with PP/EFP had significantly higher weight-SDS, BMI-SDS, body surface area (BSA), waist circumference and fat-percentage as compared to controls. After 4-months, significant increases in BMI-SDS ($P=0.005$), body-fat percentage ($P<0.001$) and carbohydrate intake ($P=0.021$), which was reflected as an increase of 173 Kcal/day were found only in the PP/EFP group. Eating behavior (CEBQ) was similar between groups and did not change. After 4-months no between group differences were observed in the changes of quality-of-life, self-esteem and state-anxiety questionnaires. Frequency of girls wanting to be thinner was reported in the PP/EFP group as compared to controls after 4-months only (65.5% vs. 19.0%, respectively, $P=0.005$).

Conclusions: Our findings suggest that short-term GnRHa treatment in girls with precocious/early-fast puberty causes an increase in energy intake, mainly from carbohydrate consumption. The increase in caloric intake may contribute to the increase in weight status and body adiposity. Interestingly, psychological consequences of early puberty in girls, at least in the short term, are encouraging with the exception for a desire to be thinner.

E-Poster Viewing: Childhood & Adolescence

PEDIATRIC SCURVY IN THAILAND: A CASE SERIES AT SIRIRAJ HOSPITAL, MAHIDOL UNIVERSITY

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Background and aims: Scurvy is still reported worldwide. We studied its manifestations in Thai children.

Methods: This study was conducted at Siriraj Hospital, Mahidol University. Medical and radiographic records of 1- to 13-year-old children with scurvy during 2000 to 2017 were analyzed. Subjects were categorized into: (i) symptomatic vs. asymptomatic, and (ii) diagnosis in years 2000-2008 vs. years 2009-2017

Results: Forty subjects (median age 3.6 years) were enrolled, 34 (85%) symptomatic and 6 (15%) asymptomatic. Their nutritional status were 55% normal, 25% wasting, and 20% overweight or obesity. They ate little fruits and vegetables, and drank large amount of UHT cow's milk and soy drink. In years 2009-2017 group, 24 (out of 28) had symptoms, which were indistinguishable from years 2000-2007 (10 of 12). In years 2009-2017 group, one subject had unusual manifestations of convulsion and epidural hemorrhage. Roentgenography of lower extremities of the symptomatic group was performed in 26 out of 34 subjects; 25 showed abnormal results, compared to 1 in the asymptomatic group ($P=0.019$). Serum vitamin C levels were analyzed in 23 of the symptomatic group and 3 (out of 6) of the asymptomatic group; prevalence of abnormal results were not different. All subjects without serum vitamin C tests showed abnormal x-ray findings too. After treatment, gum and skin bleeding resolved within 7-8 days, and difficult walking resolved within 20 days. Fruit and vegetable consumption was improved ($P=0.000$).

Conclusions: Half of 40 pediatric scurvy cases during 18 years had normal nutritional status. Favorable outcomes were achieved after treatment.

E-Poster Viewing: Childhood & Adolescence

FACTORS INFLUENCING THE COGNITIVE FUNCTION OF STUNTED ADOLESCENTS AGED 10-12 YEARS IN DISTRICT PANGANDARAN: A QUALITATIVE STUDY OF UNIVERSITAS PADJADJARAN COMMUNITY SERVICE

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Indonesia is the fifth worldwide rank of nations with a high number of stunted children (30-39%). In Pangandaran District, 45 of 144 elementary school children were stunted. Short stature or stunted is associated to decrease of cognitive function. This community service study was conducted to investigate the factors influencing the cognitive function of 10-12 years old stunted adolescents in Pangandaran District.

Interviews were conducted on the parents of 10-12 years old stunted adolescents with cognitive interference in Cimerak, Pangandaran District, West Java between September to October 2017. A qualitative method by focused group discussion was done by trained personnel from the Community Health Department.

Ten of twenty parents of stunted adolescents with cognitive interference were included in the interview consisted of seven mothers, one father, one aunt and one grandmother. The result of the discussion revealed most of the adolescents were normally born and the short stature was said to be the familial factor. The parents stated that vegetables and fruits were rarely consumed and stated that their children had poor appetites.

Nutritional habits were the main factor influencing the cognitive problems of the stunted adolescents.

E-Poster Viewing: Childhood & Adolescence

THE NUTRITIONAL STATUS OF CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY

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Background and Aims – To evaluate the nutritional status of children and adolescents with cerebral palsy (CP) depending on the caloric intake.

Methods. The study involved 42 patients aged 1 to 17 years hospitalized for cerebral palsy. Their physical development was assessed using the WHO AnthroPlus software. The assessment was performed according to WHO standards: Overweight - BMI for-age $>+1SD$, Obesity – BMI for-age $>+2SD$, Thinness – BMI for-age $<-2SD$, Stunting – Height-for-age $<-2SD$.

Results. Normal physical development was reported in 25 (59.5%) patients, Stunting – in 9 (21.4%), Thinness – in 3 (7.1%), Overweight and Obesity – in 5 (11.9%) patients with CP. The caloric intake in patients with normal physical development was 75.9 ± 5.5 kcal/kg a day, in children with Stunting – 92.9 ± 10.3 , in children with Thinness – 90.3 ± 9.2 , in children with Overweight and Obesity – 121.5 ± 17.9 kcal/kg/day ($p=0.002$). Difficulties with feeding (dysphagia, intake of only liquid and semiliquid food etc.) was reported in 9 (36.0%) children with normal physical development, 9 (100.0%) patients with Stunting ($p<0.001$), 3 (100.0%) – with Thinness ($p<0.05$), 1 (20.0%) patient with Overweight. In the population of children above 2 years old, the patients who were able to eat unassisted included 23 (92.0%) children with normal physical development, 3 (33.3%) children with stunting ($p<0.001$) and 2 (66.7%) children with thinness.

Conclusions. One in five children or adolescents with CP suffers from linear growth retardation associated with feeding difficulties and inability to take food unassisted. 11.9% of patients with CP suffer from overweight associated with increased caloric intake.

E-Poster Viewing: Childhood & Adolescence

WEIGHT-FOR – AGE PERCENTILES AND Z-SCORES FOR ADOLESCENTS AGED 10-15YEARS: AN APPLICATION OF THE LMS CHARTMAKER METHOD

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Monitoring adolescent weight from routine weight measurements at health centres can be effective for screening. Currently there is no weight monitoring tool for the 10 – 15 years age group for use in under-resourced health centres in many developing countries where body mass index determination is not practical. The aim was to demonstrate application of the LMS chartmaker method to develop a weight-for-age monitoring charts, z-scores for adolescents 10-15 years old and a comparison with the CDC 2000 and WHO 2007 references. We used sample data from a large cross-sectional study of 1114 black South African North-West province adolescents. The LMS chartmaker® Light was used to develop growth charts and determination of z-scores. Boys and Girls charts were developed with 7 percentiles. At the 3rd percentile for boys and girls our charts were lower than either the CDC 2000 or the WHO 2007. At the 97th percentile for boys, our charts were lower than the CDC 2000 and WHO 2007. For girls it was higher than the WHO 2007 by 1 unit and lower than the CDC 2000 by 5 units. Our median z-scores both boys and girls were lower than the medians of the CDC 2000 and WHO 2007 references. Our study can directly inform decisions on the best reference for use by South African medical professionals for anthropometric screening of adolescent's. Making use of the LMS chartmaker method can provide alternative charts that can be developed using local data and applied in under-resourced settings or other circumstances where it's practical.

E-Poster Viewing: Childhood & Adolescence

TIMING OF PUBERTAL GROWTH SPURT AND PREDICTED ADULT HEIGHT IN BOYS IN RELATION TO BMI IN PREPUBERTAL PERIOD

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The aim of the study was to investigate whether the BMI at the age of 8 years is associated with early and late markers of adolescent growth spurt such as: age at take-off (ATO), age at peak height velocity (APHV), velocity at take-off (VTO), peak height velocity (PHV), growth spurt duration (Δ APHV-ATO), and predicted adult height (PAH) in boys.

This longitudinal study included 133 boys for whom body mass and body height measurements were obtained in 2, 4, 6, 8, 10 years of age. BMI was calculated on the basis of measurements obtained at 8 years of age. The structural growth model JPA2 available in the AUXAL SSI 3.1 program was used to assess selected markers of growth spurt.

A significant negative correlation has been found between BMI and a) APHV ($r = -0.23$; $p < 0.05$), and b) PHV ($r = -0.22$; $p < 0.05$), positive correlation has been shown between BMI and VTO ($r = 0.24$). There were no relationship between BMI in prepubertal period and ATO, as well as PAH. BMI differed the age at PHV ($H = 22.53$; $p < 0.001$). The APHV was lowest in obese and overweight boys (APHV = 13.54 y). The latest PHV was observed in underweight boys (PHV = 13.92). BMI also affected the VTO ($H = 16.42$, $p < 0.001$) and PHV ($H = 10.6$, $p = 0.034$).

Prepubertal BMI in boys may not be critical for the initiation of the pubertal growth spurt but affects the progression of pubertal development resulting in earlier PHV, and does not affect final height.

E-Poster Viewing: Childhood & Adolescence

ADHERENCE TO THE MEDITERRANEAN DIET IN OASIS SCHOLAR CHILDREN AND ITS COLORATION

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Background:

The Mediterranean diet (MedDiet) is known as one of the healthiest diets. The aim of this nutritional survey was to evaluate correspondence of eating habits of scholars to MedDiet and analysed socio-economic factors and body weight with adherence to MedDiet, in oasis of Tafilalet, Southeastern Morocco.

Methods:

Data were collected by a cross-sectional survey in urban and rural regions (n=1260). Socio-economic characteristics and anthropometric measurements were obtained. MedDiet adherence was evaluated by KIDMED index.

Results:

The main age was 9.82 ± 2.11 years old. 50.3% were girls and 61.7 % were from urban areas. Poor adherence to MedDiet was found in 2.1% of scholars, average in 57.90% and good in 40.00%. Urban region showed a higher percentage of poor adherence to MedDiet vs rural region (40.14 %). People how speak the Amazigh language were more likely to have the higher rates of good adherence and the lower rates in poor adherence. Low incomes were more likely to have a good adherence to the MedDiet. Children having a fulltime in schools tending were more often low MedDiet adherence. Low levels of parental education were less likely to have higher percentages of poor adherence. High consumption of Mediterranean food (MF) was associated positively with normal weight.

Conclusion:

Low and average adherence rates to the MedDiet were observed in our population, even that were lower than national rates. Interventions and strategies should be taken for promotion of healthy eating habits in scholar children.

E-Poster Viewing: Childhood & Adolescence

NUTRITIONAL STATUS AND PHYSICAL ACTIVITY OF THE UNIVERSITY GIRLS

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Background:

The aim of this study was to describe the nutritional status and the physical activity of the university girls from two different regions Errachidia and Kenitra.

Methods:

A cross-sectional survey was carried out among 709 individuals (404 girls from Errachidia and 305 girls from Kenitra). The sample selection was from the university girls. Socio-demographic characteristics and levels of physical activity were collected by questionnaire. Anthropometric measurements (weight, height, waist and hip circumferences), systolic/diastolic blood pressure were performed.

Results:

The majority of the population has a normal-weight, low prevalence of obesity in both regions (Errachidia 0.74%, Kenitra=1%), while the thinness and the overweight are important. concerning physical activity (PA), 26.46% of girls in Errachidia and 29.5% of girls in Kenitra had a regularly practicing, 21.06 % in Errachidia vs 25.9% in Kenitra those declaring an irregular PA. Analysis showed a strong and a positive correlation between percentage of obesity/overweight and low physical activity ($p=0.01$).

Conclusion:

This study suggest that the university girls know changes in lifestyle those affected in their eating behavior.

E-Poster Viewing: Childhood & Adolescence

THE CORPULENCE OF THE SCHOOLED ADOLESCENTS OF BOUDNIB MOROCCO

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Introduction:

The assessment of the corpulence of an individual or population is important in order to detect anomalies and linked diseases.

Objective:

The purpose of the present work was to describe body weight of adolescents and determination of the prevalence of obesity and underweight.

Methods:

We carried out a transversal survey using a questionnaire. The sample was fixed on 205 school-going adolescents in the city of Boudnib, aged 12 to 19 years, including 61 boys (29.7%) and 144 girls (70.2%). The prevalence of overweight and obesity has been defined based on the body mass index (BMI) which has been recommended by the WHO (2007).

Result:

The results obtained show that 77.16% of boys and 82.90% of girls have normal weight. Concerning the prevalence of overweight (including obesity) girls were more often high rates comparing with boys.

Conclusion:

The prevalence of obesity and overweight among adolescents remains low in the city of Boudnib comparing with national and international context

E-Poster Viewing: Childhood & Adolescence

PREVALENCE OF OVERWEIGHT AND OBESITY AMONG SUDANESE CHILDREN AND ADOLESCENTS

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Background Childhood obesity have increased dramatically during the past decades, both in developing and developed countries. The present study examined the prevalence of overweight and obesity among a sample of Sudanese children and adolescents as documented in two surveys that are conducted 30 years apart.

Methods Data for this study were obtained from two cross-sectional surveys of school children and adolescents done in 1982 and in 2012 in Kenana town, Sudan. A total of 27,840 primary and secondary school students aged 7–18 years were studied in 1982 and 27,900 were examined in 2012. Identical methods were used in the two surveys, but by different personnel from the department of pediatric, university of Khartoum, Sudan. Height and weight were measured and Body mass index (BMI) was computed for all participants. The BMI cut-off points recommended by the World Health Organization (WHO) were used to define overweight and obesity.

Results The prevalence of overweight and obesity has increased dramatically over the 30 years period that separates the two surveys (1982–2012). Using The WHO criteria, the prevalence of overweight and obesity in boys increased from 0.93% in 1982 to 15.50% in 2012; and for girls it is increased from 1.62% in 1982 to 12.88% in 2012.

Conclusion The prevalence of overweight and obesity among children and adolescents in central Sudan increased rapidly between 1982 and 2012. This huge increment is attributed to socio-economic factors and to the globalization and increased fast food consumption. Policy-makers and experts should pay more attention to the new tendency.

E-Poster Viewing: Childhood & Adolescence

BODY COMPOSITION OF SCHOOL AGE CHILDREN WITH FUNCTIONAL CONSTIPATION

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Background and aim: It has been argued whether diet affect constipation. This study aimed to assess the body composition, dietary intake and anthropometric measurements among school age children complaining of functional constipation.

Methods: The study included thirty Egyptian school age children who were diagnosed as having functional constipation according to Rome IV criteria as well as thirty age and sex matched apparently healthy controls. All patients and controls were subjected to history taking, nutrient dietary history by 24 hours recall, as well as body composition analysis using Tanita SC-330P.

Results: The body composition analysis among cases with constipation showed that the percentages of mean body fat, free mass and muscle mass were not significantly different than those of controls. Although body water percentage has shown to be higher among controls, this was not statistically significant as well. When comparing cases and controls as regard the different food items daily consumption and energy produced by these elements, it was observed that the mean consumption of all studied items; protein, fiber, fat, carbohydrates and water, was higher in the control group compared to the cases although the differences were not statistically significant except for the water consumption, which was lower among cases.

Conclusion: Higher water intake was observed among controls, however, total body water in the body composition analysis showed no significant difference. Further studies about body water using the analyzer, may change the concept of relation of fluids to constipation.

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E-Poster Viewing: Childhood & Adolescence

IMPACT OF INTESTINAL INFECTIONS ON LINEAR GROWTH FALTERING

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Background: Growth measurements are important components of the nutritional assessment of the health and well-being of children. Severe acute gastroenteritis are among the most common reasons influencing on nutrition and health. Severe forms of intestinal infections sometimes are not self limiting and can lead to prolonged preservation of digestive disorders.

Aim: to establish an impact of acute gastroenteritis on children growth.

Material and methods: 103 children (46 male, 57 female) aged 2 to 5 were studied during acute period of severe gastroenteritis (>11 points on Vesikari score) and for 12 months after it. All children didn't have obesity, underweight or any gastrointestinal infections before study, Growth and weight characteristics were investigated using BMI and HAZ. In a follow up study children were observed every 3 months due to manifestation of gastrointestinal disorders according to Rome IV criteria.

Results: 12 children (11,7%) during the hole period had BMI interpreted as underweight (n=7;6,8%) overweigh (n=4;3,9%) or obesity (n=1;1,0%). Average HAZ at enrollment wasn't significantly different from the HAZ during follow-up ($p>0,05$) and didn't correlate with severity of gastroenteritis ($r=-0,27$; $p>0,05$). In 50 patients (48,5%) growth faltering (negative Δ HAZ) since enrollment during follow-up was sighted. Manifestation of GID took place in 26 children (25,2%). Among patients with GID on the 270th and 360th days HAZ was lower then without them ($p=0,04$ and $0,02$ respectively).

Conclusion: Severe forms of acute intestinal infections have a longitudinal influence on growth and nutrition of children. Post-infectious gastrointestinal disorders can be considered as one of the major factors flattering growth.

E-Poster Viewing: Childhood & Adolescence

INVESTIGATING MALNUTRITION AMONG CANCER PATIENTS RECEIVING CHEMOTHERAPY IN A TERTIARY CARE HOSPITAL OF PAKISTAN.

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Background:

Cancer patients often suffer from Malnutrition which raises the risk of infections. Being immunocompromised, there is a marked reduction on quality of life (QoL) and health outcome. Malnutrition also enhances the incidence of postoperative complications such as delayed wound healing, wound dehiscence, morbidities and mortalities

Objective:

To investigate malnutrition among cancer patients and to assess the nutritional status of patients receiving chemotherapy.

Methods:

The study was conducted in Sir Ganga Ram Hospital, Lahore. Simple screening tool (Short screening sheet) for malnutrition was used. Nutritional assessment of 80 patients receiving chemotherapy was done by assessing BMI, mid upper arm circumference MUAC, triceps skin-fold thickness TST, serum albumin, Total lymphocytes count. Nitrogen Balance and intake of macronutrients were also analysed.

Result:

According to full nutritional assessment, 42 patients (52.5%) out of 80 were found malnourished. Short screening sheet identified 51 patients as malnourished who were receiving chemotherapy. The SSM had a specificity of 0.88 and sensitivity of 0.72. 62% of the patients exhibited negative nitrogen balance.

Conclusion:

Nutrition is the most neglected area of clinical care. Early nutritional support and counselling is essential in order to improve patients Quality of Life (QoL). Mass media should be involved so that adequate attention can be given to nutritional issues arising in diagnostic and therapeutic procedures

E-Poster Viewing: Childhood & Adolescence

LOCAL SNACKS TO IMPROVE THE NUTRITIONAL STATUS OF PRE-SCHOOL AND SCHOOL CHILDREN IN RURAL AREA OF BURKINA FASO AND NIGER

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In the many countries of Sub-Saharan Africa malnutrition remains a public health problem. Multiple effort of nutrition policies were done but the status increase in rural population is very low. In Burkina Faso and Niger where the human development index are very low the malnutrition is growing among the youngest (UNDP, 2018). Nearly one third of children under 5 suffer from stunting (SMART, 2016). In rural areas, the feeding of preschool and school children is a difficulty for parents. The modern snacks are rare and also expensive. The availability, accessibility and improvement of our local snacks could be a good solution to fight malnutrition. The effect of supplementation of legume flour cowpea and Bambara groundnut (voandzou) from Burkina Faso at different levels 15%, 30% and 50% on the nutritional quality and acceptability of millet biscuits was determined. The macronutrients, Iron and Zinc contents were determined with AOAC methods. Profile test on color, odor, texture and hedonic test were performed. The protein contents of cowpea cookies were higher than Bambara groundnut cookies, 12.82 g/100 g and 10.47 g/100 g respectively. Supplemented cookies have low Iron and Zinc contents, 2.23 mg/100 g and 1.87 mg/100 g respectively for cowpea and Bambara groundnut. On the organoleptic level, up to 15% supplementation, there is no significant difference in odor and taste.

The local production of these snack improved the availability and accessibility of these snacks. Cowpea and Bambara groundnut can be used at 15% to improve formulations of cereal biscuits

E-Poster Viewing: Childhood & Adolescence

EVALUATION OF SERUM LEVEL OF ZINC IN CHILDREN AND ADOLESCENTS WITH DOWN SYNDROME.

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Zinc is an essential micronutrient for human nutrition and health. Zinc deficiency has been considered a public health problem in Brazil and in the world. It impairs child growth and development as well as promotes disease. Children and adolescents with Down Syndrome (DS) have a higher prevalence of this deficiency, with negative effects and repercussions on biochemical, immunological and clinical functions for growth. The aim of this study was to evaluate the serum zinc level in children and adolescents with Down Syndrome.

Methods: Transversal clinical study approved by the Research Ethics Committee was conducted in a Outpatient Unit at University Hospital in Botucatu, São Paulo State, Brazil, 2017-18. We collected peripheral venous blood and performed subsequent analysis of serum zinc through atomic absorption spectrophotometry in children and adolescents with DS. According to the World Health Organization (WHO) and the Brazilian Society of Pediatrics (SBP), normal values were considered between 65 and 120 µg / dL.

Results: Were included 37 children and adolescents, 89.2% of whom presented serum zinc deficiency, with an average of 50.40 µg / dL, median of 49.24 µg / dL (standard deviation of 10.05 µg / dL). Only 5.4% of those included presented serum zinc values considered normal.

Conclusions: We found a high incidence of serum zinc deficiency in children and adolescents with DS as described in the literature. Thus, the adequate monitoring and nutritional orientation is fundamental as well as the need of supplementation of this micronutrient, thus promoting nutritionally adequate food habit and the replacement of this deficit.

E-Poster Viewing: Childhood & Adolescence

THE DIFFERENT GROWTH CURVES AND THE NUTRITIONAL EVALUATION OF CHILDREN AND ADOLESCENTS WITH DOWN SYNDROME.

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Down syndrome is one of the most common genetic disorders. According to the 2010 IBGE Census in Brazil, about 300 thousand people would carry this syndrome, which presents a prevalence of 1 for every 600 births. There is still no consensus on the most adequate nutritional classification curve for these children and adolescents. AIMS: To compare the existing growth curves for nutritional classification, the Center for Disease Control, or the specific one for SD, by Cronk, et al., is that of the World Health Organization (2006). Methods: A cross-sectional clinical study, based on data from anthropometric evaluation of children and adolescents with DS attended at the Genetic Pediatrics outpatient clinic of a University Hospital. Anthropometric data were measured with Body Mass Index (BMI) or Weight / Height ratio in percentiles and z scores, classified by the software AnthroPlus (OMS) and Ped Z (CDC and "data" Down), under the age of 5 years, between 5 and 10 years and over 10 years. Project approved by the Research Ethics Committee. For the level of agreement used Kappa measurement. Results: Included 35 children and 2 adolescents, with two measures at different times. The best level of agreement was between WHO and CDC Kappa 0.52 rankings [CI 0.3546 - 0.7003], the highest poverty of concordance was between the SD classification and the WHO Kappa 0.15 [CI 0, 0208 - 0.2833]. Conclusions: There was a difference between the nutritional classifications. The use of software for classifications should be used with the SD-specific curve being the most appropriate to use.

E-Poster Viewing: Childhood & Adolescence

NURSING, PRACTICAL CHALLENGES AND PARENTAL PERSPECTIVES OF LONGITUDINAL ANTHROPOMETRIC MEASUREMENTS, INCLUDING PEA POD AND DEXA SCANS, FROM 'THE CAMBRIDGE BABY GROWTH STUDIES'.

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Background and Aims

Early growth is important in predicting later metabolic risks especially obesity and Type II diabetes. The study was conducted, in the UK population to collect longitudinal anthropometric and body composition measurements following children from infancy to their pre-pubertal age.

The research was carried out by a small team of highly skilled experienced paediatric nurses which helped them gain a good rapport with the parents and this reflected in the quality and accuracy of our data.

Methods

The Cambridge Baby Growth Study (CBGS) is a perspective observational cohort which commenced in 2001-2010 (N=1,658), followed by CBGSII 2011- current day (N=450). We collected data from birth to 3 years, all were recruited from a single site maternity unit. We then re-invited a small subset of children from the original study, Cambridge Baby Growth Outcome Study (CBGOS) between ages 5-10 years (N=266).

Results

Overall parental feedback was positive as reflected in our participant retention rates: CBGS 67%, CBGOS 44% and CBGSII is continuing. Some challenges we have faced include: initial recruitment and retention of participants, this was overcome by offering home visits, flexible clinic appointments and maintaining rapport with the families. Parental anxieties were addressed and reassurance paramount at each visit. Regular newsletters helped to keep the parents informed about the progress of the studies.

Conclusions

The success of the CBGS has relied on both the altruism of the families and the continuity and expertise of the Paediatric Research team.

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DIETARY PATTERNS ARE ASSOCIATED WITH BODY ADIPOSITY IN BRAZILIAN CHILDREN

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Background: Many factors are associated with the increase in total and central body adiposity in children, especially inadequate eating habits.

Objective: To identify the dietary pattern of children aged 4 to 7 years and associate it with different indicators of total and central body adiposity.

Methods: Cross-sectional study with 403 children from a retrospective cohort in Viçosa, Minas Geraes, Brazil. Four indicators of body adiposity were evaluated: Body Mass Index (BMI), waist-to-height ratio (WHtR) and percentages of total and central body fat (assessed by, dual-energy x-ray absorptiometry, DXA). The dietary habits of the children were evaluated by identifying the dietary patterns, using Principal Component Analysis (PCA). The adjustment predictor variables were related to the socioeconomic characteristics, lifestyle, and duration of exclusive breastfeeding duration EBF. Food patterns were identified by factor analysis. Linear regression was used to estimate the regression coefficient and the confidence interval considering statistical significance of $\alpha = 5\%$.

Results: Five dietary patterns were identified, which explained 42.3% of the data variance: "Traditional", "Unhealthy", "Milk and chocolate", "Snack", and "Healthy". The multiple linear regression model showed that the greater adherence to the "Traditional" and "Unhealthy" patterns was related to higher BMI, WHtR, total and central body adiposity. **Conclusion:** Children with higher intake of food from the "Traditional" and "Unhealthy" patterns showed increase in total and central body adiposity.

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ASSOCIATION OF NUTRIENT PATTERNS WITH ANTHROPOMETRIC INDICES IN CHILDREN AND ADOLESCENTS

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Aim: There is no study that assesses the relationship between nutrients patterns and obesity in adolescents. The aim of the present study was to identify the major nutrient patterns in adolescents and to assess their relationship with obesity.

Methods: This is a nationwide cross-sectional study. Usual dietary intakes were collected using a validated 168-item semi-quantitative food frequency questionnaire (FFQ). FFQ was used to evaluate nutrient patterns by factor analysis. Data on anthropometric measures were collected by standard protocols.

Results: This national study was conducted in 31 provinces in Iran. Dietary data were analysed in 4288 subjects aged 11.43 ± 3.23 years. Three major nutrient patterns were identified. Subjects in the fourth quartile of the first nutrient pattern tended to have higher weight, body mass index (BMI), waist circumference (WC) and hip circumference than those in the first quartile. Individuals in the fourth quartile of the second nutrient pattern had significantly lower means of weight, WC and hip circumference than those in the first quartile. The third nutrient pattern was not correlated with any alteration in BMI and wrist circumference in boys as well as in BMI, waist circumference and wrist circumference among girls.

Conclusions: findings indicated that second nutrient pattern which mostly characterized by high consumption in mono-unsaturated fatty acid, poly-unsaturated fatty acid, potassium, calcium, vitamin E, biotin and vitamin K was associated with lower risk of obesity, while first nutrient pattern with high amounts of carbohydrate, thiamin, iron and manganese was correlated with higher risk of obesity.

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IS MEAN ADEQUACY RATIO AS DIET QUALITY INDEX ASSOCIATED WITH ANTHROPOMETRIC INDICES IN CHILDREN AND ADOLESCENTS?

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Background: Diet quality indices are an approach to estimate entire diet quality. This study aims to determine the association between Mean Adequacy Ratio (MAR) as a diet quality indicator and anthropometric indices in children and adolescents.

Methods: This is a nationwide cross-sectional study. In the present study, 5000 students randomly were selected for filling the food frequency questionnaire. Multivariate linear regression analysis was used to evaluate the association between MAR with anthropometric measures- Z score.

Results: Data of 4323 children and adolescents aged 6-18 years were available for the present study. In total, 52.5% of them were boys. The mean (standard deviation) age was 12.26 (3.258) and 11.54 (3.13) years for boys and girls, respectively. Result of multivariate regression analysis showed that MAR was positively associated with waist circumference- Z score and BMI- Z score ($\beta=0.399$, $P < 0.001$; $\beta=0.291$, $P=0.001$, respectively).

Conclusions: Despite the insufficient evidence to draw definitive conclusions about the relation between diet quality indicator and anthropometric indices in children and adolescents, we found positive association between waist circumference- Z score and BMI- Z score with MAR.

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FACTORS RELATED ANEMIA IN INDONESIAN ADOLESCENT

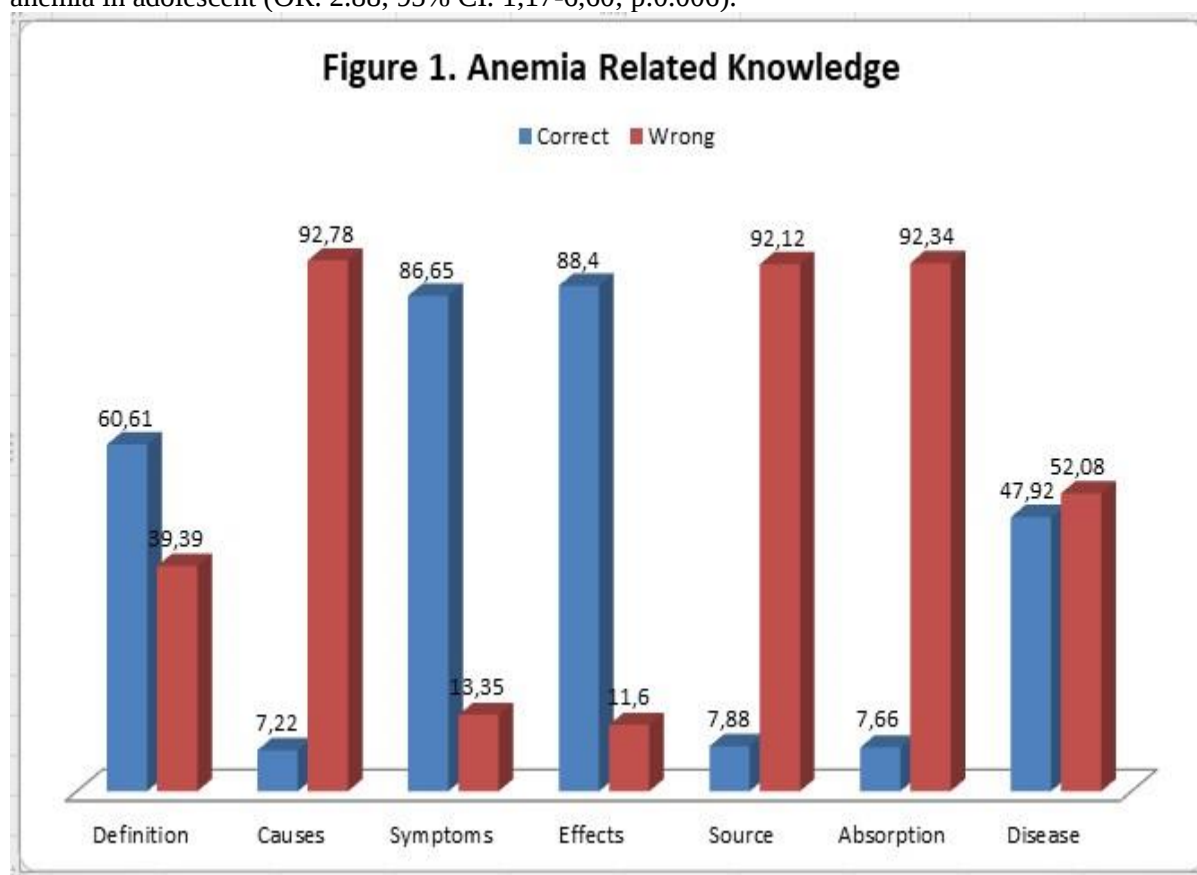
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Background and Aim: Young women are more prone to anemia than children and adults since adolescence is a period of growth, whereas in this period girls had body image issue. The aim of this study was to determine prevalence and factors related to iron deficiency anemia in girls in Sleman Regency.

Methods: This cross sectional study involved 449 girls with age between 10-18 years old in Sleman, Indonesia. Anthropometry measurement was held, such as body weight, height, and upper arm circumference. Hemoglobin level was assessed with point-of-care-testing method (Hemochroma Plus). Factors related anemia was measured using validated questionnaire consist of menstrual history, anemia related knowledge, eating habit and health conditions.

Results: Prevalence of anemia was 12,69%, stunting (13,81%), and high risk protein-calorie malnutrition (44,77%). Subject were likely to experience fatigue (69,49%) and sleepy-feel (71,65%). Subject wasn't aware of the causes, source of iron in foods and drinks, and diseases related with anemia (less than 50%). Eating habit in association with anemia such as tea consumption along with high iron food (53,06%) and low consumption of vitamin C (51,22%). Among all the potential factors, blood volume of menstruation was the main factors related to anemia in adolescent (OR: 2.88; 95% CI: 1,17-6,60; p:0.006).



Conclusion: Blood volume of menstruation was the factors related anemia in Sleman Regency, Indonesia.

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SODIUM AND POTASSIUM 24-HOURS URINARY EXCRETION ASSESSEMENT FOR A SAMPLE OF MOROCCAN CHILDREN AGED BETWEEN 6 AND 14 YEARS

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Background and aims: The World Health Organization (WHO) 2013 recommendations outline the importance of prioritizing sodium intake reduction and potassium intake optimization to reduce blood pressure level and decreasing the risk of cardiovascular diseases. The WHO recommends consuming less than 2000 mg/day of sodium in adults and children. Moreover, 33% of Moroccans adults are hypertensive, 29% have high cholesterol levels and 13% are obese. However, there is lack of data on sodium and potassium intake of the Moroccan population in general, but especially in children. Here we planned to assess the status of sodium and potassium in a sample of school-children .

Methods: In this transversal study 240 children (6-18 years) were recruited from three schools at Rabat-Kénitra region (centre of Morocco), only 112 of them are finished the two main component of the study: (1) questionnaire concerning anthropometric, and general health characteristics, (2) 24-h urinary samples to estimate sodium and potassium intake. Electrolytes were assessed using inductively coupled plasma-mass spectrometry. Creatinine was measured to validate urinary completeness.

Results: Sodium and potassium 24-h urinary excretion were respectively 2212 ± 757.1 mg/day and 1455.5 ± 651.6 mg/day (Mean $\pm$ SD). (45.5%) of children consume over the Upper Limit of sodium (2000mg/day) and 99% consume under recommended level for potassium (3500mg/day).

Conclusion: Almost half of study children were not committed to the WHO sodium intake recommendation .Consumption of potassium was very low. Thus, there's need to set up a national strategy of sodium intake reduction, and of potassium intake improvement, to tackling the associated diseases.

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ESTIMATION OF 24-HOURS URINARY SODIUM EXCRETION USING 24-HOUR DIETARY SODIUM RECALL IN A SAMPLE OF MOROCCAN CHILDREN

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Background and aims : The WHO recommend 24-h urinary collection as the standard method to accurately estimate sodium intake, however samples are difficult to collect, especially for children, leading to a low participation rate. Thus, alternative Methods using dietary data are proposed in condition to be valid by the standard method. Here we attempt to develop and validate a prediction equation of 24-h urinary using 24-h dietary and anthropometrics data from school aged children.

Methods: overall, 240 children aged between 6 and 14 years old, are selected from 3 schools at Rabat-Kenitra region. Of them, 112 are finished three interviews of 24-h dietary recall (d-Na-24h X3), and brought validated 24-h urinary excretion samples. Regression Equation to predict 24-h sodium excretion values (predNa-24h) was developed using 24-h dietary recall (X3) and factors; known to influence 24-h sodium urinary excretion in children. To evaluate the agreement measured 24-h sodium urinary excretion and this predicted were compared.

Results: the best model was the one developed using d-Na-24h X3, age, and weight. Spearman correlation between the measured and the predicted-24h urinary excretion was 0.49. Bland-Altman plot showed an acceptable level of agreement between the group mean level of measured and predicted 24-h urinary sodium excretion, with a small bias; -132,96 mg/day (95% CI: -253,59 ; -12,33 mg/day).

Conclusion : This study suggests that this newly developed model in school aged children aged 6-14 years may be useful to predict mean 24-h urinary excretion in the group level for participants with similar characteristics.

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SODIUM AND IODINE INTAKE IN A SAMPLE OF MOROCCAN CHILDREN AND ADOLESCENT : POTENTIAL EFFECT OF SALT REDUCTION STRATEGIES ON IODINE STATUE

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Background and aims: Universal salt iodization is an effective strategy to ensure adequate population-status iodine in order to tackle iodine deficiency disorders (IDD). At the same time as global initiatives to reduce salt intake is being a health priority to decrease cardiovascular diseases (CVD) prevalence, there is concern about compromised iodine intakes. Here we examined if salt intake at recommended levels induce risks of iodine deficiency in children and adolescent aged 6-18 years old from a country where salt is the vehicle for iodine fortification.

Methods: This transversal study included 131 children and adolescent recruited from Rabat-Kénitra region (centre of Morocco). Urinary sodium and iodine 24-h excretion (used as surrogate for salt and iodine intake), were assessed by ICP-mass spectrometry. Median urinary iodine (UIC) was compared across categories of sodium excretion equivalent to salt intakes <5 g/d, and ≥5 g/d.

Results: The mean sodium excretion was 2235.3mg/day (±Standard Deviation,823.2) (equivalent 5667.9±2077.7mg/day of salt). About half of participants consume over the Upper Limit of salt intake (5g/day).The UIC among the children was 77.3 µg/day (interquartile range, 44-121),and 72% of participants had a UIC <100 µg/d, indicating a deficiency of iodine statue. No association was found between median UIC and salt excretion (82µg/L iodine where urinary salt excretion ≥5 g/day versus 71.6 µg/L where urinary salt excretion <5 g/day; p=0.277).

Conclusion: it seems possible that the implementation of salt reduction strategies would not compromise iodine status in the condition that the tow approach is well coordinated.

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THE QUALITY AND QUANTITY OF BREAST MILK AND LINEAR GROWTH OF INFANTS BETWEEN ADOLESCENCE AND OLDER AGE MOTHER

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Background:

Adolescent mothers may limit in providing breast milk in quantity and quantity comparing older mother and could be to affect the infant linear growth. In Indonesia, the availability of data on the quality quantity of breast milk is very rare.

Objective:

Assessing the difference of the quantity of quality of breast milk and the linear growth of infants during first four months in adolescents and older mothers

Methods:

A prospective cohort study for 234 pairs infant and mothers were carried out from 2002 - 2003. The quantity of breast milk for four months collected by weighing method, and the quality was analyzed using proximate analysis. Infant length data was measured every month using length board scale according to WHO recommendations. Repeated measured analysis to evaluate the difference of quality quantity of breast milk and infant linear growth since birth to four months.

Results:

Breastmilk quantity quality of adolescent is lower than older mother's, but infant linear growth during first four months were not difference. Linear growth faltering infant from adolescent mother began since the first months and infant from older mother began at the second months of life.

Conclusion:

Time to growth faltering infant from adolescent mother earlier than infant from older mother.

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BRAIN PARAMETERS AND NUTRITIONAL STATUS AND THEIR INTERRELATIONSHIPS WITH THE UNIVERSITY SELECTION TEST (PSU) OUTCOMES IN CHILEAN HIGH SCHOOL GRADUATES

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Background and aims: Scholastic achievement (SA) in the University Selection Test (PSU), the national coverage baccalaureate examination for university admission, when school-age children graduated from high school depends of multiple factors. The aim was to evaluate the impact of brain structural parameters and nutritional status on PSU achievement.

Methods: A representative, stratified and proportional sample of 100 students from Chile's Metropolitan Region, of both sexes was randomly chosen. They were distributed in two groups: Group 1, high PSU scores (language and mathematics > p75; males $n=42$ and females $n=19$) and Group 2, low PSU scores (language and mathematics < p25; males $n=16$ and females $n=23$). SA was measured by means of the PSU. Brain parameters were assessed by magnetic resonance imaging (MRI) and nutritional status through anthropometric parameters of postnatal nutritional background (head circumference-for-age Z score, Z-HC) and current nutritional status (BMI). Data were analysed using Student's t tests for comparison of means, correlation and multiple regression analysis from the SAS software.

Results: In both sexes, students from Group 1 had higher Z-HC, brain volume, total, left and right cortical gray matter volumes, left and right cerebellar cortex volume and right pallidum volume than their peers from Group 2. Brain volume positively and significantly correlated with Z-HC

both in the total sample ($r = 0.757$, $P < 0.0001$), in males ($r = 0.724$, $P < 0.0001$) and females ($r = 0.694$, $P < 0.0001$).

Conclusions: PSU achievement is significantly associated with Z-HC and some brain structural parameters.

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ANGELMAN SYNDROME AND HYPOTHYROIDISM IN A 2 YEAR-OLD BOY BORN SMALL FOR GESTATIONAL AGE

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Background and aims: An Angelman syndrome (AS) is a rare neurobehavioural and neurodevelopmental disorder caused by de novo maternal deletions in 15q11-q13 region of chromosome 15 in about 70 to 80% of affected children. We present a patient with two rarely associated conditions: AS and hypothyroidism.

Methods: A 2 year-old old boy with severe motor retardation, failure to thrive (weight -3.65 SDS), length (-1.42 SDS) and absence of speech had pale skin colour, wide and prominent forehead, low-lying ears, wide mouth, small and widely spaced teeth, long fingers of the hands and folding of the second finger on both feet. He was born on term (39th GW), but small for gestational age with birth weight (-2.0 SDS) and birth length (-1.09 SDS). The boy had an early onset of seizures controlled by antiepileptic drugs. Diagnostic assessment was achieved by clinical examination, electroencephalography (EEG), hormonal and molecular analyses.

Results: The hormonal analyzes revealed normal IGF1, IGF BP3 and T4, but high TSH (14.5uIU/ml) serum concentrations for his age and sex. Karyotype was normal male 46, XY. The EEG test revealed right-sided focus of slow waves. The molecular analysis detected deletion in the 15q11-q13 region of chromosome 15 with minimal length of 3Mb. The metilation sensitive ligation probe amplification (MS-MLPA) analysis has shown absence of maternal allele.

Conclusions: Herein we present a 2 year old boy born small for gestational age with clinical features for an AS and hypothyroidism. The molecular analyses confirmed a maternal origin of deletion in 15q11-q13 region of chromosome 15.

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DETERMINANTS OF CONSUMPTION OF HIGH FAT, SALT AND SUGAR FOOD ITEMS BY ADOLESCENTS OF URBAN AREAS OF NEW DELHI, INDIA

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India is currently in a phase of nutrition transition. This comprises increase in consumption of energy-dense food items having high amounts of fat, salt and sugar (HFSS foods) and reduced manual labor. Together, these may lead to increased risk of overweight, obesity and related co morbidities. Increased consumption of HFSS foods during adolescence needs to be monitored as high frequency of consumption will deprive them of the required nutrients during this phase of rapid growth. We aim to assess the determinants of consumption pattern of high fat, salt and sugar food items among adolescents residing in urban areas of New Delhi, India. This will be a community based, cross-sectional study in which selected high-income, middle-income, low-income group households and urban slums in urban areas of New Delhi will be selected purposively. Data will be collected from both girls and boys (n=800; 11-18 years) using interviewer-administered interview schedules. Information pertaining to household socio-economic and demographic profile, physical activity and lifestyle behavior and general dietary intake pattern of adolescents will be collected. We will also collect dietary data of adolescents using semi-quantitative food frequency questionnaire for HFSS foods (for the past one month) and 24-hour dietary recall data (past two days). Height, weight, waist-circumference, mid-upper arm circumference and blood pressure of adolescents will be measured. The distance of the nearest park/ open space and eating joint from the respondents' residence will be assessed using GPS on an android phone. The data collection for this study will be completed by early 2019.

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ADOLESCENT HEALTH: PRESENT STATUS AND ITS RELATED PROGRAMMES IN INDIA. ARE WE IN THE RIGHT DIRECTION?

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Adolescence is a phase of rapid growth and development during which physical, physiological and behavioural changes occur. They constitute more than 1.2 billion worldwide, and about 21% of Indian population. Morbidity and mortality occurring in this age group is mostly due to preventable causes. Young and growing children have poor knowledge and lack of awareness about physical and psychological changes that occurs during adolescence and the ill health affecting them. Existing Adolescent health programmes focus on rendering services like immunization, health education for sexual and reproductive health, nutritional education and supplementation, anemia control measures and counseling. Adolescent health programmes are fragmentary at present and there is no comprehensive programme addressing all the needs of adolescents. Access and availability of health care services are severely limited. Lack of accurate information, absence of proper guidance, parent's ignorance, lack of skills and insufficient services from health care delivery system are the major barriers. Interventions should focus on providing psychological and mental health services and behaviour change communication towards leading a healthy lifestyle, restricting advertisement related to junk food products, awareness creation about reproductive and sexual health, educating parents to prevent early marriage, teenage pregnancy and to counsel their children on nutrition and reproductive health. Universal coverage of Adolescent friendly clinics is highly recommended. To be cost effective, all health services addressing adolescent should come under single programme. This review is intended to create awareness among the stakeholders about the importance of strengthening adolescent health services in order to meet their felt needs.

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A STUDY OF NUTRITIONAL STATUS OF ADOLESCENT GIRLS RESIDING IN URBAN SLUMS OF GUWAHATI CITY, ASSAM, INDIA

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Adolescent girl's health covers morbidity, mortality, nutritional status and reproductive health and linked to these are environmental degradations, violence and occupational hazards. Adolescent girl's health also has an intergenerational effect. With the aim to assess their nutritional status, a cross sectional study was carried out among adolescent girls of 10-19 years residing in the urban slums of Guwahati city. 400 adolescent girls were interviewed from 10 randomly selected slums over a period of one year. Predesigned pretested semi structured interview schedule was used to collect socio demographic and individual information of the respondents. Hemoglobin estimation was done using colour scale method. Out of 400 respondents, 34.75% were found to have a BMI lying between 15th -50th percentiles of reference value. 20.00% were found to be below 5th percentile. 33.50% of the total respondents belonged to class IV socioeconomic status, out of which 47.00% is found to have a BMI of less than 5th percentile. The study shows the prevalence of mild anaemia to be 28.46%, moderate anaemia to be 57.31% and severe anaemia 14.23% respectively. The mean haemoglobin of menstruating girls (8.87 gm%) was found to be less than in the non-menstruating girls (10.15 gm%). There was a positive association between prevalence of anaemia among the adolescent girls and worm infestation. Socioeconomic status is seen to have an appreciable impact in the health and nutritional status of the slum dwelling adolescent girls.

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ADOLESCENT UNDERNUTRITION: GLOBAL BURDEN, PHYSIOLOGY, AND NUTRITIONAL RISKS

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Adolescents, comprised of 10–19 year olds, form the largest generation of young people in our history. There are an estimated 1.8 billion adolescents in the world, with 90% residing in low- and middle-income countries. The burden of disease among adolescents has its origins in infectious and injury-related causes, but nutritional deficiencies, suboptimal linear growth, and undernutrition are major public health problems, even as overweight may be on the rise in many contexts. Girls are most vulnerable to the influences of cultural and gender norms, which often discriminate against them. Dietary patterns and physical activity, in addition to schooling and countervailing social norms for early marriage, influence health and nutritional well-being of adolescents. Nutrient requirements – including those for energy, protein, iron, calcium, and - others – increase in adolescence to support adequate growth and development. In settings where dietary intakes are suboptimal, anemia and micronutrient deficiencies are high. Endocrine factors are essential for promoting normal adolescent growth and are sensitive to undernutrition. Growth velocity increases during puberty when peak height velocity occurs and catch-up is possible; in girls, about 15–25% of adult height is attained. A premature pregnancy can halt linear growth and increase the risk of adverse birth outcomes. Research is needed to fill the huge data gaps related to nutrition and growth during adolescence, in addition to testing interventions during this second window of opportunity to enhance growth and development, improve human capital, and to end the intergenerational cycle of growth failure.

E-Poster Viewing: Childhood & Adolescence

MICRO NUTRIENT DEFICIENT DIETS AND DEPRESSION AND ANXIETY SYMPTOMS: ASSOCIATION AMONG ADOLESCENT BOYS AND GIRLS

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BACKGROUND – Data on prevalence of mental health disorders indicates that 4.5% and 3% of the Indian population is suffering from depression and anxiety respectively. Research suggest that a poor quality diet (lacking in micronutrients) may lead to deficiencies that are associated with depression and anxiety disorders (Jacka et al, 2012; Jacka et al, 2013).

OBJECTIVES – The present research was designed to study the prevalence & association of depression & anxiety micronutrient deficiencies among adolescent boys & girls (aged 13-15 years) studying in public schools of Delhi.

METHODS – 546 adolescents participated in this cross-sectional study (selected from public schools in Delhi). For the assessment of depression and anxiety symptoms and dietary micronutrient deficiencies Child Behavior Checklist (CBCL; administered to the parents) and 24 hour recall and food frequency questionnaire (administered to the subjects) were used respectively.

Adolescent Micronutrient Quality Index (AMQI) was further use to assess the micronutrient quality of the diets.

RESULTS – Prevalence of depression was 33.5% and anxiety was 27.47%. Assessment of diets through AMQI revealed that the diets consumed by these adolescents were lacking in major micronutrients and the consumption of processed food was higher among those adolescents who had higher scores for depression and anxiety. **CONCLUSIONS** – This study highlights the association of mental health with micronutrient deficiencies among adolescents. It will also serve as a strategic tool for mental health prevention & management policies designed for adolescents. It also add to the growing body of research in the area of nutritional psychiatry.

E-Poster Viewing: Childhood & Adolescence

DIETARY SUGAR, SATURATED FAT INTAKE AND DEPRESSION AND ANXIETY SYMPTOMS: ASSOCIATION AMONG ADOLESCENT BOYS AND GIRLS

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BACKGROUND – Data on prevalence of mental health disorders indicates that 4.5% and 3% of the Indian population is suffering from depression and anxiety respectively. Research suggest that consumption of energy dense, nutrient poor, highly processed foods, red meat and aerated drinks are associated with depression and anxiety.

OBJECTIVES – The present research was designed to study the prevalence & association of depression & anxiety micronutrient deficiencies among adolescent boys & girls (aged 13-15 years) studying in public schools of Delhi.

METHODS – 546 adolescents participated in this cross-sectional study (selected from public schools in Delhi). For the assessment of depression and anxiety symptoms and dietary micronutrient deficiencies Child Behavior Checklist (CBCL; administered to the parents) and 24 hour recall and food frequency questionnaire (administered to the subjects) were used respectively.

Nutrient Adequacy Ratio (NAR) was calculated for dietary sugar and saturated fat.

RESULTS – Prevalence of depression was 33.5% and anxiety was 27.47%. Dietary data revealed a higher consumption of simple sugars and saturated fat among adolescents who had higher scores for depression and anxiety. A positive significant association among these food groups an depression and anxiety scores was also found. **CONCLUSIONS** – This study highlights the association of mental health with micronutrient deficiencies among adolescents. It will also serve as a strategic tool for mental health prevention & management policies designed for adolescents. It also add to the growing body of research in the area of nutritional psychiatry.

E-Poster Viewing: Childhood & Adolescence

VITAMIN D STATUS IN OVERWEIGHT AND OBESE SCHOOL AGE CHILDREN

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Vitamin D is essential for child normal growth and development, and its deficiency can have long term effects on child health. The aim of our study was assessment nutritional and life style factors and evaluation of vitamin D level in overweight school age children. Observational study included 34 overweight patients aged 12-16 years old (among them 46.8 % (n=15) boys and 53,2 % (n= 17) girls). Identification Overweight and obesity was based on BMI diagrams. Dietary intake, physical activity level and life style factors were assessed based on specific questionnaires. From assess children 71, 8 % (n=23) were overweight (BMI - 85 centile -97 centile) and 28,2 % (n= 9) obese (BMI > 97 centile). 68,75 % (n=22) children have daily less than 1 hour physical activity, 81,2 % (n=26) of studied population's screen time (TV, Computer) is more then 3-4 hours a day. The majority of studied (65,6 % n=21) population eat carbohydrate containing snacks (sweets) during the TV and Computer time. Dietary evaluation revealed low consumption of vegetables and fruits and high consumption of sweets. Evaluation of vit D level shows that vitamin d deficiency (vitamin d< 20 ng/ml) was seen in 28,1 % (n=9), vitamin d insufficiency (vit D 21-30 ng/ml) 53,2 % (n=17) and in 18,7 % (n=6) vitamin d level was normal (> 30 ng/ml). Study results confirm that Vitamin D deficiency or insufficiency is common to obese and overweight school age children

E-Poster Viewing: Childhood & Adolescence

EFFECTS OF HT073 ON BONE GROWTH RATE OF ADOLESCENT RATS

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Height growth is the consequence of proliferation and hypertrophy of chondrocytes in the growth plates, which is called endochondral ossification, and this is caused by direct stimulation of GH or circulating insulin-like growth factor-1 (IGF-1). This study aimed to investigate the effects of *Acanthopanax sessiliflorus* root and germinated barley mixture HT073 on bone growth rate and growth mediators in rats.

Female adolescent rats were administered HT073 200 mg/kg (b.i.d.), recombinant human growth hormone or vehicle for 10 days. Tetracycline was injected intraperitoneally to glow a fluorescence band on the newly formed bone on day 8. To assess possible endocrine or autocrine/paracrine mechanism, we evaluated IGF-1, insulin-like growth factor binding protein-3 (IGFBP-3) or bone morphogenetic protein-2 (BMP-2) in response to HT073 administration in either growth plate or liver.

Oral administration of HT073 significantly increased longitudinal bone growth rate and height of hypertrophic zone of proximal tibial growth plate. HT073 also increased upregulated liver IGF-1 and IGFBP-3 mRNA expression, IGF-1 protein expression and the expressions of IGF-1 and BMP-2 in growth plate.

In conclusion, HT073 increases longitudinal bone growth rate by upregulation of liver IGF-1 and IGFBP-3 mRNA as well as local IGF-1 and BMP-2 expressions, which can be regarded as normal functioning of GH dependent endocrine and autocrine/paracrine pathway.

E-Poster Viewing: Childhood & Adolescence

RISK FACTORS FOR ANEMIA AMONG PRESCHOOL CHILDREN IN MYANMAR: USING DEMOGRAPHIC AND HEALTH SURVEY 2015-16

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Aims: The risk factors of anemia at national level were not examined yet among preschool children in Myanmar.

Methods: Data from Demographic Health Survey 2015-2016 were used. Multivariate logistic regression was used to identify risk factors of anemia among children 6 to 23 months (n=1133) and 24 to 59 months of age (n=2393).

Results: The prevalence of anemia was 77.2% and 50.8% among 6 to 23 months and 24 to 59 months of age, respectively. Maternal anemia was associated with child's anemia both 6 to 23 months (OR=1.88; 95%CI: 1.33, 2.66) and 24 to 59 months of age (OR=1.63, 95% CI:1.30, 2.04). Among 6 to 23 months of age, smaller birth size was associated with a lower risk of anemia than average birth size (OR=0.54; 95% CI: 0.30, 0.96). Among 24 to 59 months of age, living in Yangon, North Region, North-East States was associated with a lower risk of anemia (OR=0.63, 95% CI: 0.45, 0.88; OR=0.62, 95% CI: 0.40, 0.97; and OR=0.48, 95%CI: 0.32, 0.73) but living in West States was associated with a higher risk of anemia (OR=1.88, 95%CI: 1.19, 2.96), as compared to Central Regions. The risk of anemia was higher among households using unimproved drinking water sources (OR=1.39, 95% CI: 1.11, 1.76), stunted children (OR=1.42, 95%CI: 1.14, 1.76) but lower with older child age (OR=0.97, 95% CI: 0.96, 0.98).

Conclusion: Risk factors such as maternal anemia, child stunting, type of drinking water sources, and residential region need to be considered in planning and implementing anemia program.

E-Poster Viewing: Childhood & Adolescence

ESTIMATION OF WEIGHT DYNAMICS IN PATIENTS WITH BLOODY DIARRHEA CAUSED BY INTESTINAL INFECTION

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Background: bloody diarrhea in children with intestinal infections remains a serious medical problem due to its severe course and frequent outcomes influencing growth and nutrition.

Aim: to assess the dynamics of weight in patients with intestinal infections, according to age, severity of the disease and dehydration.

Materials and methods: 55 children with bloody diarrhea caused by intestinal infection were observed in the hospital; 9 aged < 1 year (16.4%), 27 – 2-3 years (49.1%), 11 – 4-7 years (20%), 8 – 8-17 years (14.5%). Weight was estimated daily from the 1st till 10th days of disease. The severity of intestinal infection was assessed with Clark index, severity of dehydration by clinical dehydration scale. Data were processed using standard statistical methods.

Results: The dynamics of weight during treatment was positive in 29 patients (52.7%; group 1), negative - in 14 (25.5%; group 2). In 12 children (21.8%; group 3) - no dynamics was estimated. No correlation was found in weight change with both severity ($p=0.1$, $r=-0.13$) of infection and dehydration ($p=0.5$, $r=-0.12$). Average age of children in groups was significantly different ($p = 0.04$) between study groups: with minimum in group 1 (2.8 ± 1.2) and maximum in group 3 (5.7 ± 1.8).

Conclusion: For children with infectious bloody diarrhea weight changes don't depend on severity of disease and degree of dehydration. However, weight gain during treatment was significantly more frequently observed in young children. It can be associated with more careful implementation of dietary recommendations.

E-Poster Viewing: Childhood & Adolescence

GLUTEN IMMUNOGENIC PEPTIDES IN STOOLS OF CELIAC PATIENTS ALLOW TO CONTROL THE COMPLIANCE WITH THE GLUTEN-FREE DIET AND SHOW AN INCREASING NON-COMPLIANCE DURING LONG-TERM TREATMENT

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Background and aims

Gluten-free diet (GFD) monitoring is essential in coeliac disease (CD) management however, available control methods could be insufficient to identify occasional gluten consumption, too invasive or subjective. We evaluated the adherence to GFD based on detection of gluten immunogenic peptides (GIP) in stool of CD patients. Study was registered at ClinicalTrials: NCT03064997.

Methods

Study was performed on paediatric CD patients ($N = 34$) on a GFD. GIP was analysed by ELISA kit (iVYLISA GIP-S®, Biomedal, Spain) in stool samples collected two times within 3 months. In parallel, serum anti-tissue transglutaminase antibodies (tTG), C-reactive protein assays (CRP), and faecal calprotectin (FC) were analysed.

Results

Based on first analysis, 9% of CD patients had faecal GIP levels above the LOQ ($>0.30\mu\text{g GIP/g}$ sample) and were identified as positive, whereas the remaining CD patients were GIP-negative ($<0.16\mu\text{g GIP/g}$ sample). The second analysis indicated the raised number of GIP-positive subjects up to 21%. CD patients on the GFD for a longer time (≥ 6 years) showed higher rates of non-compliance (29%) as evidenced by GIP presence in stool samples, than patients on the GFD for 2–5 years (11%) or less than 2 year (14%). Positive FC ($>50\mu\text{g/g}$) was detected in some of GFD-treated CD patients suggesting treatment transgression however, no correlation was found between FC and GIP. Serum tTG and CRP were normative in the majority of subjects and didn't change in time.

Conclusion

Association of GIP-positive CD patients rate and GFD duration was observed. GIP could be an alternative method for monitoring a GFD adherence.

E-Poster Viewing: Childhood & Adolescence

THE PREVALENCE OF UNDERNUTRITION AND ASSOCIATED FACTORS AMONG CHILDREN AGED ONE TO FIVE YEARS IN A AREA IN SRI LANKA

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Introduction

High prevalence of undernutrition is a well-known issue in rural areas. The objective of this study was to describe the prevalence and associated factors among children aged 1-5 years in Siyambalanduwa MOH area in Moneragala District.

Methods

A community based cross-sectional study was conducted among 421 child-mother pairs in Siyambalanduwa MOH area using two stage cluster sampling method with a cluster size of 36. Children of mothers who cannot communicate in Sinhala were excluded. Data were collected by pre tested interviewer administered questionnaire and conducting anthropometric measurements according to WHO guidelines. Statistical analysis was done using SPSS 20. The chi-square test was used, and $P < 0.05$ was considered for statistically significant.

Results

Overall 41% of children aged 1-5 years were undernourished in Siyambalanduwa MOH area. Among the study subjects 24% were underweight, 25.7% were stunted, 16.4% were wasted, 9.2% were both underweight & stunted, 6.8% were both, underweight & wasted, 0.5% were both, stunted & wasted and 9.9% were underweight & stunted & wasted. Only the low total monthly income ($P < 0.001$) and low birth weight ($P < 0.001$) were significantly associated with child undernutrition. Among parents or caregivers 18.6% had good knowledge, 35.6% had favorable attitudes and 12.6% had good practices related to child nutrition. None of the above three factors were significantly associated with child undernutrition.

Conclusions and recommendations

Prevalence of undernutrition among children aged 1-5 years is high and urgent efforts to reduce undernutrition should be a priority. Future studies should focus on assessing how to reduce the burden with low cost appropriate interventions.

E-Poster Viewing: Childhood & Adolescence

THE LEVEL OF CAREGIVER EDUCATION IS LINKED TO THE PREVALENCE OF STUNTING AMONGST GRADE R LEARNERS IN FICKSBURG, SOUTH AFRICA

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Background: The right to food is a basic human right, yet worldwide children suffer from undernutrition, with permanent effects on health, growth and physical and mental development. A cross-sectional, descriptive study was conducted to describe the anthropometric nutritional status of 190 Grade R learners in Ficksburg, South Africa.

Methods: Data on socio-demographics, food security and dietary practices were obtained from caregivers through a structured interview and the health history from each learner's records. Weight (weight-for-age), height (height-for-age) and mid-upper arm circumference (MUAC) were measured using standard procedures. Body Mass Index (BMI) was calculated and interpreted using the World Health Organization Z-Scores.

Results: Learners were born at a median gestational age of 40 (range: 28-40) weeks, with median birthweight of 3.0 (range: 1.2-4.3) kg and median length 49.5 (range: 32-57) cm. Underweight was identified among 4.7% of the Grade R learners and 7.4% (14/190) were stunted (5.8%) or severely stunted (1.3%). Low BMI-for-age was not observed, although health records indicated that 36.2% of learners showed poor growth trends. A significant association [CI: 10.1%; 63.8%] was found between low caregiver education level and stunting in children. No significant associations were found between stunting and socio-demographic variables, dietary practices or other health information.

Conclusion: Approximately one in 13 learners was stunted/ severely stunted. Lower parent/ caregiver education was associated with stunting in children. Maternal education and frequent growth monitoring as priority for early detection and prevention of growth faltering can facilitate timely nutrition supplementation to prevent growth failure and the loss of human potential.

E-Poster Viewing: Childhood & Adolescence

CHANGES IN TRAJECTORIES FOR BLOOD PRESSURE IN RECENT DECADES IN CHINESE CHILDREN AND ADOLESCENTS

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Background

High adult blood pressure (BP) is an important risk factor for cardiovascular disease (CVD) and mortality. Childhood BP tracks into adulthood. Little is known whether BP trajectories in children have changed over time, as BP is strongly associated with body-size, especially in countries with rapid economic growth. We investigated whether BP trajectories have changed among Chinese children and whether changes can be explained by BMI and height trends.

Methods

China Health and Nutrition Survey (eight waves 1991-2011) was used to create four cohorts (7-17y, born in 1981-85, 1986-90, 1991-95, 1996-2000, N~16000). Multilevel cubic functions were applied to estimate child-to-adolescent trajectories for systolic and diastolic BP (SBP and DBP) with and without adjustment for BMI and height (age-/gender standardised z-scores). Between-cohort differences were examined by testing interactions of each cohort with age terms.

Results

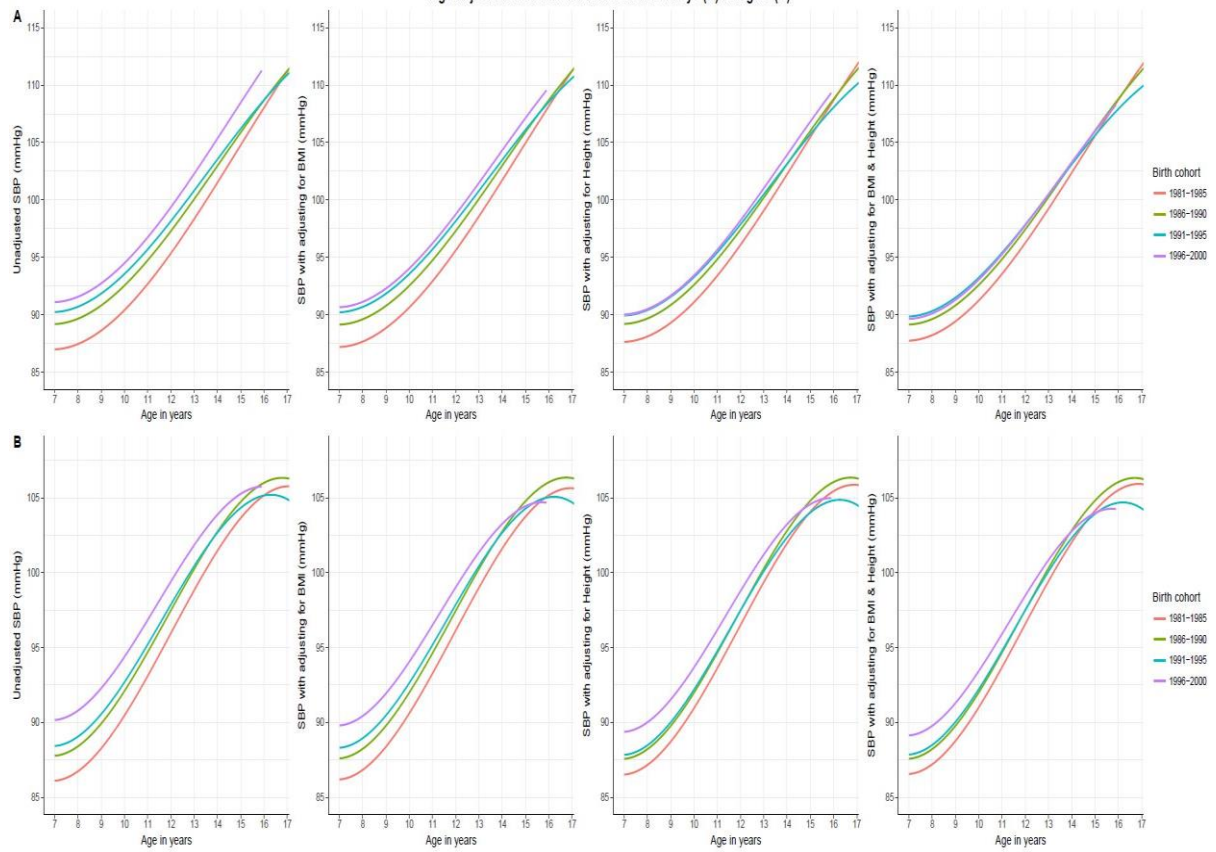
Trajectories for SBP increased across cohorts: those for later-born cohorts tended to lay above early-born cohorts in both sexes. After the adjustment differences mean SBP reduced. The reduction was more evident in adolescence (vs childhood) and with adjustment for height (vs for BMI) trajectories.

For example, the difference between the last (born 1996-2000) and first (1981-85) cohorts was 1.90mmHg (95% CI: 0.54-3.26) for boys and 2.58 mmHg (95% CI: 1.18-3.98) for girls at 7y, and there was no difference at 16y after adjustments. Similar patterns were seen for DBP.

Conclusions

Trends for BP in recent decades among Chinese children and adolescents were partly explained by more rapid growth in height and BMI in later-born children.

Age trajectories for SBP for four cohorts of boys (A) and girls (B)



E-Poster Viewing: Childhood & Adolescence

BRAZILIAN IMMIGRANT FATHERS' PERSPECTIVES ON THEIR YOUNG CHILDREN'S EATING BEHAVIORS

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The objective of this qualitative study was to explore Brazilian immigrant fathers' perspectives on their young children's eating behaviors and eating environment. In-depth, semi-structured interviews were conducted with twenty-four Brazilian immigrant fathers in the Greater Boston, U.S. who had at least one child aged two to five years. All interviews were conducted in Portuguese using a semi-structured interview guide, and were audio recorded, transcribed verbatim and thematically analyzed. Fathers expressed positive beliefs and attitudes about the importance of healthy eating for their young children. Nevertheless, the majority reported changes in their children's and family's eating environments such as increased availability and access to an "obesogenic" environment that influence their young children's eating behaviors, and familial practices, including eating out, getting take-out, etc. that have been linked to increased obesity risk among minority, low-income children. This study provides new information on Brazilian immigrant fathers' perspectives on their young children's eating behaviors and eating environment that may provide important targets for interventions aimed at promoting healthful eating of Brazilian children. Further research is needed to help understand the larger socio-cultural context and its influence on eating behaviors among low-income, Brazilian immigrant families living in the U.S. Furthermore, future research should assess environmental influences faced by Brazilian immigrant families' transition from their home country to the U.S. "obesogenic" environment on young children's eating behaviors and fathers' feeding practices. Health promotion interventions designed to address childhood obesity among Brazilian immigrant families must account for socio-cultural and environmental influences on the day-to-day lives of these families.

E-Poster Viewing: Childhood & Adolescence

SODIUM AND GROWTH IN CHILDREN WITH CYSTIC FIBROSIS: IS THERE A CONNECTION. MAKSIMYCHEVA T.YU., KONDRATYEVA E.I., MELYANOVSKAYA Y.

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Objective: To assess the concentration of Na in the blood of children with CF depending on the linear growth rates.

Material and methods: 40 children with CF from 1 to 18 y., M ($\pm$ SD) - 6, 1 ($\pm$ 4.5) y., with no history of Pseudo-Bartter's syndrome. Studied the concentration of sodium in the blood (norm-135-145 mmol/l). To assess the relationship with the linear growth of the child, all children were divided into 2 subgroups for Z - score: 1 subgroup Z -height $\leq$ -1 SD, N=15, M -6.2 y.; 2 subgroup - Z -height $>$ -1 SD, N=25, M -6.0 y.

Results: In the total group, the Na level was within the normal range M-137.1 mmol/l. However, 13% of the children in subgroup 1 had an Na level at the lower normal and 13% hyponatremia at the level of 132-133 mmol/l. In subgroup 2, 13.6% had a Na level at the lower normal. The level of Na in 1 subgroup of children was significantly lower than M -136.0 mmol/l than in the 2nd M - 137.4 mmol / l (p=0.04). Our study revealed a relationship between the sodium level and the linear growth of the child, which characterizes the overall assessment of nutritional status. The limitation of the study is a small number of observations. The obtained data are consistent with data from other studies (Knepper C et al, 2016)

Conclusions: Correction of sodium in the blood of patients with CF may be promising in increasing their linear growth. Research should continue.

E-Poster Viewing: Childhood & Adolescence

CHANGE IN HEALTH PRACTICES AND KNOWLEDGE DUE TO INTERVENTION CONSIDERING CO-VARIABLES AND CHANGES IN HEALTH ATTITUDE, SUBJECTIVE NORM AND SELF-EFFICACY IN LIMPOPO PROVINCE, SOUTH AFRICA

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Background and Aims:

The current research study investigates change in health practices and knowledge due to intervention considering co-variables and changes in health attitude, subjective norm and self-efficacy.

Methods:

A sample of 324 students from rural primary schools in Dikgale village participated in the study. A questionnaire was used to collect data.

Results:

The main findings of the study includes (i) Students in the experiment condition did not reflect more health related practices ($F(1,315)=0.20$; $p>0.887$) considering co-variables and changes in health attitude, subjective norm and self-efficacy (ii) Students in the experiment condition reflected more health related knowledge ($F(1,315)=115.72$; $p<0.001$) considering co-variables and changes in health attitude, subjective norm and self-efficacy. In addition, 53,8% of the differences between both groups seems related to the intervention.

Conclusions:

The results suggest that even if there can be changes in knowledge due to intervention, healthy practices may be difficult to change. Further interventions should be in place in communities like Dikgale because knowledge alone cannot decrease the prevalence of NCDs.

E-Poster Viewing: Childhood & Adolescence

ANTHROPOMETRIC INDICATORS OF OVERWEIGHT AND OBESITY AND DIET RELATED WITH SLEEP QUALITY IN ECUADORIAN ADOLESCENTS

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Background and aims: The implications on inadequate sleep in the development of overweight and obesity have been strongly evidenced. Previous studies in adults indicate that sleep deprivation results in changes in the levels of some hormones (leptin, ghrelin, insulin, cortisol) that contribute to energy imbalance, which in the long term is related to overweight and obesity. The aim of this study was to examine the relationship between sleep quality and overweight-obesity and diet in a sample of Ecuadorian adolescents.

Methods: Three twenty hundred adolescents (14 ± 3.5 years; 56% female) were recruited from this study. Obesity parameters (BMI, waist circumference and fat mass percentage), diet (24-hour recall) and sleep quality (Pittsburgh Sleep Quality Questionnaire) were evaluated. Adolescents were categorized into two groups as a function of their sleep quality: Good (GSQ) and Poor sleep quality (PSQ). The potential relationships sleep quality, obesity, and diet were determined by ANCOVA adjusted by gender, age and physical activity level using STATA software.

Results: Significant relationships between sleep quality, obesity measures and diet were found. Adolescents with **PSQ** had higher BMI ($p < 0.001$), higher waist circumference ($p = 0.023$), higher fat mass percentage ($p < 0.001$), and they showed a higher intake of energy ($p < 0.001$), carbohydrates ($p = 0.023$) and fat ($p = 0.021$) than adults with a good sleep quality.

Conclusions: These results show that poor sleep quality is an important risk factor for overweight and obesity in adolescents. This support is based on the hypothesis of the metabolic implications of inadequate rest. Rest should form an appropriate lifestyle.

E-Poster Viewing: Childhood & Adolescence

KNOWLEDGE AND USE OF “NUTRITIONAL TRAFFIC LIGHT STYLE” LABELING IN THE NUTRITIONAL STATUS AND PHYSICAL ACTIVITY OF ECUADORIAN ADOLESCENTS”

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Introduction: Nutritional Traffic Light (NTL) is a type of food labeling created to improve the understanding of the content of nutrients such as sodium, sugar and fat in industrialized foods. In Ecuador, the labeling of nutritional semaphore type is mandatory since 2012. **Aim** of this work is to evaluate the influence of the use and knowledge of the nutritional semaphore type labeling in the nutritional status in ecuadorian adolescents.

Methods: transversal study. 600 adolescents (14-18 years old) were selected. Anthropometric, physical activity (IPAQ-A) data were collected, information on the use and knowledge of the labeling was collected through a questionnaire prepared for this purpose. The potential relationships use and knowledge, and weight status and diet were determined by logistic regression adjusted by gender, age and physical activity level using STATA software.

Results: 46% of adolescents perform moderate physical activity. 64% of the sample presented excess body weight measured by body fat percentage. The average energy consumption was 2891 Kcal (men) and 2551 (women). More than 84% of adolescents report adequately understanding the information of the NTL; 64% of adolescents report consuming their food based on NTL. A negative correlation ($r = -0.185$, $p = 0.032$) was found between the knowledge of the NTL of the adolescents and waist circumference and a negative correlation ($r = 0.227$; $p = 0.008$) between the consumption of fat and the knowledge of the NTL.

Conclusions: Adequate knowledge about NTL is related to a lower waist circumference and lower fat consumption in Ecuadorian adolescents.

E-Poster Viewing: Childhood & Adolescence

INDICATORS OF ADIPOSITY AND SYMPTOMS OF ASTHMA IN ADOLESCENCE: SCAALA COHORT RESULTS

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The aim of this study was to examine the relationship between global obesity, abdominal obesity and the symptoms of asthma and atopy.

Methods

Abdominal adiposity was evaluated in 1,001 adolescents aged 12 to 19 years, living in Salvador-Brazil, using waist circumference (WC), waist-to-height ratio (WHtR), conicity index (CI) and A Body Shape Index (ABSI). The BMI for age was calculated to classify excess weight and the questionnaire of the International Study of Asthma and Allergies in Childhood (ISAAC) was used. The association between global and abdominal obesity and the symptoms of asthma and atopy was analyzed by logistic regression, according to sex and adjusted for variables of interest.

Results

The prevalence of wheezing in the 12 months prior to the interview was 10.1% and 7.9% had asthma symptoms. No association was found between the BMI and the symptoms of asthma and atopy. However, only in women the abdominal obesity measured by CC was OR 2.02 (95% CI 1.01, 4.04), the RCE was high, OR 2.75 (IC95 % 1.14; 6.60) and was associated with wheezing. An ABSI with high and very high risk in women increased almost twofold (OR 1.97, 95% CI 1.11, 3.36) the probability of atopy (adjusted for age, birth weight, schooling of the mother, breastfeeding, severity of symptoms in baseline, asthma in the parents, sexual maturity and menarche).

Conclusion

The association between excess abdominal weight and wheezing and atopy in adolescent women was confirmed. We encourage the use of abdominal adiposity indicators to identify populations at risk.

E-Poster Viewing: Childhood & Adolescence

ASSESSING CHILD NUTRITION STATUS THROUGH INTEGRATED SERVICES IN UNDESERVED COMMUNITIES: USING AN OUTREACH MODEL IN SHINYANGA, SIMIYU AND MARA, TANZANIA

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Background & Aims

Malnutrition contributes to 50% of childhood deaths and is a barrier to child growth, development and survival. Stunted, underweight and wasting children are at greater risk of severe acute malnutrition (SAM) and death without early intervention. USAID Boresha Afya works in 7 regions in the lake and western zones in Tanzania to address challenges in maternal and child health.

Use of integrated outreach services for identification of malnutrition cases at community level provides an opportunity to reach under-fives through expanded services such as immunization, deworming, vitamin A, and other child health services.

This presentation describes the use of outreach services as a platform for identifying malnourished children and ensuring they receive key preventive health services.

Methodology

- Provision of integrated outreach services in undeserved population in Shinyanga, Simiyu and Mara regions, Tanzania;
- Children 0-59 months were assessed on their nutrition status using anthropometric measurements and new standards of growth monitoring were used to plot and interpret data;
- Nutrition counselling on locally available foods conducted;
- Referrals were provided to children with SAM.

Results

Out of 1356 children, 97 (7.2%) were stunted, 97 (7.2%) were underweight, and 11 (1%) were wasted while 1151 (85% %) were normal. There were 11 SAM cases of which 9 were referred to the nearest health facilities. 454 under-five children were immunized.

In addition, 1,067 (78.7%) children received vitamin A and 1,356 (100%) received mebendazole.

Conclusion

Integrated community outreach services, including nutrition assessment and counselling, in undeserved areas offers an opportunity to identify cases early, intervene early, and minimize risk of complications.

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ADDRESSING PRACTICAL CHALLENGES WITH NUTRITION ASSESSMENT: THE EXPERIENCE FROM LAKE AND WESTERN ZONES, TANZANIA

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Background & Aims

Malnutrition remains an important underlying cause of mortality and morbidity in Tanzania. Malnutrition is a serious barrier to the development of full human potential and sustainable social and economic development. To achieve health for all, USAID Boresha Afya has to address the malnutrition challenge through comprehensive maternal newborn and child health program .

Early identification and management of malnutrition cases at health facilities presents an opportunity to improve the overall quality of care and clinical outcomes while reducing costs.

Methodology

USAID Boresha Afya Project collected data on quality of pediatric care at 421 facilities using a national Integrated Management of Childhood Illness (IMCI) compliance assessment tool in April – June 2018.

Results

A total of 1,146 under-fives were seen in 421 facilities. The nutrition assessment and categorization was conducted in 10% of cases assessed. Height was recorded in 2% of the total cases assessed, while weight was recorded in 53% of cases.

The Project, in collaboration with District Nutrition Officers, provided mentorship on nutrition assessment and categorization. Health facilities with no anthropometric equipment were encouraged to procure them from their resources in improving nutrition and RMNCAH services. Ongoing program support ensures that health providers conduct regular monitoring on nutrition status for under-fives during clinic attendance.

Conclusions

Use of Quality improvement tool such as the electronic IMCI compliance assessment is effective in identifying gaps on nutrition specific interventions in health facilities. Providing immediate mentorship on observed gaps on knowledge and skills improve quality of child health care in facilities.

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WOULD YOU PLAY WITH A SHORT CHILD? ATTITUDES TOWARDS SHORT STATURE CHILDREN - A NOVEL TOOL

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Background and aims: Child stereotypes about height have not been well documented in spite of their relevance to understanding the impact of height differences on the well-being of short statured children. The results of most studies could be affected by social desirability. We constructed a novel, implicit tool, the Height-Perception-Picture-Test (HPPT), which assesses internal emotions towards four age-appropriate social situations related to height: a basketball game, a dance party, a yearbook picture and a picture of children sitting. The study aimed to validate the HPPT and examine the association between self-esteem and the HPPT.

Methods: 233 healthy children (118 boys), aged 8-17 years, with height in the normal range ($-2 < \text{height-SDS} < +2$) were recruited to the study. Participants completed the HPPT and the Rosenberg-Self-Esteem-Scale (RSES).

Results: The HPPT Cronbach- α was 0.869, indicates good internal consistency. Lower scores were found for answers about a child with short stature as compared to an average height child in all social situations ($P < 0.001$). Negative correlations were found between RSES and the HPPT mean scores ($R = -.274$, $p < .001$ & $R = -.239$, $p = .001$ for short and averaged height children, respectively).

Conclusions: In this study, negative attitudes were shown towards the short stature child, while the average height child was considered more popular, strong and capable. Children with a higher self-esteem showed greater acceptance of other children with different stature.

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COMMUNITY PERCEPTIONS OF THE DETERMINANTS OF MOTHER-CHILD COUPLES' DIETARY DIVERSITY AND NUTRITIONAL STATUS: A MIXED DESIGN STUDY

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Background and aim: Fighting malnutrition requires good understanding of its causes. This study assessed community perceptions of the determinants of maternal and child nutritional status in Zè district in Benin.

Methods: Quantitative data on household food insecurity and individual dietary diversity were collected in 64 couples of mothers and 6-59 months old children from 38 households. Anthropometric measurements were used to determine their nutritional status. Qualitative data were collected during 8 focus groups, with active men, older men, women of childbearing age and older women separately.

Results: The prevalence of wasting and underweight was respectively 6% and 19%. Chronic malnutrition was predominant and affected 57% of the children. Among mothers, 9% suffer from chronic energy deficiency while 13% were overweight or obese. Only 19% of children aged 6-23 months had a minimum dietary diversity and 15% a minimum acceptable diet. For 24-59 months old children and mothers, average dietary diversity score was 5 ± 1 out of 14 food groups. Food insecurity affected 80% of households in total, 53% severely. Focus groups confirmed poor food access and dietary diversification as main determinant of mothers and children's malnutrition, as well as low contribution of men in household food provisioning, poor sanitation, insufficient utilization of health services due to cultural beliefs and bad reception.

Conclusions: Zè remains highly disadvantaged despite numerous nutritional interventions. Beyond quantitative data, community perceptions gave good insight into context-specific causes of malnutrition in mothers and children, in view of a refinement of strategies using a more participatory approach.

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TRENDS AND PATTERNS OF CHILD MALNUTRITION IN NEPAL: DOES INEQUALITIES IN CHILD MALNUTRITION IN NEPAL ARE SWIMMING AGAINST TIDE?

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This study examines the trends and patterns of averages *vis-a-vis* inequalities in child malnutrition by wealth status of household across regions and place of residence of Nepal. Data from two rounds of Nepal Demographic and Health Survey (NDHS) 2006 and 2011 were analyzed. The proportion of children Underweight, Stunting and Wasting (moderate and severe) have been used as dependent variables and wealth index as a proxy for economic status of the household. Results indicated that, in spite of a substantial improvement in average nutritional status from 2006-2011, corresponding improvement was not observed in inequality in nutritional status of children. Further, the findings suggest that the inequalities in child malnutrition in Nepal are swimming against its progress in averages. This implies that benefits of improvements in child nutritional status by passed the children of poorest wealth quintiles while it disproportionately benefitted children of richer and richest wealth quintiles.

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RICKETS AND ASSOCIATED MICRONUTRIENT DEFICIENCY AMONG MOTHER-CHILD PAIR IN RURAL COMMUNITIES OF KUJE AREA COUNCIL, FEDERAL CAPITAL TERRITORY ABUJA, NIGERIA

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Rickets/osteomalacia in rural communities have been unnoticed, thus have not attracted attention for appropriate intervention in Nigeria. This study assessed the proportion of underfive children with rickets and women with osteomalacia/rickets and associated micronutrient (Vitamin D, Calcium, Alkaline Phosphates and Phosphorus) status of the underfive children – mother pair. A cross-sectional survey method was used and multi stage sampling techniques was used in selecting the populations that were studied. Probability proportion by size was applied in choosing 30 clusters for the survey using ENA for SMART software 2011 version. Validated questionnaires were used to obtain information from the population and trained personnel collected the blood sample and all parameters were analysed using standard methods. The data was also subjected to statistical analysis using statistical package for social sciences version 20. Biochemical result showed that 11.8% of the children were suspected to have rickets from clinical assessment, 36.4% were deficient in Vitamin D, 10.7%, 9.1% were deficient and above normal respectively in Alkaline Phosphates, 1.7% were deficient in Phosphorus, and 59.5% were deficient in Calcium. The biochemical result of the mothers showed that 5.7% of the mothers were suspected to have rickets, 30.4% were deficient in Vitamin D, 93.8% had above normal Alkaline Phosphates levels, 41.3% were deficient in Phosphorus, and 52.2% were deficient in Calcium. Rickets and associated micronutrient deficiency in Kuje was high in this study.

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CORRELATES OF CONSUMPTION OF MICRONUTRIENT RICH FOODS AMONG IN-SCHOOL AND OUT-OF SCHOOL ADOLESCENTS IN SOUTHWESTERN NIGERIA

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Background and Aim: It is well documented that micronutrient deficiencies affect at least a billion young people worldwide. Eating micronutrient rich foods (MNRF) may be a convenient way to improve the nutritional and health status of adolescents. The study was conducted to assess the awareness, knowledge and consumption of MNRF among adolescents in Ile-Ife, Osun State.

Methods: Simple random sampling technique was used to select 720 adolescents. 630 in-school and 90 out-of school adolescents were interviewed in the study area. A structured questionnaire was used to elicit information on awareness, knowledge and consumption of MNRF. MNRF was assessed using Dietary Diversity Score. Data were analysed using both descriptive and inferential statistics on SPSS version 22.

Results: For awareness, 66.7% were rated high which was higher among in-school adolescents, 15.0% were rated high in knowledge and consumption of MNRF. Surprisingly, consumption is higher among out-of-school adolescents. There was a significant relationship between knowledge and consumption ($p=0.014$) while differences existed between in-school and out-of-school adolescents in consumption of MNRF ($p=0.001$). Older adolescents are twice more likely to consume MNRF than younger adolescents ($OR = 2.04$, $CI = 0.62 - 2.21$). **Conclusion:** It is concluded that awareness is high but consumption of micronutrient rich foods is low among adolescents in the study area. It is therefore recommended that educational material about micronutrient rich foods should be provided in schools and emphasis should be placed on the benefits of consumption. More foods should be fortified with micronutrients of public health importance.

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NUTRITIONAL AND HEALTH STATUS OF ADOLESCENTS IN A PRIVATE SECONDARY SCHOOL IN OSUN STATE, NIGERIA

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Background: Malnutrition and high blood pressure in children and adolescents have grave consequences on public health. This study investigated the prevalence and associated factors of underweight, overweight/obesity and high blood pressure among adolescents in a private secondary school in Osogbo, Osun state, Nigeria

Method: A cross-sectional study was conducted on 316 (160 females and 156 males) aged 13.1±1.7 years. Nutrition knowledge and dietary habits were obtained using a well structured questionnaire. Anthropometric indices and blood pressure variables were determined using standard techniques. Descriptive analysis and correlations were conducted using the Statistical Package for Social Sciences (SPSS) software (version 20).

Results: Majority of the participants had a good knowledge of nutrition (83.5%), skipped meals (69.0%) and mostly breakfast (41.2%) and a few consume fruits (24.2%) and vegetables (31.0%) daily. Consumption of in-between meals was popular (80.3%) among the participants majorly fast foods (61.4%). Most of the participants had normal weight (52.8%) and blood pressure (83.9%), a significant proportion of them were underweight (32%), overweight or obese (14.9%) and pre-hypertensive or hypertensive (16.1%). Many of the overweight/obese participants consume fast foods in-between-meals (64%) and fried foods daily (55%). Overweight and obese (BMI-for-age ≥85 percentile) participants had significantly higher ($p<0.05$) systolic and diastolic blood pressure than those with BMI-for-age <85 percentile. BMI and WC had positive correlation with systolic ($r=0.300$; $p=0.000$ and $r=0.373$; $p=0.000$) and diastolic blood pressure ($r=0.200$; $p=0.000$ and $r=0.263$; $p=0.000$) respectively.

Conclusion: Although the participants had good nutrition knowledge, they had poor dietary pattern which may have negative impact on their nutritional and health status.

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EVALUATION OF MALNUTRITION DEVELOPMENT RISK IN HOSPITALIZED CHILDREN AND THEIR CAREGIVERS

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Background: Malnutrition is known to be responsible for mortality especially in hospitalized children and the studies evaluating the nutritional status of mothers are quite limited.

Methods: Waterlow and Gomez classification and MUST screening tool were applied to 80 inpatients and their caregivers at one hospital in Ankara, Turkey. Physical measurements of children and their parents were collected at hospital admission and at discharge. Z-scores of height-for-age, weight-for-age, weight-for-height, and body mass index-for-age were calculated.

Results: WFL/H (weight-for-length/height), WFA (weight for age), and BMI (body mass index-for-age) standard deviation score of less than -2 was present in 25% of the study population at hospital admission, whereas 35 % of the participants had z indeks score of less than -2 at hospital discharge. Length of hospital stay was determined to be longer for those patients with the 3% reduction in WFL/H, WFA and BMI standard deviation score values ($p = 0.00, 0.01$ and 0.04 , respectively) at the time of discharge, compared with the patients without the significant changes in these three parameters. According to Gomez and Waterlow classification malnutrition rates increased at discharge and according to MUST classification system, 7.5% of caregivers were identified moderate risk and 26.3% of them were classified obese.

Conclusion: The results of our study showed the frequency of malnutrition in hospitalized patients is still very high and therefore beside investigation of the hospitalization reason, the all hospitalized patients should be evaluated in terms of nutrition and with this way early diagnose and treatment of malnutrition would be provided.

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IMPACT OF BREASTFEEDING DURATION AND MATERNAL CHRONIC DISEASES ON WEIGHT IN PRESCHOOL-AGE CHILDREN

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Background and aims. The health benefits of breastfeeding are well-known, but the complex impacts with maternal chronic diseases on children weight have not been well studied. We examined the relationship between maternal chronic diseases and childhood overweight and evaluated breastfeeding impact on these associations.

Methods. This follow-up study comprised 621 mother-child pairs who were residents of the city of Kaunas, Lithuania. Mothers responded to the standardized questionnaires with information about the chronic diseases, behavioural characteristics, and child health data. We used Lithuanian percentile method for the estimation of children's overweight/obesity. The impact of duration of breastfeeding and mother's chronic diseases on children's weight were examined by using logistic regression analyses.

Results. Some 10.3 % of the children were overweight and obese. 59.1 % of infants were breastfed longer than 6 months. The results indicated an inverse association between duration of breastfeeding and risk of overweight. Children who were breastfed for ≥ 6 months were 29 % less likely to be overweight than those who were breastfed for < 6 months independently on maternal chronic diseases. The multivariate model showed that maternal chronic diseases were found to be the risk factors for overweight in 4–6 years children breastfed less than 6 months (aOR 2.11); however for children breastfed more than 6 months aOR were 1.54.

Conclusions. Longer duration of breastfeeding was associated with the lower risk for overweight in children aged 4–6 years. Health care professionals should encourage mothers promoting breastfeeding targeted to prevent obesity through childhood.

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ASSESSMENT OF MORNING HYDRATION STATUS AMONG SCHOOLCHILDREN FROM MAŁOPOLSKA REGION (SOUTH OF POLAND)

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Background and aims: In the case of children, dehydration affects mobility and cognitive functioning at school. We assessed the morning hydration status in a group of schoolchildren aged 7-15 years.

Methods: The study, conducted in spring 2018 among 331 healthy pupils from Niepołomice and Kraków (Małopolska Region), measured urine osmolality of two urine samples: the morning sample brought by the child from home and the sample taken at school.

To assess nutritional status, BMI interpretations for a child's sex and age by national percentiles charts were used. We present results regarding 314 pupils (average age 10.36 ± 1.64 years, no statistical differences according to gender), including 175 boys and 139 girls, who gave their second urine sample. Statistical analyses were performed in the Statistica 13 PL program.

Results: The nutritional status of children did not differ depending on gender and place of residence. 75.8% of children had normal weight, 7.5% a body mass deficiency, 10.0% were overweight and 6.7% obese. The average osmolality level of the morning urine sample was 801.76 ± 232.32 mOsm/kgH₂O, and of the second sample 757.0 ± 272.38 mOsm/kgH₂O. More than a third of the children (36.6%) had urine osmolality above 800 mOsm/kgH₂O, while 16,8% had urine osmolality over 1000 mOsm/kgH₂O.

Conclusions: Every second child had evidence of a hydration deficit during morning stay at school. The project received a positive opinion from the Bioethical Committee of the Jagiellonian University and was financed by the Polish State Committee for Scientific Research, Grant no K/ZDS/006175.

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ASSOCIATION OF BLOOD PRESSURE WITH NUTRITIONAL STATUS, CONSUMPTION OF SAUSAGES AND PHYSICAL ACTIVITY OF ADOLESCENTS

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To verify association of blood pressure with nutritional status, intake of sausages and physical activity of adolescents. Project approved by the Human Research Ethics Committee of the Federal University of Viçosa, Brazil. Cross-sectional study with high school adolescents of a public school in 2017 and 2018. Weight and height were measured for the calculation of body mass index being evaluated according to age and sex. The consumption of sausages was evaluated through the questionnaire of frequency of weekly consumption and physical activity was investigated whether or not performed. Blood pressure was measured twice, with a five-minute interval between measurements and the mean was used. Statistical analyzes were performed in SPSS software version 20.0, adopting significance level of 5%. Pearson's chi-square test and the magnitude of the association determined by the Odds Ratio (OR, 95% CI) were used to verify the association between altered blood pressure and the variables of interest. We evaluated 196 adolescents, 2.6% (n=5) were underweight, 14.3% (n=28) were overweight and 83.1% (n=163) were eutrophic. 83.7% (n=164) consumed sausages weekly and 25.0% (n=49) did not practice physical activity in college. Regarding blood pressure, 11.2% (n=22) presented alterations. It was observed only association between arterial pressure and overweight ($p<0.001$), where adolescents with excess weight were 8.39 more likely to present blood pressure changes. Concluded that nutritional status interferes with blood pressure levels in adolescents

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SOCIAL WELFARE AND FOOD AND NUTRITIONAL INSECURITY OF RURAL FAMILIES OF ADOLESCENTS: AN ANALYSIS OF THE INFLUENCE OF THE SEX OF THE FAMILY CHIEF

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Adolescence is a phase of biological transformations, where different factors can influence the development of adolescents. The objective was to evaluate the influence of the sex of the head of the family on the determinants of access to goods and services and on the food insecurity situation of rural families of adolescents. This is a cross-sectional study carried out in rural households in Viçosa – Minas Gerais, Brazil. A questionnaire was used to collect information regarding access to goods and services (type of water supply and treatment, sewage and waste disposal); number of residents at home; and evaluation of food insecurity by the Brazilian Scale of Food Insecurity. Statistical analyzes were conducted using the Pearson's Chi-square test and Spearman's correlation. The project was approved by the Human Research Ethics Committee of the Federal University of Viçosa. Sixty-six adolescents with a mean age of 16 years ($sd \pm 2.57$) were evaluated, being 55.0% male. Food insecurity was present in 53.3%. There was an association between the sex of the reference dweller (female) and type of water supply - source or cistern ($p=0.001$), water treatment ($p=0.034$), garbage collection ($p < 0.001$), food insecurity $p=0.011$). There was a correlation between number of residents and EBIA score ($r=0.456$, $p<0.001$). It was concluded that the gender of the reference dweller influenced the determinants of access to goods and services and the food and nutritional insecurity situation of the adolescents' families. (ACKNOWLEDGMENTS: Coordination of Improvement of Higher Level Personnel and Post-graduation in Agroecology).

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ATTENTION DEFICIT HYPERACTIVITY DISORDER PROGRESSION AFTER DIET MODIFICATION: EGYPTIAN MODEL

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Introduction: There is increased prevalence of attention deficit hyperactivity disorder in children and adolescents in many countries and in Egypt. The specific causes for ADHD are unknown but there are several factors contribute or exacerbate ADHD as high carbohydrate diet especially simple sugars. Complementary treatment as diet modification was proved to have beneficial effect.

Aim: study effect of diet modification and adjusting carbohydrate intake on ADHD.

Sample: the study was applied on 47 children newly diagnosed with ADHD. Their ages are from 6 to 9 years. They were recruited from behavioral and psychological assessment clinic of medical excellence center, national research center.

Methods: That was a prospective, interventional study. The children were newly diagnosed by DSM 5 and subjected to Conner's parent rating scale –revised short form and dietary analysis before and after diet planning (carbohydrate intake was 45-65% of expected energy requirement) for 5 weeks.

Results: The study detected that following planned diet led to improvement in ADHD symptoms demonstrated by reduction of Conner's parent rating subscales scores. Hyperactivity index before diet modification was (66.21±12.96) and after diet modification (64.06±11.99), impulsive /hyperactive index before (65.94 ± 7.36) after (64.31±6.93) and learning problems before (71.85±12.58) after (70.15±11.83).

Conclusion: Diet modification and adjustment of carbohydrate intake with exclusion of simple sugars improved ADHD symptoms.

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MORE THAN ONE TENTH OF SHORT CHILDREN ARE CELIAC !

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1. Introduction

Celiac disease is one of the commonest causes of short stature in children, particularly in the Maghreb.

We report the etiologic results of a school screening of short stature in Algeria.

2. Material & Methods

This was a cross-sectional descriptive study conducted in a sample of school pupils in Setif, Algeria to detect short children and then to look for the etiology of short stature by several investigations ; including celiac serology.

3. Results & Discussion

The study covered 2493 primary school children ; prevalence of short stature was 47 children / 2493 or 1.9%.

Of these 47 children, 35 had a height < 2 SD when adjusted to their genetic predicted height. and were explored

Five out of 47 short school children had a confirmed celiac disease, the estimated prevalence of celiac disease in short children was 10.64% .

The panel of celiac patients encompassed: - 04 children already diagnosed as celiac patients - and a boy detected by this screening (height < - 2.04 DS, anti-transglutaminase IgG at 90.73 IU / ml, and Marsh III villous atrophy)

Our work reports the results of the high frequency of CD diagnosis through a short stature screening in Algeria.

4. Conclusion

In our study, more than one tenth of short children were celiac.

Broad indications of growth monitoring may reveal or unmask a complicating celiac disease.

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EFFICIENCY OF KETOGENIC DIET ON PATIENTS WITH REFRACTORY EPILEPSY.

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Introduction and aims

The ketogenic diet is a nonpharmacologic treatment used for patients with medication refractory epilepsy, this diet contains a high proportion of fats and low of carbohydrates reproducing metabolic changes seen in fasting.

The aim of the study was to describe efficiency and tolerability of this diet in patients with refractory epilepsy carried out in a pediatric nutrition unit of a reference hospital in Madrid.

Methods

Retrospective observational study from July 2015 to September 2018, with revision of medical records (anthropometrical, analytical and clinical outcome) of patients with refractory epilepsy. Ketogenic diet treatment was carried out by doctors and dietist specialised on pediatric nutrition.

Results

A total of 12 patients, median age of 7,5 years (range 1,5-16), was included, 58% male. The median duration of the diet was 5 months (range 1-14). 33% of patients started the diet during admission for treatment of an epilepticus status.

The Ketogenic diet most frequently used was Atkins modified in 50% of the cases (table 1). 67% showed an improvement in the crisis control, no epilepticus status were registered during the follow up. 75% of children showed cognitive and conductal improvement with the diet. Just a 17% gave up the diet because of lacos compliance. No major adverse effects were founded. Constipation was present in 42% of the cases.

The type of Ketogenic diet	Patients	
	Total (n)	Percentage (%)
Classic ketogenic diet	3	25%
Medium chain triglyceride diet	3	25%
Modified Atkins diet	6	50%

Table 1. Descriptive analysis of the type of ketogenic diet in the study sample.

Conclusions

The Ketogenic diet proved to be an effective treatment in refractory epilepsy. It achieves an effective control of the crisis and improves cognitive and conductal levels.

It should be applied earlier in patients treated unsuccessfully with two or more antiepileptic drugs.

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BODY COMPOSITION ASSESSMENT BY A BIOIMPEDANCE SCALE IS A BETTER ROUTINE MEASUREMENT OF BODY ADIPOSITY THAN BODY MASS INDEX

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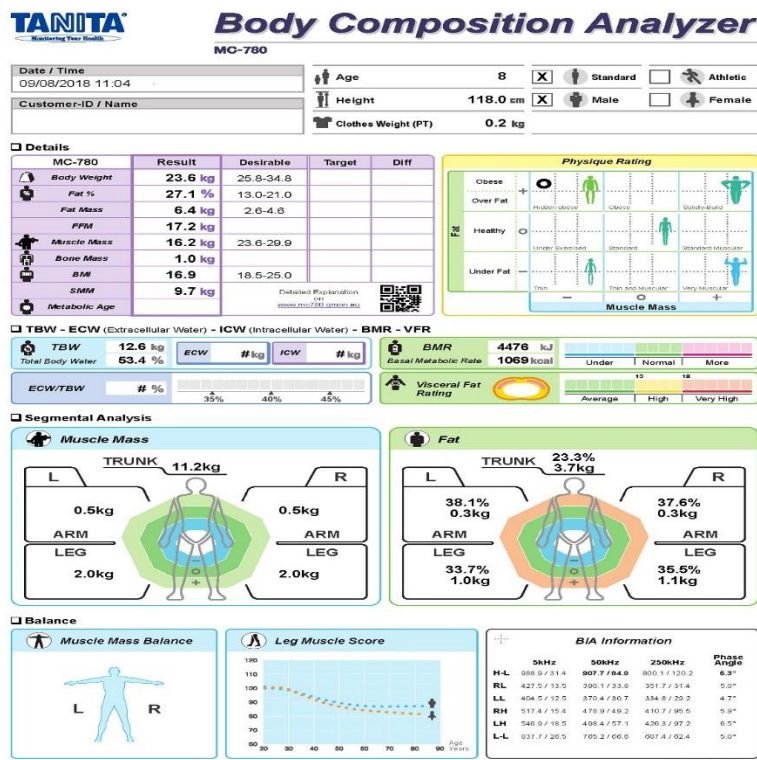
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Background and Aims:

Body mass index (BMI) is a standard measure of weight in children and adolescents, but it is not a direct measure of adiposity. It may overestimate fatness in children who have high muscle mass or underestimate fatness in children who have low muscle mass. In 2018, our Endocrinology Unit implemented a bioimpedance scale as part of the routine anthropometric growth and nutrition assessment. We aimed to investigate the association between BMI and body composition.

Methods:

Cross-sectional study. Patients 5-19 years of age were assessed using the Tanita Body-Composition Analyzer (Tanita MC-780 MA) (Figure 1).



Results:

Outcome measures: BMI-SDS, body-fat (BF%) categories (healthy/obese/over-fat/under-fat). Our cohort was comprised of 318 patients (47% males), mean age 12.8 ± 3.4 years. BMI overestimated and underestimated body adiposity in boys and girls (0.6% and 43%; 1.2% and 30.3%, respectively). Distribution of weight-status differed between BMI-SDS and BF% (in boys: 69% healthy, 11.5% obese, 12.8% overweight, 6.7% underweight versus 49.3% healthy, 33.8% obese, 15.5% over-fat, 1.4% under-fat, $P < 0.001$, and in girls: 59% healthy, 16.6% obese, 19% overweight, 5.4% underweight versus 53.6% healthy, 35.7% obese, 10.1% over-fat, 0.6% under-fat, $P < 0.001$).

Conclusions:

Our findings suggest that the use of BMI as a surrogate marker of adiposity is often misleading. The implementation of a bioimpedance scale as part of the standard of care allows a more nuanced assessment of body anthropometrics and adiposity. This clinical tool may enable the physician and nutritionist to better optimize medical nutrition therapy.

E-Poster Viewing: Childhood & Adolescence

RELATIONSHIP BETWEEN CAREGIVER BEHAVIOR IN YOUNG CHILD FEEDING PRACTICE AMONG CHILDREN AGED 12-23 MONTHS WITH STUNTING AT SUBURBAN AREA JATINANGOR WEST JAVA - INDONESIA

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Background: Stunting is malnutrition condition caused by unfulfilled nutrition for a long period, this condition affecting the child's life for short and long term. The pPrevalence of stunting in West Java at 2015 as much as 17.1% among children aged 0-23 months with 12.9% children categorized as stunted and 4.2% categorized as severely stunted. Stunting can be reduced by one of factor that affect the fulfillment of nutritional requirement, which is caregiver behavior in feeding practices. The aims of this research is to know the relationship between caregiver behavior in young child feeding practices with stunting.

Method: This cross sectional study participated by mother and children aged 12-23 months in seven villages at Jatinangor. Data collected by interview using questionnaire and child's body length measurement using infantometer. Questionnaire made based on guideline from *Ikatan Dokter Anak Indonesia* (IDAI) and World Health Organization (WHO) about infant and young child feeding. Nutritional status is determined based on length-for-age Z score. Statistical analysis using chi square and Mann Whitney test.

Result: This study collected 217 subjects with 59 of them (27.2%) are categorized as stunted. Mann Whitney test showed p value for adequate feeding is 0.003 and for responsive feeding is 0.012. P value for timely and safe feeding are >0.05. Caregiver behavior in child feeding practice showed $p < 0.05$.

Conclusion: Child feeding practice showed a relationship with stunting. Adequate and responsive feeding practice showed a relationship with stunting, meanwhile safe and timely feeding show no relationship with stunting.

E-Poster Viewing: Childhood & Adolescence

PREVALENCE AND INCIDENCE OF STUNTING FROM BIRTH TO FIVE YEARS OF LIFE IN INDONESIAN CHILDREN: PROSPECTIVE COHORT STUDY OF CHILD GROWTH AND DEVELOPMENT BOGOR CITY

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Indonesia is facing high prevalence of stunting. Meanwhile, stunting is one component of Human development index in a country. The environments a child live in have important roles to their nutritional status. This study aims to To determine the percentages of prevalence and incidence in child stunting at birth, 23, and 59 months of age and to investigate the association between living condition factors and child stunting outcome. This is an open population study conducted in Bogor City from 2012. Anthropometric measurements were performed monthly by trained health background enumerators. WHO's growth standard ($<-2SD$) is categorized as stunted. There were 793 children followed from birth. 104 born stunted. They were followed for 59 months and 300 became stunted. The 59-months average risk of stunting in this cohort study was 0.435 or 43.54%. The incidence rate of stunting in this study is 2.4 stunting cases per 100 person-months. The prevalence of child stunting at birth, 23 months, and 59 months was 13.1%, 39%, and 50.9%, respectively. Among children live in a house without toilet, 16 of 60/100 incident cases of stunting that occur could be prevented if they have a toilet in the house ($RR=1.401$ ($1.079-1.820$); $p\text{-value}=0.004$; $AR=0.16$). Early nutritional interventions from pregnancy, increase quality of antenatal care, provide proper household sanitation infrastructure are vital to reduce child stunting in early life.

E-Poster Viewing: Childhood & Adolescence

EPIDEMIOLOGICAL STUDY ON HYDRATION OF CHILDREN AFTER AN EARTHQUAKE

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Background: Health benefits of drinking water have been reported by several studies worldwide, and growing children need 1.5 to 2.5 times higher amount of water intake than that of adults per day. After the 2011 Great East Japan Earthquake, parents temporarily lowered their children's frequency of drinking water due to concerns water safety, and after that the possibility that the relationship with water in the usual lifestyle has changed.

Methods : We have delivered a questionnaire to almost five hundred schoolchildren and their guardians lived in the Tohoku region where epicentre of the earthquake. The questionnaire included changes in drinking water behaviours after the earthquake, types of drinking water (tap water, water purifier, etc), reasons for using water purifiers and commercial water at home, and liquids that children usually drink at home. **Results:** Regarding the modified situation of the drinking water after the disaster, 76% remained 'unchanged', 16% 'changed and remained changed', and 7% 'changed, but now returned to the original'. About 86% of those who 'changed and remained changed' currently drinks or uses 'tap water or water purifier' at home; 28% of them combined it with 'market water'.

Conclusions: About 90% used tap water; however, the ratio of using water purifier is high. Approximately 20% are changing the type of drinking water after the disaster, and "safety" is the most common reasons why tap water is not used and for using commercially available water.

E-Poster Viewing: Childhood & Adolescence

ANTHROPOMETRIC AND BIOCHEMICAL ASSESSMENT IN PATIENTS WITH DUCHENNE MUSCULAR DYSTROPHY

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Introduction: Duchenne muscular dystrophy (DMD) is a severe muscular disease inherited in a recessiveX-linked pattern and characterized by progressive loss of functional muscle mass followed by changes in body composition. Finding diagnostic markers and determining adequate nutritional support remain a challenge.

Aim: To describe anthropometrics and biochemical measurements in DMD patients followed-up at a tertiary care center

Methods: A prospective, observational, cross-sectional study was conducted. Anthropometric measurements were taken evaluating body composition (bioelectrical impedance analysis), and biochemical parameters in all DMD patients seen between June 2013 and April2014 who agreed to participate in the study.

Results: 63 boys between 5.4 and 18.7years of age were evaluated. Diagnosis of obesity ranged from 28% measuring body mass indexZ-score (BMI Z-score) to 70% using percentage of fat-free mass (%FFM). Of all patients, 29% presented with insulin resistance (IR) associated with BMI Z-score and waist circumference. Of these patients, 77% were obese according to the BMI Z-score and 83% were on steroid treatment. Acanthosis and central fat distribution was found to be associated with IR (p 0,04).None of the patients had impaired fasting glucose nor diabetes. Dyslipidemia was found in 40% of the DMD patients, due to hypertriglyceridemia in 90%.

Conclusions: A high prevalence of obesity was observed. BMI Z-score underestimates the diagnosis of obesity. No correlation was found between steroid type and body composition or metabolic disorders.

E-Poster Viewing: Childhood & Adolescence

ANTHROPOMETRIC AND NUTRITIONAL ASSESSMENT IN SPINAL MUSCULAR ATROPHY TYPE II AND III

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Aim: Spinal Muscular Atrophy(SMA) is a hereditary neuromuscular disease marked by the progressive weakness and muscle loss, with obesity as well as malnutrition, gastrointestinal dysmotility, and osteoporosis. Many patients also exhibit metabolic abnormalities. The optimal body weight in this patients has not been clarified yet.

Methods: observational study. Nutritional and medical history survey of children with SMA type II and III collected between 2008-2015

Results: 109 patients, 55% males, 78% SMAII and 22% SMAIII. Median age at evaluation was 8.5 years. Low height-for-age was present in 31%, significantly more frequent in SMAII (61 vs 10%, $p=0.03$). According of Z-score-of-BMI, 66% presented normal weight, 16% underweight, 12% overweight and 6% obesity. With higher frequency of malnutrition in SMAII and greater presence of overweight-obesity in SMAIII (19 vs 40%, $p<0.00$). Nutritional support was required by 10% of the population and in all cases were SMAII. Vitamin D supplementation was required by 37% of the population, significantly more frequent in SMAII (35 vs 2%, $p<0.00$). Scoliosis was present in 62% of the population, more frequent in SMAII (71 vs 31%, $p<0.00$), 10% present pathological fractures. Constipation is more common in SMAII (41 vs 4%, $p<0.00$). According to metabolic disorders, 37% present insulin resistance with no differences according to the type of SMA, but significantly more common in overweight and obese patients (0.46 ± 2.2 vs 31 ± 1.2 , $p=0.03$). The 18% of the patients presented hypertriglyceridemia and 54% showed low HDL cholesterol, with no difference according to the type of SMA, and without correlation with Z score of BMI. Low vitamin D plasma levels was present in 70% of the population, more frequent SMAII.

Conclusion: It's very important to have a close look at the nutrition of these children to try to reduce the morbidity associated with their underlying disease and optimize growth.

E-Poster Viewing: Childhood & Adolescence

REDUCTION IN CHILD STUNTING AND IMPROVED COGNITION: A CONTRIBUTION BY COMMUNITY HEALTH WORKERS IN A RURAL SETTING, KENYA

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Background and aims: Globally an estimated 139 million children are stunted with majority living in developing countries. Stunting in early age has been associated with diminished survival and impaired cognitive development. It is irreversible after second year of life. Poor child cognition is linked to delayed school enrollment and decreased economic activities in later years. Through Timed and Targeted Counselling intervention, Community Health Workers provided key nutrition messages to caretakers of children at specific times during child's growth. This study assessed the impact of Community Health workers services on stunting and cognition among children aged less than two years in Kisumu County, Kenya.

Methods: This was a cross sectional study that recruited 101 children. Stunting was computed based on WHO height-for-age Z-scores while child cognition was determined by Baileys Scale of Infant Development and composite scores.

Results: The prevalence of stunting was at 6% while 34% of children were found to below average on cognitive scores. Bivariate analysis revealed that duration of breastfeeding ($\chi^2=16.7174$, $p=0.033$) was associated with stunting child's age ($\chi^2=13.71$, $p=0.033$) and father's income ($\chi^2=6.63$, $p=0.0036$) was associated with child cognition.

Conclusions: Community Health Workers have proved effective in reducing stunting and improving cognition. This intervention should be scaled up. Mother's education showed to be critical in improving these outcomes. Program interventions should target children aged below two years as it is the window period of opportunity

Keywords: Stunting, cognition, Community Health Workers.

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E-Poster Viewing: Childhood & Adolescence

TRAINING DEVELOPMENT FOR ADOLESCENTS AS NUTRITION CADRES IN INDONESIA

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BACKGROUND & AIMS

Inadequate knowledge of balanced nutrition and proper diet is one of the causes of nutrition problem in adolescents. Therefore, nutritional education is needed as an effort to promote health in adolescents. Education is carried out in the form of coaching the youths to become nutrition cadres and share their knowledge to other teenagers.

METHODS

Cadre candidates are taken from Depok region in West Java with age range of 12-18 years. They were asked to record the food and drink they consumed through the food diary phone application. Data from food diary is used as the basis for making 2-dimensional food models, which are based on Indonesian Ministry of Health's nutritional guideline, "Piring Makanku". The training used interactive lecture methods and games using puzzles and food models. Pretest and post test are used as indicators of achievement. The cadres then used flip charts and food models as media to teach their friends with the team as supervisors.

RESULTS

There were 10 adolescent cadres joined this training. Every cadres have 5 respondents for practice their knowledge about nutrition. Based on the data from food diary, all cadre candidates did not apply proper dietary habits. After training, there was an increase in post test scores compared to the pretest.

CONCLUSION

By conducting training for adolescent cadres by a team consisting of pediatricians, community medicine doctors, and nutritionists, it is expected that there will be an increase in knowledge about the importance of balanced nutrition for adolescents.

E-Poster Viewing: Childhood & Adolescence

IMPROVEMENT OF ANTHROPOMETRIC AND BIOCHEMICAL, BUT NOT OF VITAMIN A, STATUS IN ADOLESCENTS WHO UNDERGO ROUX-EN-Y GASTRIC BYPASS: A 1-YEAR FOLLOW UP STUDY

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Background: The aim of this study was to describe anthropometric, biochemical, co-morbidity, and vitamin A nutritional status in severely obese adolescents before and 30, 180, and 365 days after Roux-en-Y gastric bypass (RYGB). Setting: Federal University of Rio de Janeiro, Rio de Janeiro, Brazil.

Methods: Sixty-four adolescents (15–19 years old) with a body mass index ≤ 40 kg/m² were enrolled in a prospective follow-up study. Vitamin A status was evaluated before surgery (T0), and 30 (T30), 180 (T180), and 365 (T365) days after surgery, applying biochemical and functional indicators. Anthropometric measures, lipid profile, glycemia, and basal insulin also were assessed. No patients were lost during follow-up.

Results: Before surgery, 26.6% of the sample group experienced vitamin A deficiency (VAD). Serum retinol levels dropped significantly 30 days after surgery and then returned to basal levels. There was a significant increase in the prevalence of β -carotene deficiency and night blindness throughout the postsurgery period. A significant reduction was observed in blood glucose, insulin resistance, lipid profile, and anthropometric parameters.

Conclusion: The finding that oral daily supplementation with 5000 IU retinol acetate failed to reverse VAD and night blindness after RYGB is highly significant. We recommend assessment of VAD and night blindness in extremely obese adolescents before and after RYGB. We further recommend monitoring for an additional 180 days (for VAD) and 365 days (for night blindness) after surgery, with particular attention to daily supplementation needs

E-Poster Viewing: Childhood & Adolescence

QUALITY OF CARE AND EARLY CHILDHOOD DEVELOPMENT IN NEPAL: A MULTILEVEL ANALYSIS

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Background

The early childhood phase is regarded as the most crucial phase of development in the entire lifespan. This study aims to understand the early childhood development status, to identify the contributing factors and to estimate the variations in early childhood development across the ecological environment in Nepal.

Methods

A total of 2,279 children aged 36-59 months, belonging to 1804 households nested within 500 clusters has been analysed from Nepal's Multiple Indicator Cluster Survey, carried out during 2014. Random intercept multilevel logistic regression has been performed to analyse the data.

Results

It is found that 64.44 percent of sampled children are on the track of early childhood development in Nepal. This percentage varies substantially across individual child characteristics, indicators of quality of care, household and community factors. Multilevel logistic regression revealed that indicators of quality of care; having three or more children's books (OR=2.62; $p<0.001$) and fathers' engagement in four or more activities (OR=2.42; $p<0.001$) with the child contribute significantly to the ECD. Besides, children who belong to the richest households are 4.33 times more likely to have ECD in comparison to children of poorest households after controlling for all other factors. Almost half of children belonging to communities with relatively higher proportion of poverty and Terai region is less likely to have ECD than their counterparts. Further, 12.70 percent and 22.02 percent variations in ECD are explained by the communities and households, respectively.

Conclusion

The quality of care or 'home environment' created by the parents is playing a crucial role in early childhood development.

E-Poster Viewing: Childhood & Adolescence

VITAMIN SUPPLEMENTATION IMPROVES HEALTH-RELATED QUALITY OF LIFE AND PHYSICAL PERFORMANCE IN CHILDREN WITH TYPE SS SICKLE CELL DISEASE

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BACKGROUND AND AIMS: Sickle cell disease (SCD) detrimentally effects health-related quality of life (HRQOL) and physical performance. Our aim to assess the impact of daily high-dose vitamin D (vitD, 4000 or 7000 IU/d cholecalciferol, 12-wk) or vitamin A (vitA, 3000 or 6000 IU/d, 8-wk) supplementation on HRQOL using Pediatric Patient-Reported Outcomes Measurement Information System (PROMIS) and physical performance using Bruininks-Oseretsky Test of Motor Proficiency (BOT2) in children with SCD-SS compared to healthy children (HC). **METHODS:** PROMIS T scores for pain, fatigue, depressive symptoms, mobility, peer relations, and upper-extremity function (UEF), and BOT2 scores for fine and gross motor skills were assessed. **RESULTS:** VitD significantly ($p<0.05$) improved serum 25(OH)D (>20 ng/mL) in SCD-SS ($n=21$, $11\pm1y$) and HC ($n=23$, $10\pm1y$), and fetal hemoglobin ($+2\%$) in SCD-SS. T scores for pain (55 ± 13 - 48 ± 15), fatigue (52 ± 11 - 46 ± 14) and depressive symptoms (43 ± 8 - 49 ± 7) declined and UEF (46 ± 11 - 51 ± 9) increased in SCD-SS, while fatigue declined (40 ± 10 - 36 ± 10) and UEF (51 ± 9 - 53 ± 6) increased in HC (all $p<0.05$). BOTS2 improved in SCD-SS (62 ± 14 - 66 ± 10 , $p<0.001$), particularly upper limb coordination, manual dexterity and strength, and in HC (62 ± 15 - 67 ± 10), particularly manual dexterity. With vitA, fetal hemoglobin increased ($+3\%$, $p<0.05$) in SCD-SS ($n=20$, $14\pm3y$). Declines in fatigue (54 ± 11 - 52 ± 11) and depressive symptoms (46 ± 12 - 43 ± 9) and increase in peer relations (48 ± 10 - 50 ± 10) were modest. BOTS2 improved (67 ± 6 - 69 ± 6 , $p<0.05$), particularly strength. **CONCLUSIONS:** Daily higher dose vitD improved both HRQOL and physical performance in children with and without SCD-SS. VitA improved physical performance with more modest improvement in HRQOL in SCD-SS.

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E-Poster Viewing: Childhood & Adolescence

VITAMIN D SUPPLEMENTATION IN MALE ADOLESCENTS WITH OBESITY ALLEVIATES INSULIN RESISTANCE AND DYSLIPIDEMIA

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Background and aims: Obesity prevalence has increased among young population in developing nations. Low circulating vitamin D is common in obesity. Deficiency in vitamin D has been associated with insulin resistance and CVD. The aim of this study is to investigate if vitamin D supplementation could help alleviate CVD risk factors male adolescents with obesity.

Methods: This is an intervention study with a pre-post design in 29 male adolescents with obesity. Participants were given 800IU of vitamin D₃ supplementation for 42 days. Pre and post data collected include: anthropometric measures and fasting biochemical analyses such as: plasma glucose, insulin, total cholesterol, LDL, HDL, and triglycerides. HOMA-IR were calculated from plasma glucose and insulin. Significance for supplementation were analyzed for t-test ($p=0.05$).

Results: After six weeks of supplementation, there was no significant reduction in body mass index ($p=0.55$). Vitamin D levels increased by 1.12 ng/mL on average ($p=0.83$). Despite of this, vitamin D supplementation helps alleviate insulin resistance by reducing insulin levels from 43.28 to 33.58 mIU/L and HOMA-IR from 9.30 to 7.40, although not statistically significant. Interestingly, vitamin D supplementation reduced triglyceride levels from 154.64 to 117.50 mg/dL ($p=0.03$). No significance was seen in other lipid profiles including total cholesterol, LDL and HDL.

Conclusions: Our findings showed that vitamin D supplementation helped alleviate insulin resistance and significantly reduced triglyceride levels. Vitamin D supplementation may serve as an adjuvant in obesity treatment. Further investigation using higher dosage and longer period of intervention may increase the positive outcomes seen in this study.

E-Poster Viewing: Childhood & Adolescence

STUNTING, RECOVERY FROM STUNTING AND PUBERTY TIMING IN THE MINIMAT COHORT, BANGLADESH

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Aim: To analyse the association between birth size, stunting, recovery from stunting, and the outcome timing of puberty in a rural Bangladeshi cohort.

Methods: The participants were children whose mothers participated in the Maternal and Infant Nutrition Interventions in Matlab (MINIMat) trial. Women were identified in early pregnancy and a birth cohort was followed from birth to puberty. Pubertal development according to Tanner was self-assessed. Age at menarche was determined and in boys, consecutive height measurements were used to ascertain whether pubertal growth spurt had started. The exposures were modelled with age at menarche by Cox's proportional hazards analyses, and with pubertal onset in boys by logistic regression.

Results: There was no difference in age at menarche between girls that were small or appropriate for gestational age at birth. Boys born small for gestational age entered their pubertal growth spurt later than those with appropriate weight. Children who were stunted had later pubertal development, age at menarche and timing of growth spurt than non-stunted children. Children who recovered from infant or early childhood stunting had similar timing of puberty as non-stunted children.

Conclusion: Infant and childhood stunting was associated with a later pubertal development. Recovery from stunting was not associated with earlier puberty in comparison with non-stunted children.

E-Poster Viewing: Childhood & Adolescence

POLISH PATIENTS WITH SILVER-RUSSELL SYNDROME (SRS): CHARACTERISTIC OF GROWTH PARAMETERS ACCORDING TO (EPI)MUTATION.

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Children with SRS are characterized by intrauterine and postnatal growth retardation, feeding difficulties, relative macrocephaly, triangular face and body and/or face asymmetry. SRS is a rare heterogeneous congenital imprinting disorder associated with loss of methylation in *H19/IGF2:IG-DMR* at chromosome 11p15.5 (LOM11p15) or maternal uniparental disomy of chromosome 7 (mUPD7).

95 SRS patients: 79 with LOM11p15 (83,2%) – 42 boys and 37 girls and 16 with mUPD7 (16,8%) – 10 boys and 6 girls, at age from 0,1 to 18,9 years, without growth hormone therapy, were diagnosed and followed. Each patient was measured 10 times on average. Body weight, length/height were measured and BMI was calculated. The right and left side of the body were measured to diagnose body asymmetry. Growth parameters were standardized and expressed as SDS scores.

Body weight was lower in both boys and girls with mUPD7 (-4.17 ± 1.28 vs. -3.86 ± 1.83 SDS, $p=0.005$; -4.88 ± 1.27 vs. -3.17 ± 1.88 SDS, $p<0,00001$), as well as body length/height (-3.53 ± 0.76 vs. -3.18 ± 1.4 SDS, $p=0.0003$; -4.19 ± 0.65 vs. $-2,97 \pm 1,04$ SDS, $p<0.00001$). The nutritional status assessed by BMI was lower in girls with mUPD7 ($-2,29 \pm 0.96$ vs. $-1,77 \pm 1.98$, $p=0.004$) and in boys with LOM11p15 ($-2,69 \pm 1.89$ vs. $-2,44 \pm 1.21$ SDS, $p=0,66$). The prevalence of body asymmetry was higher in LOM11p15 group (85,5% vs. 26,6 %, $p<0,0001$). Body asymmetry in group of mUPD7 girls was not observed.

Conclusions:

1. Growth parameters such as body length and weight were significantly lower in boys and girls with mUPD7 comparing to LOM11p15 group.
2. Body asymmetry is more characteristic for children with LOM11p15, especially for girls.

E-Poster Viewing: Childhood & Adolescence

THE EFFECT OF BMI DURING MENARCHE ON SELECTED MARKERS OF ADOLESCENT GROWTH SPURT IN GIRLS

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In addition to genes controlling the pace of growth and sexual maturation, both growth and rate of pubertal development are affected by many non-genetic factors, with nutritional status being one of the most important. The aim of the study was to determine the relationship between BMI during menarche and pace of linear growth measured by age at TO (ATO), age at peak height velocity (APHV), growth spurt duration (Δ APHV-ATO) in girls.

The study group 243 girls aged 10-16 years. Several measurements of body height and weight have been taken for each girl during girls' development. BMI has been assessed and classified using the IOTF criteria. Girls were asked about their age at menarche. To investigate the rate of linear growth the age at TO and PHV for each girl were calculated using mathematical structural model JPA2. Other statistical analyzes were made using Kruskal-Wallis test.

The average age at menarche for the entire group was 12.59 (Me = 12.52, Min = 9.9, Max = 16.0). There was a significant statistical correlation between the level of nutritional status and age at menarche. The age at menarche decreased significantly with increasing levels of nutritional status ($H = 33.2$, $p < 0.001$). Also, TO and PHV occurred earlier in girls with higher values of BMI (TO: $H = 12.25$, $p < 0.05$; PHV: $H = 12.25$, $p < 0.05$).

The level of nutritional status significantly affects growth and the rate of biological maturation of girls, accelerating the occurrence of menarche, TO and PHV.

E-Poster Viewing: Childhood & Adolescence

PARENTAL FEEDING STYLES AND ITS INFLUENCE ON CHILDREN'S FEEDING BEHAVIOUR

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Background

Feeding involves an interaction between the child and his caregivers. Caregivers' feeding styles may contribute to feeding difficulties in children.

Objective

To determine feeding styles in caregivers of children being seen at a multidisciplinary feeding clinic.

Methods

Caregivers were asked to complete two validated questionnaires; the Caregiver's Feeding Styles Questionnaire (CFSQ) and the Behavioural Pediatrics Feeding Assessment (BPFA).

Results

Parents of 61 children (40 males) seen from January 2016 to July 2018 completed both questionnaires. Median age of the child at clinic presentation was 41 (range 4-161) months.

Based on the BPFA, 46 parents (75.0%) identified high frequency of abnormal feeding behaviours in their children, with a similar number (n=45, 73.3%) perceiving their child's feeding behaviours as highly problematic. 11.5% of parents would always or almost always force-feed their child. 19.7% would always or almost always use threats. 52.5% always or almost always have to coax their child to eat.

Based on the CFSQ, 31.1% (n=19) adopted an indulgent parenting style, 29.5% (n=18) had an authoritarian style and a similar number were authoritative (19.7%, n=12) or uninvolved (19.7%).

Conclusion

The authoritative feeding style is the most encouraged parenting style. In our patient cohort, only a fifth of parents were using this feeding style to deal with their child's feeding issues. This would be an important consideration for healthcare professionals managing children with feeding difficulties. Time should also be spent assessing caregiver feeding style and helping caregivers adopt a more appropriate feeding style in dealing with their child's feeding behaviours.

E-Poster Viewing: Childhood & Adolescence

THE CONSUMPTION OF SUGAR AND SWEETENED PRODUCTS AMONG PRE-SCHOOL CHILDREN ARE NOT CONSISTENT WITH CURRENT GUIDELINES

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Background: WHO strongly recommends reducing the intake of free sugars. The early years sets the stage for the child's later dietary habits and encouraging early healthy eating habits could be one way to prevent the onset of diet-related disease and caries.

Aim: The aim of this study is to describe pre-school children's exposure to sugar and sweetened products and its impact at 12 months on body mass index (BMI) at 5 years of age.

Methods: A population based, longitudinal birth-cohort study of 2666 children followed from 0-5 years of age in the Halland Region, Sweden were recruited in 2007–2008. Feeding practices were obtained from parental questionnaires distributed nine times over the first five years of life and anthropometric data were collected by child health nurses.

Results: Already at the age of six months 2% of infants had started eating sweetened products. At 12 months 33% and at 18 months 75% had started eating sweetened products and this percentage increased as age increased. Candy and ice-cream were the most frequently eaten products. Few infants (54/2666) had tasted sweetened products. There was no relationship with a high BMI at five years of age.

Conclusion: Despite being informed many times by health and dental staff most infants had eaten sweetened products before the age of 18 months. The absence of a clear relationship between sweetened products and a high BMI at five years of age calls for further studies on the potential effect of sweet products at this age on high BMI.

E-Poster Viewing: Childhood & Adolescence

A STUDY ON THE USE OF TIME BY STUDENTS OF RESOURCE CENTR "SECHENOV MEDICAL PRE-UNIVERSITY"

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Background: Education of students in higher grades (15-17 years old) of schools has a number of characteristics: a lot more of adolescents' time is dedicated to studying schoolbooks in preparation for the final exams and the following application to university; rest, sleep and meal times and significantly reduced; more and more time is dedicated to the use of various electronic devices which are now an integral part of our life. Future challenges lead to an increase in neuro-emotional stress and anxiety, which in its turn affect children in the final stages of growth.

Goals of educational institutions lie not only in giving the students a maximum amount of knowledge, but also in teaching them to work efficiently while spending minimal time. Amount of study materials constantly increases, while speed of receiving the information lags behind. (Yugova E. A.)

Methods: To study the modern student's time budget we have developed a time-study form concerning not only the main activities of every person, but also considers time spent using electronic devices. The form encompasses a full day of the student from awakening to the time of going to sleep.

The goal of this paper is to study the time budget of the students of 10-11 grades of the Resource Center "Sechenov Medical Pre-University", and to study the time they spend using electronic devices and to develop a set of guidelines for the most optimal ratio of time used for various activities.

E-Poster Viewing: Childhood & Adolescence

VITAMIN D SUPPLEMENTATION OF CHILDREN WITH RHEUMATIC DISEASES

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Background and aims: To determine supplementation level of vitamin D in children with rheumatic diseases.

Material and methods: 52 children (35 girls and 17 boys), aged from 5 to 17 years (average age 11.88 ± 0.48 years) were observed. 29 children had connective tissue diseases (CTDs) and 23 children - Juvenile idiopathic arthritis (JIA). The level of 25(OH)D in plasma was measured by chemiluminescent immunoassay method. Concentration level 21-30ng/ml was determined as insufficiency, less than 20 ng/ml as deficiency. 17 (58.6%) patients with CTDs and 16 (69.5%) JIA patients were taking vitamin D drugs (cholecalciferol 200-400 IU/day and/or alfacalcidol 0,25 µg).

Results: normal vitamin D supply was only in 5 (9.5%) children, insufficiency - in 6 (11.5%), the deficit - in 41 (79%). Vitamin D supplementation in CTDs patients was more satisfactory. 25(OH)D <30 ng/ml was observed in 82.8% cases in CTDs patients and in 100% cases in JIA patients, the incidence of Vitamin D deficiency was 69% versus 91.3%. The average 25(OH)D level in CTDs group (20.86 ± 2.15 ng/ml) was significantly higher than in JIA group (14.98 ± 0.91 ng/ml).

Conclusions: The overwhelming majority of children with JIA and CTDs have an insufficiency or deficiency of vitamin D in comparison with Russian population. Traditional therapy with complex calcium salts drugs and cholecalciferol in low doses is insufficient to achieve the optimal level of vitamin D.

E-Poster Viewing: Childhood & Adolescence

GROWTH PATTERNS IN A NORWEGIAN MULTI-ETHNIC COHORT OF PREESCHOOL CHILDREN; ASSOCIATIONS WITH IN UTERO EXPOSURE TO GESTATIONAL DIABETES MELLITUS

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Background and aims: Exposure to gestational diabetes mellitus (GDM) affects foetal growth, although this may vary between ethnic groups. There is limited knowledge about how GDM relates to postnatal growth.

We aimed to investigate the associations between GDM and body mass index (BMI) growth patterns from birth to 4-5 years in a multi-ethnic cohort in Norway, adjusting for ethnicity, mothers' pre-pregnant BMI and gestational weight gain.

Methods: Participants were children (ethnic European (n=346), South Asian (n=181), Middle East/North African (n=152)) drawn from the population-based STORK Groruddalen cohort of healthy women and offspring, followed from early pregnancy, all screened for GDM. We present preliminary results from general linear models, exploring associations with the child's BMI at birth and BMI change during different time periods. Results from mixed methods analysis will be presented at N&G 2019.

Results: GDM was not significantly associated with BMI z-score at birth ($B=0.154$; 95% CI: -0.009-0.318), but with slower BMI-growth 0-3 months ($B=-0.321$; 95% CI: -0.534- -0.109). Maternal pre-pregnant BMI and gestational weight gain were positively associated with BMI at birth ($B=0.044$; 95%CI: 0.028-0.061) and ($B=0.034$; 95% CI: 0.018-0.050), and faster BMI-growth 15-52 months ($B=0.047$; 95%CI: 0.031-0.063 and ($B=0.018$; 95%CI: 0.003-0.034). The relation between GDM and postnatal BMI growth pattern was similar in the three ethnic groups when adjusting for confounders.

Conclusion: GDM was not associated with BMI at birth, but with slower BMI-growth 0-3 months. Mother's pre-pregnant BMI and gestational weight gain was positively associated with child's BMI at birth and BMI development 15-52 weeks.

E-Poster Viewing: Childhood & Adolescence

INFLUENCE OF SOCIODEMOGRAPHIC CHARACTERISTICS ON THE PREVALENCE OF OBESITY: PILOT STUDY IN TWO SCHOOLS IN THE CITY OF GRANADA

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Background and aims:

It is often established that families living in the centre of cities will generally have a higher level of education and a better socio-demographic level. Several studies conclude that the educational level of families could be another of the factors closely associated with the worsening of eating habits and the adoption of sedentary lifestyles among schoolchildren, being able to act as a conditioning factor of the habits, lifestyle and health of the youngest.

For this reason, the aim of this pilot study is to compare two populations of schoolchildren in order to analyse the relationship between the sociodemographic characteristics and the body mass index they presented.

Method:

Cross-sectional study of 114 schoolchildren between the ages of 8 and 13 in Granada, Spain. A body composition analysis was performed using bioimpedanciometry. An ad hoc questionnaire on sociodemographic data and the Krecz-Plus test were used to evaluate nutritional level and physical activity.

Results:

The results obtained show statistically significant differences between neighbourhoods, a greater number of parents with university studies in the Albayzín educational centre and higher values of weight, total fat and BMI were observed among schoolchildren in the centre of Granada.

Conclusions:

The educational level of the parents could be a potentially influential factor for the adoption of healthy nutritional habits in the family context.

E-Poster Viewing: Childhood & Adolescence

NUTRITION CARE GROUPS; A ROBUST AND SUSTAINABLE WAY OF INCREASING UPTAKE OF GOOD HOUSEHOLD NUTRITION PRACTICES : EXPERIENCE OF WORLD VISION UGANDA

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Background

Malnutrition among the under-fives remains high in Uganda with 29% or 11% children estimated to be stunted and underweight respectively. In Mpigi district, the problem was also worse with stunting at 28.1%. To improve household Maternal Infant and Young Child Nutrition (MIYCN) practices, WordVision Uganda implemented and studied the nutrition care group approach in Mpigi over a period of 2 years. Focus was on the recommended breastfeeding practices, correct complementary feeding, and meal diversity.

Methods

58 women were selected by their peers in neighbor households across 58 Villages and trained as lead mothers biweekly for a period of 9 months in four areas of maternal-child health, MIYCN practices, kitchen gardening and hygiene. VHTs were trained as facilitators for the biweekly lessons, each attending to a group of 10 lead mothers. Each lead mother shared her knowledge and skills from the lessons learnt to 10 pre-identified neighbor women through individual home visits and/or groups to facilitate behaviour change. Data was collected through a questionnaire from the exact villages and households visited at baseline.

Results

7,648 Household visits were made, each lead mother making 132 contacts exceeding the 15,600 Visits reached by VHTS in the same period. We observed an average improvement of 20% across several infant feeding indicators over the 2 years (see fig below).

Conclusion

Community care groups is an effective and sustainable approach to improving household nutrition practices in resource constrained settings. Policy makers are encouraged to adopt/adapt the approach as a key to improving child survival.

E-Poster Viewing: Childhood & Adolescence

UPTAKE OF NUTRITION PRACTICES AT SCALE USING NUTRITION CARE GROUPS: EXPERIENCE OF WORLD VISION UGANDA

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Background The Nutrition care group approach was used in Mpigi district to promote Maternal Infant and Young Child Nutrition practices. The Care Groups (5 non-VHT community health volunteers) received training from Village health team (VHT). Each volunteer mother (lead mother) regularly visited 10 of her neighbours, to share her knowledge and skills to facilitate behaviour change.

Methods 58 women were selected by their peers in neighbor households, and trained by VHTS to be lead mothers. The package a biweekly training for 9 months on modular topics in recommended maternal, child health and MIYCN practices, kitchen gardening and hygiene. Each lead mother cascaded the lessons learnt to 10 pre-identified neighbour women through individual home visits.

Results 7648 home visits made by 58 mothers to deliver appropriate health and nutrition messages,. Averagely, each lead mother made 132 contacts.exceeding the 15,600 reached by VHTS in the same period. Lead mothers contributed a 49% increase in household coverage. Evidence from the end of project evaluation indicated 96.8% improvement in infant feeding practices with 89.6% children initiated on the breast within one hour after birth and 80.7% exclusively breastfed up to six months of age. Use of prelacteal feeds dropped to 14% and 64.3% infants were given the recommended minimum meal frequency. Prevalence of stunting was at 17.6% in the age group 6 - 17 months. **Conclusion** Community health volunteers organised in care groups can improve the reach of community health workers by 49% and contribute to improved health and nutrition practices at household level.

E-Poster Viewing: Childhood & Adolescence

BODY COMPOSITION AND DEHYDRATION IN KENDO ADOLESCENT ATHLETES

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Background and aims: Kendo or Budo is a Japanese martial art, which emerged as a war fighting technique and became a sport, in which are performed trainings with the use of bamboo swords and a heavy garment, a kind of Kimono. The present study aimed to assess the body composition and the hydration status of Kendo fighters, after a regular training session, in Sao Paulo, Brazil.

Methods: Cross-sectional study, with Kendo athletes, aged between 10 and 15 years old. The athlete's Body Mass Index (BMI) was estimated and individual body fat percentage was evaluated, by bioimpedance method. The presence of dehydration was verified by the variation between initial weight and final weight after a 120 minutes training session, at an average temperature of 19.4°C.

Results: Fourteen adolescents were evaluated, with a mean age of 11.64 years old, being 8 male athletes. About 43% of adolescents showed overweight, according to BMI. Only one female athlete presented an adequate fat percentage and only one boy presented excessive body fat. The majority of the athletes lost weight (64.3%) after training, and the mean fluid loss percentage was 1.61%, indicating mild dehydration. The mean sweat rate was 5.7mL/min. After the session, nearly half of the athletes, 42.9%, were mildly dehydrated and 7.1% presented significant dehydration.

Conclusions: Although the adolescents attended regular Kendo training, they showed excessive body weight and high percentages of body fat, mostly the girls. In addition, 50% of the athletes were dehydrated after 2 hour training, demanding nutritional orientation and care.

E-Poster Viewing: Childhood & Adolescence

THE IMPORTANCE OF QUALITY NUTRITION OF ADOLESCENTS WITH CHRONIC NONCOMMUNIBLE DISEASES

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Chronic, noncommunicable diseases are characterized by a long latency period. Prevention, education and control of disease of adolescents is particularly effective and must be accepted as investment for health, in order to develop educational orientation influence of food quality.

The basis of the study is to examine the prevalence of chronic diseases among young people and their correlation with dietary and health awareness. Chronic disease affects the quality of life of adolescents and families. The two sides, manifestation and cause turmoil of adolescence and the care of their own health should reconcile.

Microresearch work of an anonymous questionnaire to 250 adolescents 14-15 years old was conducted at the elementary school.

Results: Chronic non-communicable respiratory disease / obstructive pulmonary disease of plums- 3.5%, and asthma - 3.2% Allergies to pollen, dust 3% Food allergies 1,8% Constipation 1,49% Cardiovascular disease 0,8% Diabetes - 0.4 %.

Feeding behavior is affected by many factors such as parents, schools to peers, media, economic, social, cultural, physiological needs, body shape... Since adolescence is a period of intense social communication, there is a distinct change behaviors that have an impact on consumption. First of all, it is about changing the rhythm of meals, avoiding meals, usually breakfast or lunch, as well as the frequent reduction of time for meal. The girls skip meals more often than boys.

Prevention and education and adequate healthy nutrition have the greatest potential to reduce the incidence of chronic non-communicable diseases. Society needs to create an atmosphere and a healthy environment to support young people, making healthier choices more affordable choices.

E-Poster Viewing: Childhood & Adolescence

THE INFLUENCE OF DIET ON TOOTH DECAY AMONG SCHOOLCHILDREN IN DĄBROWA TARNOWSKA, POLAND

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Tooth decay is a social problem that mainly affects children and young people. The aim of the study was to analyze the impact of dietary habits and dental hygiene on the incidence of dental caries. The study was conducted among 50 pupils (25 boys and 25 girls) from primary and junior high schools. Food frequency questionnaire was used in order to analyze dietary habits of participants. The students daily consumed wheat bread, 3-4 times a week sugar, butter, sweets, yogurt, milk and cheese. Twice a week they ate cereals, pasta, rice, poultry, eggs, pork, dried fruit, chips, crisps, salty sticks, vegetables and fruit juice. Once a month they ate legume seeds, fish, whole-meal bread, white cheese, vegetable oils and margarine. 60% of the subjects controlled the state of their teeth more often than once every six months, 24% once every six months, 16% less often than once every six months. Fluorine prophylaxis was not used by 28% of the pupils (boys - 40%, girls - 16%; $p < 0.05$). The majority of children (66%) brushed teeth twice a day, 22% pupils brushed teeth once a day, and 12% of the examined children brushed teeth after every meal. The study group was characterized by the high caries severity (84%). Only 8 children were free of caries. Caries were observed at higher rate in boys (88%) than in girls (80%) ($p < 0.05$). It is necessary to increase the awareness of children and parents about the influence of nutrition and dental hygiene on the teeth condition.

E-Poster Viewing: Infancy

EFFECT OF BREASTFEEDING PROMOTION INTERVENTIONS ON BABY WEIGHT AT 3 MONTHS

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Background and aims:

The 'Baby Friendly Hospital Initiative (BFHI)' is based on the 'Ten Steps to Successful Breastfeeding' (WHO/UNICEF 1989) for health services to adopt, in order to effectively promote and support breastfeeding. Many breastfeeding promotion interventions shown to protect, promote, and support breastfeeding that has effect on baby growth. In this study, I focus on particular interventions. The aim to find the effect of these interventions on baby weight gain at 3 months

Methods:

Quantitative retrospective data analysis of a sample of 80 mothers and their babies from 800 children followed in the well-baby clinic in Maternity and Children Hospital-Dammam- Saudi Arabia during the period from 1st Sept. to 30 Nov. 2018. A questionnaires survey, phone calls, messages and electronic medical files were used to collect data. All mothers had normal vaginal delivery with normal full term babies. Interventions (SSC(skin to skin contact), education, and support) were evaluated for their effect on baby weight at 3 months. All mothers were exclusively breastfeed their children

Collected data were analyzed by using SPSS – descriptive and one-way Anova analysis

Results:

SSC intervention directly affect the weight and significantly increase the weight of the baby with P value (0.00) .Level of confident = 95.

While the education and support does not have any effect on the weight

Conclusions:

All women should encouraged practicing skin-to-skin contact after delivery. Further evaluation of the effect of support and education on continuation of breastfeeding is needed which also affect the growth of the baby

E-Poster Viewing: Infancy

ADMISSION MORBIDITY STATUS AND MORTALITY RISK IN SAM INFANTS AGED 6-23 MONTHS IN GHANA. A RETROSPECTIVE COLLECTION OF HOSPITAL MEDICAL RECORDS

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Background and aims: In developing countries, severe acute malnutrition remains a major public health concern contributing significantly to childhood mortality. Strong epidemiological evidence shows that, low weight-for-length/height or MUAC are highly associated with 5–20 times increased risk of mortality. On the other side, the association between pre-morbid status and mortality risk is not well acknowledged.

Methods: A retrospective collection of hospital medical records was conducted in three hospitals in Ghana where data on 399 children aged 6–23 months were collected (203 boys, 50.88%). Malnutrition status at admission was assessed using WLZ according to WHO child growth standards and MUAC. The odds of mortality were performed using a multivariate logistic model adjusted by gender and age.

Results: Data regarding 399 first admissions for SAM were collected over the period may-2013 and June-2018. Among those infants 63 (15.79%) died. No differences were observed between admission WLZ and MUAC in infants who died compared to survivors. Otherwise, baseline conditions like HIV status, oedema, severe pallor, convulsions and respiratory tract infections were associated with an increased mortality risk up to 6 times. In a linear model aimed to evaluate number of conditions and mortality, we observed a significant mortality risk increase of 75% when a single condition accumulates on the condition profile of the child.

Conclusions: Admission morbidity status better determined mortality in infants aged 6-23 months than malnutrition status assessed by Z-scores and MUAC.

Acknowledgment: Thanks to Nutricia Research Foundation for sponsoring my masters' education and the co-authors for their contributions.

E-Poster Viewing: Infancy

MATERNAL SODIUM INTAKE REFLECTS ON SODIUM CONTENT IN MATURE BREAST MILK

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Background. High sodium intake in infancy may have an effect on blood pressure in later life. For majority of babies in Latvia (~58%), breast milk is the first source of sodium.

Aim. To determine sodium content of mature breast milk among lactating women in Latvia and to evaluate possible association with maternal sodium intake.

Methods. Pooled diurnal mature breast milk samples and 24-hour food diaries were collected from 64 participants. Sodium content was determined using ICP-MS Agilent 7700x, Agilent Technologies, Japan. Maternal sodium intake was calculated using data from USDA Branded Food Products Database. Data statistical processing was performed using IBM SPSS Statistics, version 22.0, SPSS Inc.

Results.

Study (country)	Mean $\pm$ standard deviation (range) sodium content in mature breast milk, mg 100 ml ⁻¹
Our research (Latvia)	13.85 $\pm$ 5.95 (5.00 – 42.54)
Björklund et al., 2012 (Sweden)	21.70 $\pm$ 7.70 (13.60 – 48.00)
Turkey, Altun et al., 2018 (Turkey)	33.00 $\pm$ 41.70 (4.47 – 170.30)

Average maternal sodium intake was 2884 $\pm$ 1788 mg (174 – 7082 mg). Maternal sodium intake positively correlated with sodium content in breast milk ($r=0.27$, $p=0.03$).

Conclusion. Sodium content in breast milk among women from Latvia was lower comparing to data from literature. Breast milk from mothers with higher dietary sodium intake contained significantly higher sodium content, respectively.

Ethical approval. Riga Stradiņš University Ethic Committee (No. 4/28.7.2016.).

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Acknowledgment. We thank all mothers who participated and donated milk samples.

E-Poster Viewing: Infancy

EARLY DETERMINANTS OF THE APPEARANCE OF PROBLEMS TO INTRODUCE FOOD IN TODDLERS

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Background and aims: Identifying the determinants in the acceptance of food at an early age can help in the acquisition of healthy eating habits and the prevention of future health problems. We aim to analyze the relationship between the sociodemographic and feeding characteristics, lifestyle, living conditions and well-being of Spanish mothers with food acceptance problems in their toddlers.

Methods: 511 mothers with a toddler (12-24 months) completed a web-based survey to obtain data on demographic and anthropometric characteristics, feeding styles, time of weaning, toddlers' characteristics when eating, lifestyle, living conditions, personal well-being and child's problems to accept cereals, fruits, vegetables, meat and fish. The associations between these factors and food acceptance problems for each category were analyzed using Spearman's correlation coefficient, U Mann-Whitney or Kruskal-Wallis tests.

Results: 27.6% of children accepted all food groups without problems. Greater satisfaction with life ($r_s -0.178$, $p 0.000$) and parenting ($r_s -0.155$, $p 0.001$) was significantly associated with fewer problems introducing food. On the contrary, a higher level of stress ($r_s 0.120$, $p 0.007$) and fatigue ($r_s 0.124$, $p 0.006$) were related to a worse acceptance. A higher score of responsiveness was associated to fewer problems to introduce fruits ($r_s -0.112$, $p 0.011$). Children who always eat baby foods ($p 0.039$) or eat watching the TV or any other entertainment ($p 0.033$) showed more problems to introduce fruits.

Conclusions: Maternal feeding styles, personal well-being and characteristics of children when eating may favor or make difficult the acceptance of food in Spanish toddlers.

E-Poster Viewing: Infancy

CORD BLOOD ADIPOCYTOKINES AND BODY COMPOSITION UP TO 5 YEARS OF AGE: A SYSTEMATIC REVIEW

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Background and aims

Childhood obesity has reached epidemic levels and constitutes one of the greatest Public Health challenges of the 21st century. There is increasing evidence that events occurring in early life, even before birth, can cause obesity. Identifying early life biomarkers that could predict future obesity would allow the development of intervention strategies during the peri-conceptual and immediate postnatal period. The review investigates the association of cord blood adipocytokines with body composition in infants and children up to 5 years of age.

Methods

A literature review was performed between January 1994 and March 2018. Observational, cross-sectional and longitudinal studies were examined. Air Displacement Plethysmography (ADP), Dual Energy X-ray Absorptiometry (DXA), Magnetic Resonance Imaging (MRI) and anthropometric measurements (skinfold thickness) were considered validated techniques in assessing adiposity.

Results

20 studies, reviewing 3789 pregnancies, met all the inclusion criteria and were included in the quantitative analysis. Applying a random effects model revealed a positive correlation of cord blood leptin ($r = 0.450$ [95% CI 0.381, 0.519]) and adiponectin ($r = 0.236$ [0.111, 0.361]) with neonatal fat mass.

There was an inverse correlation between cord leptin and adiposity at 3 years of age which was no longer apparent after 4 years of age. Studies included presented controversial results regarding the relationship of cord adiponectin and adiposity at different age groups.

Conclusion

Early post-natal life is a critical period of developmental plasticity. Cord blood biomarkers will allow immediate interventions to amend intrauterine programming in high risk groups to prevent the development of obesity.

E-Poster Viewing: Infancy

MAPPING OUT COMMERCIAL INFANT CEREALS: AN OVERVIEW FROM 8 COUNTRIES

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In many countries commercial infant cereals (CICs) are one of the first foods introduced at the beginning of the complementary feeding period. However, characteristics of CICs are culturally dependent. The objective of this study was to analyze and identify the characteristics of CICs worldwide.

In this cross-sectional study, 435 CICs targeted at infants under 2 years from main infant food brands marketed in 8 countries (Czech Republic, Egypt, Germany, Spain, Sweden, Turkey, UK and US) were analyzed. CICs data were obtained through the manufacturers' websites and collected from March 2017 to September 2018.

CICs were characterized depending on farming quality (organic or conventional), type of cereals, type of processing (1. hydrolysed or non-hydrolysed; 2. whole grain or refined flour) and presence or absence of milk in the formulation.

Wheat and rice cereals were most frequently used in Spain, the US, Turkey, Egypt and Czech Republic, whereas oat and rice cereals were most frequently used in the UK, Sweden and Germany. In the UK, Sweden and Germany the CICs were often whole grain non-hydrolysed cereals. In the UK and Germany CICs were often organic. However, in the US, Spain, Turkey, Egypt and Czech Republic CICs were predominantly refined hydrolysed cereals and conventional. The CICs that include milk were more common in Sweden, Czech Republic, Turkey and Egypt.

Overall, this study highlights the different types of infant cereals commercialized in different countries. Our findings provide valuable insights to infant food manufactures for the development of healthier and less processed infant cereals.

E-Poster Viewing: Infancy

FOOD VARIETY IN COMPLEMENTARY FEEDING. COMPARISON OF HOMEMADE AND COMMERCIAL INFANT FOODS IN SPAIN. AN OBSERVATIONAL STUDY

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Food variety during complementary feeding has been found to promote food acceptability, and improvements towards a balanced diet. This study aimed to describe and compare the food variety of homemade foods (HMFs) and commercial infant foods (CIFs) in infants and young children.

A cross-sectional study was conducted with 30 mothers from 4 Spanish cities who completed a 3-day food record of their children aged 6-18 months. CIFs data were obtained from the website of the 4 main infant food manufacturers in the Spanish market. Collected data were used to evaluate the type and frequency of ingredients used. Differences between HMFs and CIFs were analysed through independent t-tests.

A total of 121 HMFs and 143 CIFs were analysed. Similar ingredients were found in meat and fish meals, with a predominance of chicken in meat meals and hake in fish meals. Yet, HMFs meals contained a higher number of different vegetables than CIFs, with carrot as the most frequently used in HMFs and the second one in CIFs. There was a lack of oily fish and legumes in HMFs and CIFs. A significantly higher variety of different fruits were used in fruit purees of CIFs, as compared to HMFs. However, banana was the most frequently used fruit in both of them.

Our findings emphasize the need for clearer nutritional guidelines for the preparation of HMFs as well as the promotion of food variety in HMFs and CIFs to suit infants' and young children's nutritional and developmental needs.

E-Poster Viewing: Infancy

ANIMALS AND ANIMAL FAECES CONTRIBUTE TO E. COLI CONTAMINATION ACROSS MULTIPLE INFANT EXPOSURE PATHWAYS: EVIDENCE FROM RURAL ETHIOPIA

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Childhood stunting is commonly observed in regions with poor sanitation and hygiene, partially due to the observed effect of infection on intestinal nutrient absorption. However, interventions which aim to improve sanitation demonstrate little effect on growth. Increasing research suggests that residual contamination of hands and floors from domestic animals and faeces may explain a lack of impact on stunting through normal infant hand-to-mouth behaviours. This study sought to characterise principle exposure and transmission routes in infants in the domestic environment, considering infant behaviours, key hygiene indicators, household sanitation and animal exposure. In a context where animal husbandry is common and faecal contamination widespread, we provide empirical evidence that animals and animal faeces propagate high environmental contamination despite high coverage of on-site WASH (water, sanitation and hygiene) facilities. Contamination of caretaker and infant hands and domestic floor surfaces and strong intercorrelation among vectors suggest infants are frequently exposed to faecal pathogens through linked transmission pathways. Animal exposure is a potential common underlying factor and a dominant source of contamination. Results suggest WASH interventions to address pathogen exposure in infants must consider contextual animal husbandry practices and the need to separate infants from animals in the domestic environment. Interventions can assess whether reducing exposure to animal faecal contamination reduces child enteric illness and improves growth.

SB thanks the People in Need team in Awassa, namely T. Tulu, F. Woldemedhin and M. Gizaw whom assisted in data collection and logistics. SB also thanks participants who welcomed us into their homes and gave their time.

E-Poster Viewing: Infancy

CAN IRON FORTIFICATION CHANGE THE BIODIVERSITY OF GUT MICROBIOTA IN WEANING PIGLETS?

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Introduction. Iron fortification programmes are very useful in the world, especially in developing countries. Fortification of staple foods reduce iron deficiency anemia, however, the effect of iron supplementation gut microbiota seems to depend on the bioavailability of the iron source. The aim of this work was to analyze the effect of feeding weaning anemic piglets with different iron fortificants on the biodiversity of gut microbiota.

Methods. The study was conducted on 36 piglets, 30 of them with induced anemia. We used four iron sources: ferrous sulfate heptahydrate (FSH), electrolytic iron (EI), ferrous fumarate (FF) and micronized dispersible ferric pyrophosphate (MDFP), (n=6 each group). A group of 6 piglets did not received iron fortification. Fecal samples were collected on baseline (day 28 of life) and at the end of study (after 21 days of repletion period). Total genomic DNA was extracted, *via* TissueRuptor®, from fecal samples with a commercially available kit. The gut microbiota composition was analyzed by 16S rRNA gene amplification on the Illumina MiSeq platform.

Results. We observed a great individual variability; however fecal microbial diversity increased from baseline to the end of the study on each piglet, except in anemic ones. In fact, the biodiversity at phylum, family and genus increased with the life time, but in anemic piglets and piglets treated with EI, percentages of Bacteroidetes, Firmicutes and Proteobacteria were similar with a clear predominance of Prevotella. Prevotella has been previously related to diarrheic conditions.

Conclusions. Gut microbiota is affected by iron status and iron fortificant used to treat iron deficiency.

E-Poster Viewing: Infancy

BREASTFEEDING AND ANTHROPOMETRIC INDICATORS IN CHILDREN FROM THE URBAN AREA OF ECUADOR.

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Introduction and aims: Breastfeeding is related to health state and physical growth during the first 1000 life's days. Objective was to identify the relationship between height / age indicator and exclusive breastfeeding in children under 2 years old in urban area of Ecuador.

Methods: Cross-sectional study in children under 2 years of Child Development Centers in Chimborazo province (n = 193). Anthropometric data (weight, height) were taken, a standardized questionnaire on socioeconomic status and breastfeeding practices was applied. The anthropometric indicators were analyzed in Anthro and logistic regression was performed to determine the association of lactation practices with the short stature of children, the model was adjusted by education level and socioeconomic status of the mothers.

Results: 51% were male sex, the age of the mother at the time of birth was 18 - 30 years, 67% of the mothers are private employees, 57% of them have a higher education level. 23% of the sample had a low height and 12% had severe low height. 34% of the children had exclusive breastfeeding until 6 months. With respect to children who received exclusive breastfeeding (EB), children who did "not receive exclusive breastfeeding" (NEB) (OR = 1.56, 95% CI: 1.11-2.21) are more likely to have low height. In addition, children who did NEB have a higher prevalence of severe low height (OR = 1.59, 95% CI: 1.22-2.31) compared to children who did receive EB.

Conclusions: Low height and severe low height may be related to inadequate breastfeeding practice in children under 2 years age.

E-Poster Viewing: Infancy

DIETARY PATTERNS OF CHILDREN UNDER 2 YEARS OF A CITY IN BRAZIL: HOME VERSUS CHILDCARE CENTER

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Background

Dietary patterns consider feeding in global form and recognize that people consume a combination of food and nutrients. The environment where children live influences their feeding. Hence, identifying dietary patterns in these environments is relevant to guide public politics and to develop strategies to improve child nutrition.

AIMS

The objectives of this study was to identify the dietary patterns of children under two years of age, at home and childcare center, and verify association with socioeconomic, demographic and nutritional status.

METHODS

This is a cross-sectional study carried out in the childcare centers of a Brazilian city in 2014, with 256 children of both genders. From the food consumption data, we identify the dietary patterns in each environment by factorial analysis using the principal components method.

RESULTS

We found four patterns obtained at home: "traditional", "less healthy", "milks and cereals" and "mixed", and four in childcare center: "traditional", "snacks", "nutritive" and "pasta and meats". There was an association between younger mothers and greater adherence to the "less healthy" pattern, lower maternal schooling and lower adherence to the "mixed" pattern, lower family income and greater adherence to the "snack" pattern. Obesity children had lower scores for all patterns at childcare center and children older than 12 months had higher scores for all patterns in both environments.

CONCLUSIONS

In both environments we observed the "traditional" pattern, and only at home, we found a "less healthful" pattern. Adhesion to the dietary patterns was associated with socioeconomic, demographic variables and nutritional state.

E-Poster Viewing: Infancy

CULTURAL TABOOS THAT AFFECT THE HEALTH OF INFANTS AMONG THE JOLA ETHNIC GROUP IN THE WEST COAST REGION OF THE GAMBIA

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1. Introduction

Malnutrition is one of the leading causes of morbidity and mortality of children in the world. In The Gambia, malnutrition is one of the major public health problems. Among the factors determining its high prevalence, cultural norms play a crucial role. Food taboos influence the amount, frequency, and quality of nutrients that mothers and children consume. In this qualitative study the objective was to describe food taboos and how they influence infant's nutritional health.

2. Methodology

The methods chosen were a review of the literature, a focus group discussion (FGD), and a semistructured questionnaire. The literature review was designed to search for studies on nutritional taboos among the different ethnic groups inhabiting Sub-Saharan African countries, with a special focus on the Jolas living in The Gambia.

3. Results

There was a general trend among the mothers to mention certain types of food as taboos, but, when asked about the meaning behind this, no clear explanation was provided. Commonly, the concept of nutritional taboo was connected to what the Jolas are not allowed to eat, either because their parents did not eat it or because eating it can lead to health problems.

4. Conclusion

If educational strategies are to be designed aimed at decreasing the prevalence of malnutrition in The Gambia, the food taboos have to be analysed together with the populations and especially with the household diet decision makers. Advocacy for a behavioural change in diet habits through education on nutrition is to be considered one of the most essential tools.

E-Poster Viewing: Infancy

QUALITATIVE STUDY OF BARRIERS TO OPTIMAL BREASTFEEDING PRACTICES IN ARMENIA

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Background and aim: In 2015, the median duration of exclusive breastfeeding was 2.2 months in Armenia and only 15% of 4-5 month old children were exclusively breastfed, indicating an issue with breastfeeding knowledge and practices. This study aimed to identify the main perceived barriers towards optimal breastfeeding practices in Armenia.

Methods: The study utilized qualitative research methods via focus group discussions (FGD) and in-depth interviews (IDI) covering six groups of participants (providers from different levels of care and mothers of young children) from Yerevan city and two provinces: Lori and Shirak. Overall, eight IDIs and 13 FGDs with 99 study participants were conducted during 2015.

Results: The study identified two main groups of barriers to optimal breastfeeding: systemic barriers and knowledge deficiency. The main themes within systemic barriers included lack of skilled breastfeeding support services and low work motivation of providers, mainly related to inadequately low remuneration they receive. The main knowledge-related barriers were: insufficient counseling of mothers, lack of reliable information sources on infant feeding, and misconceptions among both mothers and healthcare providers, mainly related to violations of the exclusivity of breastfeeding.

Conclusion: The main recommendations derived from the study findings included training of providers on breastfeeding counseling, sustainable public education activities, eliminating commercial influences on providers' medical decision making, motivating providers financially to perform better, developing evidence-based clinical guidelines on breastfeeding, and establishing a network of affordable lactation consultants in the country. Considering the similar historical background, findings of this study could be applicable to other post-Soviet countries.

E-Poster Viewing: Infancy

BIOCHEMICAL MARKERS IN ASSESSMENT OF INTESTINAL MICROFLORA FUNCTIONAL STATE IN FORMULA-FED INFANTS

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Background: Bottle feeding is always accompanied by significant changes in intestinal microbiota and often leads to functional disorders of digestion.

Aim: to study biochemical markers of intestinal functional condition in formula-fed infants, who get adapted formulas based on different protein sources.

Materials and methods: The study included 200 healthy children aged from 2 to 5 months. The study lasted for 2,5 months. Infants were divided into 2 groups of 100 children, receiving breast and bottle feeding respectively. The latter group was divided into 2 subgroups: 1st subgroup included infants receiving formula of goat's milk with prebiotics (51 children), 2nd subgroup receiving formula of cow's milk whey protein with prebiotics (49 children). All children assessment of stool characteristics, coprogram, determination of volatile monocarboxylic fatty acids (MFC) in the faeces by gas-liquid chromatography.

Results: Most of the infants, receiving formula with prebiotics on the basis of different protein source had decreased severity of transient functional digestive disorders. Also infants in two compared subgroups receiving adapted formulas had positive dynamics of MFC in faeces: increased activity of bifidobacteria and lactobacilli, good utilization of acetic and butyric acids by and other types of microflora, providing energy for cells, change of the generic microflora composition, anaerobic populations of intestinal microorganisms.

Conclusion: Clinical and probiotic effects of casein-dominant formulas based on goat milk and cow's milk whey formulas had no substantial significant differences. Examination of anaerobic microflora metabolic activity by MFC content in faeces is recommended for characterizing of dysbiotic intestinal conditions in children.

E-Poster Viewing: Infancy

HUMAN MILK PHTHALATE DIESTER LEVELS IN TURKEY

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Introduction: Newborn and infants are among the most susceptible age groups to endocrine disruption due to potential environmental toxins like phthalates. Differing results have been found on phthalate exposure through human milk from different geographic parts of the world. In this study, we aim to evaluate six different phthalate diesters in human milk samples.

Methods: In this part of the Human Milk Artificial Pollutants (HUMAP) study, human milk samples were analyzed using GC-MS to indicate the presence of bis (2-ethylhexyl) phthalate (DEHP), benzyl butyl phthalate (BBP), dibutyl phthalate (DBP), di-“isononyl” phthalate (DINP), di-“isodecyl” phthalate (DIDP), and di-n-octyl phthalate (DNOP).

Results: This study included 72 mothers aged 18 to 41 years; human milk samples were taken from the mothers who gave their consent to participate within 7 to 79 days after birth (mean 34 ± 20 days). We did not detect phthalate esters as DEHP, BBP, DBP, DINP, DIDP, and DNOP in 72 human milk samples.

Discussion: In this study, we did not find phthalate diesters in human milk samples in Turkey. Different results of previous studies about human milk phthalate levels might be related to geography, maternal factors, or analytical methods. In conclusion, potential further studies should continue for potential chemical contamination of human milk.

E-Poster Viewing: Infancy

ASSESSMENT BY THE EUROPEAN FOOD SAFETY AUTHORITY (EFSA) OF THE RISK OF INFANTS TO HAVE VITAMIN D INTAKES ABOVE THE TOLERABLE UPPER INTAKE LEVEL (UL)

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On request from the European Commission, EFSA updated the UL for vitamin D for infants, i.e. 25 and 35 µg/day for the first and second half-year respectively. EFSA also characterised the risk of infants to have intakes above the UL, particularly when consuming formulae with the maximum vitamin D content (3 µg/100 kcal) under the future new European Regulation.

For younger infants up to 4 months, calculations used the maximal allowed vitamin D content in infant formulae (IF) and published default 'high' values for IF consumption. For infants 4 -< 12 months, using its Nutrient Composition and Comprehensive European Food Consumption Databases, EFSA defined intake scenarios, considering ranges of vitamin D amounts in current and future European legal frameworks for formulae, with or without additional intake from fortification.

Depending on reference body weight, age and energy content of IF, using the maximum vitamin D content of 3 µg/100 kcal may lead some younger infants to consume amounts above the UL from formulae alone without considering vitamin D supplemental intake. The precise percentage of infants could not be determined from the data used. In older infants, the 95th percentile of intake, estimated from scenarios comprising formulae and foods fortified or not with vitamin D, does not exceed the ULs, without considering vitamin D supplemental intake.

This intake assessment, considering possible voluntarily and mandatorily fortified foods on the European market and different food patterns, will support decision-making by risk managers. Further national consumption surveys in infants would help improve the intake assessment.

E-Poster Viewing: Infancy

EFFECT OF HONEY SUPPLEMENTATION ON MICROBIOTA OF MALNOURISHED CHILDREN: RANDOMIZED CONTROLLED TRIAL

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Background: Malnutrition in children is a global public health problem with wide implications. Malnourished children have increased risk of dying from infectious diseases. The gut microbiota plays an important role in the regulation of the host's metabolism, immunity and in the extraction of energy from ingested food. Honey can exert the prebiotic effect in a synergistic mode of action and improve microbiota.

Aim: To evaluate the effect of honey supplementation in malnourished infants and children regarding anthropometric measurements, bifidobacterium and lactobacillus count in stool.

Methods: randomized single blinded case control prospective intervention study.

Forty malnourished children of both sexes were recruited. They were divided into group I (20 patients) received honey in dose of 2mg/kg daily for 1 month, group II (20 patients) no supplementation. Anthropometric measurements and Stool Bifidobacteria and lactobacilli counts by PCR were done to all patients at baseline and repeated after 1 month of supplementation.

Results: At baseline, the two malnourished groups 1 and 2 were matched as regards anthropometric measurements and stool bifidobacteria and lactobacilli count. Follow up revealed significant increase in bifidobacteria and lactobacilli in group I compared to group II, weight gain and appetite were significantly higher in honey supplemented group. Also, there was significant decrease in frequency of infections in group I compared to group II.

Conclusion: Honey consumption in a group of malnourished children resulted in better weight gain, upregulation of beneficial bacteria and decreased frequency of infections.

E-Poster Viewing: Infancy

PALATABILITY AND SENSORY PERCEPTION OF INFANT FORMULAS FOR THE TREATMENT OF COW'S MILK ALLERGY ACCORDING TO BRAZILIAN MOTHERS

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Introduction: Cow's milk allergy (CMA) is a prevalent allergic manifestation in the pediatric population. The treatment is based on the exclusion of the milk proteins from the diet of the nursing mother or, in the case of new-born babies using infant formulas, the use of infant formulas with extensively hydrolyzed proteins (eHF) or free amino acids (AAF). However, the taste of the eHF may represent an obstacle to the treatment, which is basically dietary. The objective of this study was to measure the sensorial perceptions of different infant formulas for the treatment of cow's milk allergy, according to Brazilian mothers.

Methodology: Randomized blind study of 90 women, mothers of children with CMA. Five different types of formulas aimed at the treatment of CMA were evaluated, without identification of type, brand or manufacturer, in relation to acceptability and preference.

Results: Evaluation of the appearance, smell, flavor and aftertaste of the powders and prepared products showed similar orders of preference, with only slight differences in discrimination. All results showed that whey based eHF were chosen as better palatable compared to eHF based on rice and casein and AAF. Overall and aftertaste liking of the rice based eHF was better than for casein based eHF and for AAF; smell and flavor liking was better for rice based eHF than for casein based eHF.

Conclusions: Whey hydrolyzates were more palatable than other eHF and AAF formula, which is a potential advantage in the maintenance of an adequate intake for children on a CMA diet.

E-Poster Viewing: Infancy

ROLE OF BREASTFEEDING IN PREVENTION OF TYPE 1 DIABETES IN PAKISTAN.

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Background:

In type 1 Diabetes, there is autoimmune destruction of β cells which is genetically transmitted. Various factors are responsible for this autoimmune process like early use of cow's milk, allergic food, absence of breastfeeding and various other factors.

Objective:

Our study aims to investigate the role of breastfeeding in prevention of type 1 diabetes in an underdeveloped country Pakistan.

RESEARCH DESIGN AND METHODS:

Cases were the patients diagnosed with Type 1 Diabetes Mellitus and controls were the siblings of affected children. Data on breast feeding, introduction of cow's milk, time and duration of breast feeding, prenatal care, gestational age, mode of delivery, birth weight, need for resuscitation and immunisation status were collected through the information provided by parents and health records. Data was analysed using SPSS.

RESULTS:

100 children with type 1 Diabetes and their respective siblings were included in the study. Patients with type 1 diabetes had a shorter duration of breastfeeding usually 3-4 months. However, 38% of the patients were never breastfed in the life. The diabetic group was exposed to cow's milk during the 3rd month of their life whereas the control group was exposed to cow's milk after the 2nd year of their life. Other parameters also exhibited that a longer duration of breastfeeding was associated with a protective effect against diabetes.

CONCLUSIONS:

We concluded that breastfeeding plays a vital role in prevention of Type 1 Diabetes. It is important that future studies must identify the duration and exclusivity of breastfeeding in order to prevent diseases like type 1 diabetes.

E-Poster Viewing: Infancy

ANALYSIS OF DEATH IN HOSPITALIZED CHILDREN IN THE SERVICE OF NUTRITION AT DAVID BERNARDINO PEDIATRIC HOSPITAL

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Introduction: In Angola 2017 mortality rate for acute severe malnutrition 19%, 38% children with chronic malnutrition and 5% with severe acute malnutrition.

Objectives: To identify factors that may influence the occurrence of death in hospitalized children due to malnutrition in the Nutrition Service.

Methods: An observational descriptive and retrospective study in a sample of 280 children aged 1-59 months that died at the Nutrition Service, from January 2017 to June 2018.

Results: From children studied, 70% were male, 56% were aged between 12-59 months, 70% lived mainly in the peripheral municipalities of Luanda, 59% had an early onset of feeding, and an incomplete immunization schedule in 56.5%. The parents performed activities with no fixed income, 56.7%, cohabiting with an average of 10 people in the family in 52.5% and with a franchise of 5 brothers 48.9%. Correlation of clinical characteristics revealed that diarrhea (p 0.0018), dehydration (p0.0188), hypothermia (p0.0137), skin mucous pallor (p0.00920), altered state of consciousness (p0.046), increased mortality risks. The most common co morbidity was HIV in 22%. The main identified cause of death was dehydration with 42% cases. The related circumstances to the occurrence of deaths were: delays in medical care 71.4%, failure to monitor 69.3%, night time from 8:00 PM to 8:00 PM in 55%, and failure to organize the health system 78.5% (reference and counter-reference).

Conclusion: The debilities in the health system organization, the delay in medical care, the failure to monitor, dehydration and night time are the main factors that contribute to the death occurrence

E-Poster Viewing: Infancy

TEMPORAL CHANGES IN FATTY ACID PROFILE OF HUMAN MILK: A POOLED DATA ANALYSIS

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Background and aims: This study aims to provide a first overview of fatty acid (FA) concentrations in human milk (HM) throughout lactation using pooled data analysis of existing literature, which has not been done before.

Methods: A Medline search was conducted with specific search terms on FAs in HM. The search was confined to English language and with a time limitation from January 1980 until August 2018. Studies providing original data on HM samples from healthy mothers were included. Main exclusion criteria were usage of packed columns for FA chromatography, undefined lactational stage, pooled milk samples across mothers or lactational stages, maternal dietary restrictions and reviews.

After data extraction and standardization, weighted least squares means (WLS) and SE were calculated for the most commonly reported FAs, palmitic-, oleic, linoleic- (LA), arachidonic- (ARA), α -linolenic- (ALA), eicosapentaenoic- (EPA), docosahexaenoic- (DHA) acids in colostrum (0-5 days post-partum), transitional milk (6-15 days) and mature milk (16-60 days) using a random effect ($k > 5$) model.

Results: The literature search resulted in a total of 54 studies (4295 HM samples) worldwide. Table 1 shows that LA, palmitic and oleic acids seem to remain relatively stable throughout lactation, whereas DHA and ARA seem to decrease, ALA to increase over time and EPA to peak in transitional milk decreasing thereafter.

Weighted least squares mean concentrations of fatty acids (g/100 g FA) per lactational stage

	Colostrum			Transitional milk			Mature milk		
	<i>k</i>	<i>N</i>	Mean $\pm$ SE	<i>k</i>	<i>N</i>	Mean $\pm$ SE	<i>k</i>	<i>N</i>	Mean $\pm$ SE
Palmitic acid (C16:0)	23	919	24.9 $\pm$ 0.62	22	1065	22.5 $\pm$ 0.71	36	2311	22.2 $\pm$ 0.48
Oleic acid (C18:1n-9)	23	919	35.1 $\pm$ 0.63	20	940	32.3 $\pm$ 1.01	33	2154	33.0 $\pm$ 0.74
LA (C18:2n-6)	22	903	14.7 $\pm$ 0.97	21	1051	14.5 $\pm$ 0.76	35	2292	15.0 $\pm$ 0.78
ARA (C20:4n-6)	23	873	0.78 $\pm$ 0.04	22	1001	0.65 $\pm$ 0.04	36	2245	0.48 $\pm$ 0.03
ALA (C18:3n-3)	21	919	0.83 $\pm$ 0.08	19	1065	1.00 $\pm$ 0.11	33	2311	0.98 $\pm$ 0.07
EPA (C20:5n-3)	20	842	0.11 $\pm$ 0.02	18	901	0.14 $\pm$ 0.03	29	1334	0.09 $\pm$ 0.01
DHA (C22:6n-3)	23	919	0.51 $\pm$ 0.05	20	957	0.46 $\pm$ 0.06	34	2280	0.32 $\pm$ 0.03

Conclusions: Our pooled data analysis provides an overview of FA concentrations across lactational stages narrowing a scientific gap. Distinctly different temporal patterns seem to exist in HM FA concentrations.

E-Poster Viewing: Infancy

INFANT FEEDING PRACTICES DURING THE FIRST 6 MONTHS OF LIFE IN SINGAPORE: INSIGHTS FROM THE VENUS STUDY

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Background and aims: The WHO recommends exclusive breastfeeding for the first 6 months of life and continued breastfeeding supplemented with complementary feeding thereafter, until 2 years of age. We provide preliminary data on (breast)feeding practices between 0-6 months of Singaporean infants enrolled in an intervention study.

Methods: At birth, infants were enrolled in the VENUS study (clinical register number NCT01609634). When parents autonomously decided to introduce infant formula, either partially or fully, their infants were randomised to one of three intervention formulas. Age at breastfeeding cessation, formula and complementary food introduction and maternal motivation for breastfeeding cessation were recorded.

Results: Demographic and feeding characteristics were not apparently different between intervention groups, allowing overall cohort analysis. Feeding characteristics of 520 healthy infants (52% male; 63% Chinese, 29% Malay, 8% other ethnicities) were analysed. Only 19% of infants were fully breastfed at 6 months of age, of which 51% received complementary feeding. Although in 73% of the infants formula was already introduced within the first month, 45% was still, either fully or partially, breastfed at 6 months (Figure 1). Irrespective of infant's age, the main reason to stop breastfeeding was the mother's perception of insufficient breast milk supply.

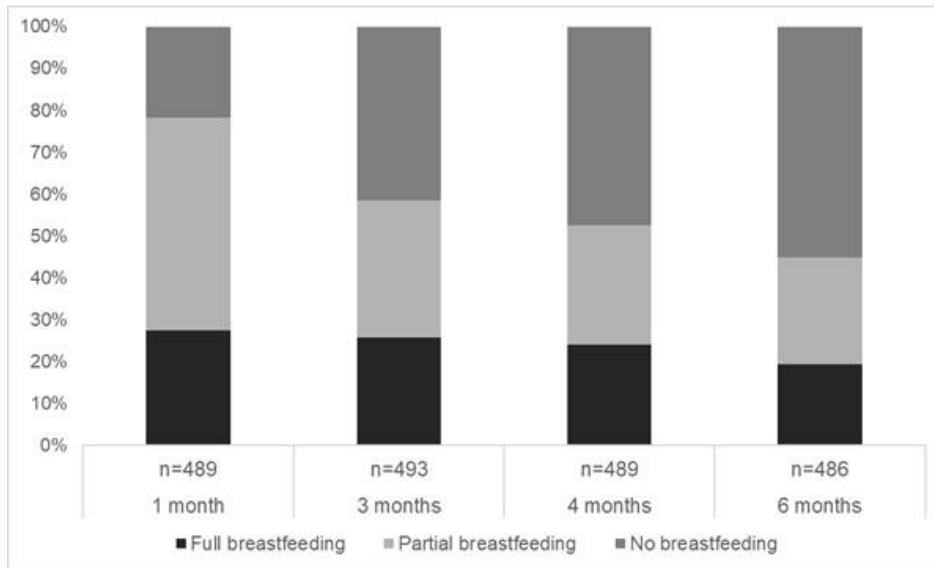


Figure 1. Prevalence of breastfeeding at each study visit in the first 6 months of life.

Conclusions: In this cohort, only a small percentage of infants met the WHO breastfeeding recommendations. This confirms previous findings by others that partial breastfeeding together with formula and complementary foods up to 6 months of age seems to be common in Singapore.

E-Poster Viewing: Infancy

INFANT AND YOUNG CHILD FEEDING PRACTICES AT HOUSEHOLD AND VERY HIGH STUNTING AMONG MARGINALIZED CHEPANG CHILDREN IN NEPAL

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Appropriate nourishing with supplement is a crucial means for repaying good or bad health as well as nutritional status of kids. Although, documentation about tyke nourishing practices and the wholesome statuses among ethnic networks like the Chepang is constrained. The present investigation in this manner goes for investigating the bolstering hones and healthful status of Chepang youngsters in two regions of the Dhading area of Nepal. The examination was cross-sectional in nature. It moved toward moms of kids matured 6 two years. A quantitative report was directed among February and March 2018. Stature, weight and mid-upper arm periphery (MUAC) of the kids were estimated and broke down as indicated by WHO shorts. A sum of 347 moms (238 from Benighat Rorang and 109 from Gajuri municipalilty) took an interest in the examination. It was discovered that 26.8% youngsters were underweight, 66% were stunted and 6.6% were experiencing wasted. There was no huge relationship between selective bosom sustaining and wholesome status, dietary decent variety, malnourishment, least feast recurrence and wellbeing related status. It was seen that guardians of Chepang kids knew about the advantages of elite bosom sustaining, dietary assorted variety and dinner recurrence, yet there was no relationship of these practices with nutritious nourishment things for the kids because of inaccessibility consistently. So different components ought to be investigated further to advance sound development and improvement of chepang children.

E-Poster Viewing: Infancy

PREVALENCE OF ACUTE MALNUTRITION AMONG 6-24 MONTHS IN ANGANWADI CENTERS OF DELHI

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Background: Acute malnutrition is a serious public health problem in our country. Overall burden of wasting is highest in India with more than 25 million wasted children. As per NFHS-4 (NCT Delhi) there has been a slight increase (1.7%) in wasting prevalence as compared to NFHS -3 (NCT Delhi). This study aims to assess the prevalence of acute malnutrition among infants and young children (6-24 months) in AWCs of Delhi.

Method: A community based cross sectional study was conducted in 5 zones of Delhi; North (Madipur), South (Badarpur), West (Hastsal), East (Shakarpur) and Centre (Nabi Kareem) from October 2017 to March 2018. Weight/Height/Mid Upper Arm Circumference of children (n=250) were measured and Weight for Height Z scores were computed with the help of Anthro Plus software. Children were categorized as acute malnourished if WHZ<-2SD and/or MUAC <125mm.

Result: Out of all 250 children (6-24m) 111 were identified as acute malnourished. The present study revealed the prevalence of acute malnutrition on Delhi as 44.4%. Higher prevalence was reported among girls (25.6%) as compared to boys (18.8%). Prevalence of moderate acute malnutrition was found to be 37.2% and severe acute malnutrition was found to be 7.2%. Out of all 111 acute malnourished children, nearly half (41%) were age between 12-18 years.

Conclusion: Prevalence of acute malnutrition in Indian capital is alarming. Therefore, it is the need of an hour to provide timely and appropriate interventions to treat the underlying cause of malnutrition in order to uplift the overall health of these children.

E-Poster Viewing: Infancy

ARRIVING AT MID UPPER ARM CIRCUMFERENCE CUTOFFS FOR SCREENING OF ACUTE MALNUTRITION AMONG CHILDREN 6-24 MONTHS OF AGE

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Background: MUAC is popularly used as a simple and robust alternate method of screening under 5 children with acute malnutrition than WHZ score. The present study aims to compare WHZ score and MUAC as a screening criteria for acute malnutrition among children (6-24 months) in Anganwadi centers of Delhi.

Method: A community based study was carried out in 5 zones of Delhi from October 2017 to March 2018. A total of 250 children in the age group of 6-24 months were screened for acute malnutrition using WHZ score and MUAC. WHZ scores were computed with the help of AnthroPlus software. Children were categorized as acute malnourished if WHZ<-2SD and/or MUAC <125mm. To determine power of MUAC to predict acute malnutrition ROC curves were drawn against WHZ scores. Sensitivity and specificity of various MUAC cutoffs was calculated.

Results: Out of 250 children, 48.4% were male. Mean MUAC was 133.9mm and ranged between 110mm to 159.5mm. The prevalence of acute malnutrition as indicated by MUAC (<125mm) was 14.8% and 41.2% indicated by WHZ score (<-2SD). The current cutoff of MUAC for diagnosing acute malnutrition compared poorly to the same category as defined by WHZ score with Kappa 25% (p value=0.053). Optimal MUAC cutoff to detect acute malnutrition was 130.3 mm (AUC= 0.993) with a sensitivity and specificity of 70.9% and 89.1% respectively.

Conclusions: There is a need to conduct similar studies on a larger population with different ethnic background and geographical settings to derive age and gender specific cutoffs for acute malnutrition.

E-Poster Viewing: Infancy

CHILDREN NUTRITION FORMULAS BASED ON GOAT MILK AS A WAY OF REDUCING THE RISK OF ALLERGIC REACTION IN THE EARLY AGE

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Breastfeeding up to 3 months get about 41% of children, while 59% fed with infant formulas mainly based on cow milk (CM). However, it's allergy to cow's milk proteins, more often to α -s1-casein, in 85% of cases becomes trigger for development of food allergies (FA) and atopic dermatitis' (AD). In other hand, in goat milk (GM), unlike CM, there's no α -s1-casein. Purpose: to reveal frequency of development of allergic manifestations in children from parents with weighed allergic anamneses receiving artificial feeding with infant formulas based on GM (Group 1, n=63) v. CM (Group 2, n=65). Patients: 128 full-term children aged from 3 months (onset of introduction of infant formulas) up to 6 months (before introduction of complementary feeding) observed during 3 months period.

Methods: Specific IgE (sIgE)-antibodies to food proteins of CM and GM were determined by method of enzyme immunoassay, as well as component determination of sIgE to molecules of specific proteins. Every month, all children were anthropometrically recording for manifestations of AD and/or FA: skin condition, gastrointestinal tract disorders. Results were processed using variation statistics methods with the software: MS Excel 2010, TIBCO Statistica 11.9. When comparing the data, significance level $p < 0.05$ was considered statistically significant.

Results: before beginning of introduction of infant formulas, manifestations of AD (increased dryness and hyperemia of the skin) were noted in 27 (21%) children: in 15 (55.5%) children of Group 1 and 11 (44.5%) in children from Group 2 (SCORAD < 20 for all). An elevated level of sIgE antibodies to CM proteins detected in 55 (42.9%) children: in 27 (21%) of Group 1 and in 28 (21.8%) of Group 2. With a high level of antibodies to α -s1-casein (89%), to β -lactoglobulin (7.4%), to both fractions (3.7%) during definition of sIgE. After three months of taking infant formulas the mass/height rates in both groups were comparable ($p > 0.5$), but the gastrointestinal disorders were significantly less in children of Group 1 (6 v. 15, $p = 0.0067$). AD effects on the background of taking infant formulas based on GM were preserved in 4 (6.3%) children (SCORAD < 20); while based on CM - in 18 (27.6%; SCORAD = 24 ± 7.44 , $p = 0.006$).

Conclusions: infant formulas based on GM and CM do equally contribute to normal physical development of children. While infant formulas based on GM improve digestion, reduce risk of development of AD in toddlers from parents with weighed allergic anamneses.

E-Poster Viewing: Infancy

MINERAL CONCENTRATION (CA, FE AND ZINK) OF BREAST MILK BASED ON BABY'S BIRTH WEIGHT AT KASSI-KASSI HEALTH CENTER MAKASSAR

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Breast milk is the best nutrition for babies. It contains the nutrients that the baby needs. Important minerals contained in breast milk are Ca, Fe and Zink. This study wanted to see the concentration of breast milk mineral based on infant birth weight. The type of this research is observational analytic research with cross sectional design. Sampling was done by random sampling and the total sample were 37 breastfeeding mothers, consisting of 31 mothers with normal weight babies and 6 mothers with LBW infants. The data were collected using questionnaires with interview method and breastmilk samples were taken as many as +30 ml to be analyzed using anatomic absorbtion spectrophotometry (AAS) method. The results showed that the average calcium level in the respondents' milk was 344.25 ± 82.78 mg / L, the iron content was 4.71 mg / L and the zinc level was 0.88 ± 0.55 mg / L. In infants with normal birth weight the calcium content of breast milk was 336.99 ± 75.19 mg / L, FE levels were 5.24 ± 9.1 mg / L and zinc was 0.83 ± 0.51 mg / L. In infants with low birth weight calcium ASI levels were 381.73 ± 115.80 mg / L, Fe was 2.06 ± 1.53 mg / L and zinc was 1.13 ± 0.67 mg / L. Calcium and Zink levels were higher in breast milk of mothers with low birth weigh (LBW) t infants while Fe was higher in breast milk of mothers with normal-born infants (NBW)

E-Poster Viewing: Infancy

THE UTILITY OF COW MILK SYMPTOM SCORE IN NONEXCLUSIVE BREASTFEEDING TAIWANESE INFANTS WITH SYMPTOMS SUGGESTIVE OF COW MILK PROTEIN ALLERGY

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Background & Aim: Cow's milk-related symptom score (CoMiSS) had been developed as a tool to screen and raise awareness of cow milk protein allergy (CMPA) in infancy depending on their clinical symptoms. Score greater than 12 is suggestive of CMPA. Here we assess the practical use of CoMiSS in the pediatrics gastroenterology outpatient setting in a medical center in Northern Taiwan for nonexclusive breastfeeding Taiwanese infants with symptoms suggestive of CMPA.

Methods: The single center prospective study was conducted in a medical center in Northern Taiwan over a period of 2 years from January 2016 to January 2018. In this study, a total of 137 patients between age 0-3 months with symptoms suggestive of CMPA were included.

Results: A total of 137 infants were enrolled in the study. The mean age was 48 days. 80 (58%) infants were male and 57 (42%) infants were female. More than half of the infants (55%) had inconsolable crying complaint followed by 41% with gastrointestinal complaints (regurgitation [35%], and diarrhea [6%]) as well as 2% with skin manifestation (eczema). The overall mean and median of CoMiSS were 6.9 and 7.0. Only 1 of the infants had the CoMiSS greater than 12, which CMPA was unlikely during follow up.

Conclusion: In our study, CMPA was not likely in pediatric gastroenterology outpatient department in infants with symptoms suggestive of CMPA by using CoMiSS.

E-Poster Viewing: Infancy

THE UTILITY OF COW MILK SYMPTOM SCORE IN EXCLUSIVELY BREASTFED TAIWANESE INFANTS WITH SYMPTOMS SUGGESTIVE OF COW MILK PROTEIN ALLERGY IN PEDIATRICS OUTPATIENT DEPARTMENT

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Background & Aim: Cow milk protein allergy (CMPA) has been documented in infants with exclusively breastfed at incidence of 0.5%-2.2%. The development of Cow's milk-related symptom score (CoMiSS) was used as a tool to screen and raise awareness of CMPA in infancy depending on their clinical symptoms. Score greater than 12 is suggestive of CMPA. Here we assess the practical use of CoMiSS in a pediatrics gastroenterology outpatient department of a medical center of Northern Taiwan for exclusively breastfed infants presenting with symptoms suggestive of CMPA.

Methods: Exclusively breastfed infants aged under 4 months with symptoms suggestive of CMPA were included in this observational study over a period of 2 years (March 2016-March 2018).

Results: A total of 43 infants were enrolled in the study. The mean age was 52 days. 65% of the infants were male and 35% were female. 56% of infants had inconsolable crying complaint followed by 35% with gastrointestinal complaints (regurgitation ([33%] and diarrhea [2%]) as well as 7% with skin manifestation (eczema). The overall mean and median of CoMiSS were 6.9 and 6.0. Only 1 infant out of 43 infants (2.3%) had CoMiSS greater than 12, where hypoallergic diet was suggested to the mother.

Conclusion: In our study, CoMiSS probably can be used as a screening tool for CMPA in exclusively breastfed infants with symptoms suggestive of CMPA at pediatric gastroenterology outpatient department.

E-Poster Viewing: Infancy

ENVIRONMENTAL ENTERIC DYSFUNCTION AND SYSTEMIC INFLAMMATION ARE NOT REDUCED BY SUPPLEMENTATION WITH ZINC OR MULTIVITAMINS IN TANZANIAN INFANTS

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Environmental enteric dysfunction (EED), a subclinical disorder of the small intestine, and systemic inflammation (SI) are associated with stunting in young children in low- and middle-income countries (LMICs); however, effective therapies for improving them remain elusive. The aim of this study was to examine whether daily zinc and/or multivitamin (MV) supplementation reduce markers of EED (as assessed via anti-flagellin and anti-LPS immunoglobulins (Igs)) and/or SI (as assessed via C-reactive protein (CRP) and alpha-1-acid glycoprotein (AGP)), in a sample of infants from peri-urban Dar es Salaam, Tanzania. Infants who participated in a randomized, double-blind, placebo-controlled trial received daily oral supplementation of zinc, MVs (B complex, C, and E), zinc + MVs, or placebo for 18 months starting at ~6 weeks of age. Micronutrient doses were equivalent to 150-600% of the Recommended Dietary Allowance (RDA) or Adequate Intake (AI). Blood samples were obtained, and biomarkers of EED, SI, and growth (IGF-1, IGFBP3) were measured via ELISA in 590 infants at 6 weeks and 6 months of age. EED biomarkers were also measured in 162 infants at 12 months of age. We observed no significant differences in changes in EED or SI biomarker concentrations between infants who received zinc compared with infants who did not receive zinc or between infants who received MVs compared with infants who did not receive MVs ($p > 0.05$ for all). In summary, neither zinc nor MV supplementation ameliorated EED or SI during infancy. Other therapies for EED and SI should be prioritized for future trials.

E-Poster Viewing: Infancy

SOCIO-CULTURAL FACTORS AND CARE PRACTICES ASSOCIATED WITH INCIDENCE OF SEVERE ACUTE MALNUTRITION (SAM) IN KATSINA STATE, NIGERIA

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Malnutrition is one of the major health problems facing under-five age children and remains a significant contributor to morbidity and mortality among children worldwide especially in sub-Saharan Africa. Multi stage sampling technique was used to select 400 mother-child pair for the study. Semi-structured questionnaire were used to obtain information of the respondents. Results showed that 82.0% of the mothers were married, 58.3% were from polygamous home while 26.8% were full house wives with average monthly income of ₦750. Also, 42.3% initiates Breastfeeding within 8 hours of delivery while 84.4% do not practice Exclusive Breastfeeding and 59.0% introduce Complementary feeding within 3-4 months and stop breastfeeding by 18 months respectively. Most (58.5%) of the children were male and 47.0% were within the age of 6-12 months. Majority (84.8%) of the children were underweight, 25.8% were wasted while 41.3% were stunted. Socio-cultural practices, most women delivery at home (71.5%), 69.8% fed herbs to children, 16.8% prefer spiritual remedy and 54.5% didn't give meat or fish to children during meals. Major hygiene practices by the respondents were use of pit latrine (73.8%), use of refuse dump (67.0%) and use of public tap (38.8%). Malaria (83.5%) was the major sickness of the children while 71.5% did not know their children were malnourished. SAM still persist among under five children and was found to be associated with socio-cultural factors and socio-economic characteristic. Early introduction of complimentary feeding and lack of Exclusive Breastfeeding practices are contributing factors for SAM. Increase in number of trained health personnel and equipment in all hospitals especially the one use for CMAM Programme is recommended

E-Poster Viewing: Infancy

FEEDING PATTERNS OF INFANTS AND YOUNG CHILDREN IN THE PHILIPPINES: FINDINGS FROM THE FEEDING INFANTS AND TODDLERS STUDY (FITS) 2013

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Background and aims: Dietary patterns in early childhood should contribute essential nutrients required for growth, and help establish lifelong dietary habits. This study describes the dietary patterns of 6-23.9mo Filipino children.

Methods: The FITS is a cross-sectional, national survey of infants (6-11.9mo; $n=350$) and toddlers (12-23.9mo; $n=714$). Dietary data were collected using 24-hour recalls. Mean daily intakes and percentage consumption of food groups were calculated.

Results: Sixty percent of infants consumed breastmilk compared to 37% of toddlers, while 35% of infants consumed formula, compared to 5% of toddlers. In general, rice consumption was high. Among toddlers, consumption of sweets was more prevalent than fruit and vegetables, with 20% consuming sugar-sweetened beverages.

Table 1. Milk consumption.				
	6-11.9mo ($n=350$)		12-23.9mo ($n=714$)	
	Mean/capita (g)	% consumption	Mean/capita (g)	% consumption
Milks	390	99	235	89
Any breastmilk	336	60	182	37
Any formula	39	35	7	5
Fortified powdered milks	11	13	19	31

Table 2. Complementary foods consumption.				
	6-11.9mo ($n=350$)		12-23.9mo ($n=714$)	
Food Group	Mean/capita (g)	% consumption	Mean/capita (g)	% consumption
Grains	49	86	83	99
Rice	35	70	62	91

Fruit	3	5	9	14
Vegetables	2	11	6	28
Meat/Proteins	6	25	26	65
Sweets	11	44	33	63
Sugar sweetened beverages	3	7	14	20

Conclusion: The diversity of Filipino children's diet is limited, with low consumption of fruit and vegetables and high consumption of rice and sugary foods. This data can be used to support the development of public health strategies to improve diet quality in early childhood.

E-Poster Viewing: Infancy

LONGITUDINAL BODY COMPOSITION STUDY IN HEALTHY BABIES AGED 0-24 MONTHS FED ACCORDING TO THE INFANT AND YOUNG CHILD FEEDING (IYCF) GUIDELINES IN COLOMBO SRI LANKA

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Introduction

Body composition is better indicator of nutritional status than anthropometry. Asian children have been known to have proportionately higher fat mass compared to children of other ethnic origins. This is the first longitudinal body composition study of Sri Lankan infants aged 0-24 months.

Objective

To describe the body composition in healthy Sri Lankan babies from 0-24 months fed according to the IYCF guidelines.

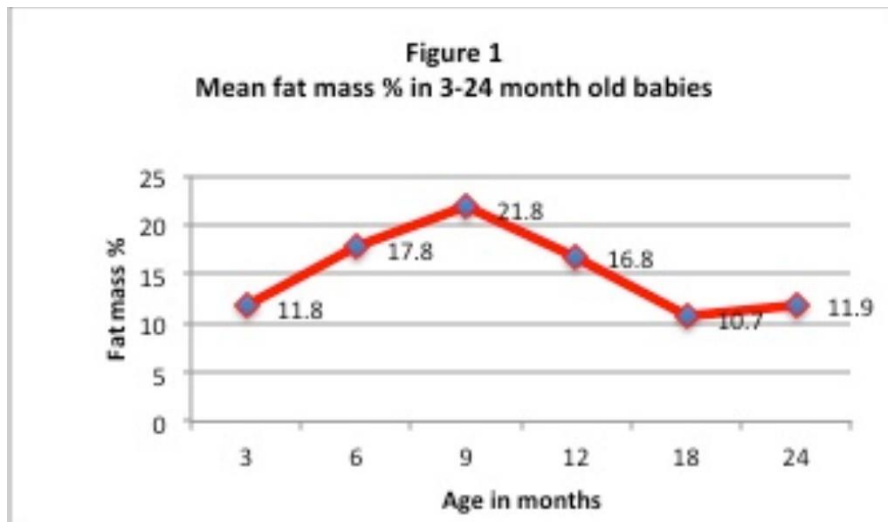
Method

This is an ongoing longitudinal study since July 2015. All healthy babies born at the University Unit, De Soysa Hospital for Women, Colombo after 37 weeks gestation to mothers over 18 years who agreed to attend monthly follow up until 1 year were included. Ethical clearance was obtained from Faculty of Medicine, University of Colombo. Body composition was assessed at 3,6,9,12,18 and 24 months of age with Deuterium Dilution Method using saliva, which was, sampled pre-dose, 2.5 and 3 hours post-dose (deuterium=0.15mg/kg) and analysed using Agilent 4500FTIR. Statistical analysis was done using SPSS24.

Results

Body composition was assessed in 153, 112, 75, 63, 37 and 16 babies at 3,6,9,12,18 and 24 months respectively. Their mean and SD values are shown below.

Age mts	3	6	9	12	18	24
Weight kg	5.590±0.7	6.99±0.76	7.89±0.91	8.471±0.9	9.36±1.0	10.168±1.5
FFM %	87.5±18.8	82.1±21.	77.3±17.	83.1±10.3	89.2±21.2	88.0±11.4
FM kg	0.68±0.98	0.29±1.9	1.73±1.4	1.44±0.9	1.05±1.9	0.22±1.2
FM%	11.8±18.6	17.8±21.8	21.8±17.3	16.8±10.3	10.7±21.2	11.9±11.4



Conclusion: Mean fat mass percentage increased from 3 to 9 months of age but decreased from 12 to 24 months in healthy babies fed according to the IYCF guidelines.

I acknowledge the funding received by the IAEA for this study.

E-Poster Viewing: Infancy

EFFICIENCY OF USING THE ADAPTED GOAT'S MILK FORMULA IN THE DIET OF HEALTHY YOUNG INFANTS: A MULTICENTER PROSPECTIVE COMPARATIVE STUDY

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Objectives and study

The aim of our study was to assess the clinical efficacy of the adapted goat's milk formula in the infant diets.

Methods. We conducted a prospective comparative study with healthy full-term infants aged 0-5 months being on a formula (main group) or breast feeding (comparison group). The tolerability of the adapted goat's milk formula (Kabrita GOLD, «Hyproca Nutrition East Limited»), the dynamics of anthropometric indicators, changes in microscopic characteristics of stool and blood parameters were assessed after 1 month.

Results. Good tolerability of the goat's milk formula was noted in 184 (96.8%) of 190 children in the main group. In the course of taking the product, the proportion of children with functional disorders of the gastrointestinal tract decreased significantly from 57 (30%) to 27 (14%) ($p < 0.001$). Physical development, complete blood count results, the levels of ferritin, prealbumin and 25(OH)D in children of the main group and the comparison group ($n = 71$) were comparable and were within the mean age parameters. Qualitative analysis of the level of specific IgE to goat's milk proteins did not reveal any sensibilization in any of the children receiving the milk formula, either at the beginning of the study or after 1 month of taking the product.

Conclusion. The studied adapted goat's milk formula can be used in nutrition of young infants in the cases of insufficiency or absence of mother's milk.

E-Poster Viewing: Infancy

PREVALENCE OF MALNUTRITION AMONG INFANTS IN MANGU LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA

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The study assessed the prevalence of malnutrition among infants in Mangu Local Government Area of Plateau state, Nigeria. A cross sectional community-based survey was used for the study. Structured and validated questionnaire was used to obtain information on socio-demographic characteristics of 400 respondents sampled using stratified random sampling by balloting without replacement. Anthropometric data was measured with appropriate tool for each measurement. Data was compared with standards and analyzed. Data was described with mean, standard deviation, frequency and percentage. Categorical data was checked for association with Chi square and Pearson correlation. Numerical parameters of male and female infants were compared with independent sample t-test. Results were presented in tables and figures. Results revealed that stunting was 15%, wasting was 12%, and underweight was 4% among the infants. Also, body mass index (BMI) for age indices showed that overweight, obesity and underweight was 54%, 18% and 0.5% respectively. There was a statistical significance ($p=0.021$) between the BMI of male and female infants using t-test. There was also a significant positive correlation ($r=0.252$; $p=0.000$) between the weight of the infants and duration of breastfeeding. The study revealed a high prevalence of malnutrition among infants in the study population.

E-Poster Viewing: Infancy

PREVALENCE OF MALNUTRITION AMONG INFANTS IN IGBO-EZE NORTH LOCAL GOVERNMENT AREA OF ENUGU STATE, NIGERIA

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This study examined prevalence of malnutrition in Igbo-eze north local government area of Enugu State, Nigeria. The population for the study were all mothers that attended post-natal clinics in the primary health care facilities in Igbo Igbo-eze north local government area and their infants. Purposive sampling was used to select a total of 139 mothers with their infants (birth-1 year). Validated questionnaire was used to elicit socio-demographic characteristics of the respondents. Anthropometric indices were categorized using WHO (2007) reference standard. The data collected were coded using computer software, SPSS version 22. Chi-Square and Pearson correlation was used to associate categorical data. Independent sample t-test was used to compare the numerical variables of male and female infants. A $p < 0.05$ was considered statistically significant. A total of 68.9% of the mothers had their first child from the ages of 20-24, majority of the parents were low income (20,000 Naira per month) earners. Also, 51.1% of the mothers completed secondary education and 18% had tertiary education. Majority of the mothers were traders (51.1%) and 93.5% of the infants had both parents alive. The result showed that the percentage of wasting, stunting, underweight, overweight and obesity among the infants were 29.5%, 19.4%, 19.3%, 6.5% and 2.2% respectively while 7.2% were severely stunted, 2.2% were severely wasted and 1.4% were severely underweight. There was high prevalence of double burden of malnutrition in Igbo-eze north.

E-Poster Viewing: Infancy

BREASTFEEDING IN VEGETARIAN FAMILIES (RUSSIAN EXPERIENCE)

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Background. The popularity of vegetarian diets has increased in Russia. The exclusion of animal products from the diet may cause deficiency of essential nutrients in mothers and infants.

Aim of the study - to assess the frequency of breastfeeding and some parameters of the nutritional status in children breastfed by vegetarian mothers.

Methods. The study included 148 children aged 1-17 year. Parents were interviewed about breastfeeding. Nutritional status was evaluated using anthropometric measurements and results of clinical laboratory tests (hemoglobin, mean cell volume, ferritin, transferrin, vitamin B12, homocysteine).

Results. The frequency of breastfeeding in vegetarian families was 96% with the duration from 2 to 60 months (23±11 months). 92,5% children were breastfed until 6 months, 87,2% - until 12 months, 75% - until 18 months, 55,4% - until 24 months.

26 children aged 3-36 months received breastfeeding at the time of the study and had anthropometric measurements data within the normal limits. Biochemical laboratory findings showed iron deficiency in 31%, iron deficiency anemia - in 27%. Vitamin B12 deficiency associated with lack of animal origin food in the diet without supplementation was found in 50%, B12-deficiency anemia - in 4%. Hyperhomocysteinemia was detected in 55% of children.

Blood samples of 26 vegetarian mothers who had strict diets without routine supplementation were examined to assess B12 level, 40% of them had extremely low vitamin B12 level.

Conclusions. This study demonstrate high commitment to breastfeeding in vegetarian families. However, the nutritional status of infants breastfed by vegetarian mothers should be closely monitored by the pediatricians and nutritionists.

E-Poster Viewing: Infancy

MIXED MILK FEEDING: PREVALENCE AND DRIVERS

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Background and Aims

Extensive literature exists on exclusive breast and formula feeding following e.g. institutional protocols, epidemiologic surveys and associations. In contrast, mixed milk feeding (MMF) as such, combining breast and formula feeding, has only been studied incidentally. This study aims to gain insight into MMF prevalence, drivers and practices.

Methods

A systematic review of the literature was performed, focussed on MMF prevalence, drivers and practices. Articles published between January 2000 - May 2018 in English, Spanish, French and Mandarin from 6 databases were screened by 2 authors independently. Titles/abstracts and full text articles were evaluated against a list of *a priori* inclusion/exclusion criteria.

Results

The search identified 1389 articles of which 454 were potentially eligible and 108 articles were selected. Results were mainly based on cross-sectional data. The prevalence of MMF in infants aged 1-6 months ranged between 8-79%. Median prevalence by month was approximately 30%. Regional comparisons indicated highest MMF rates in East Asia and Middle East. Main reported drivers for MMF were perceived feeling of milk insufficiency, “best of both worlds” (convenience/nutrition), and external factors (breastfeeding in public/family perception). Limited information on MMF practices and duration was found.

Conclusion

Data showed that although exclusive breastfeeding is the best form of infant feeding until 4-6 months of life, MMF is a feeding reality. There is a clear need to better understand this common feeding practice, including its potential effects on the duration of total breastfeeding and related outcomes on nutrition status, growth and development.

PROSPERO registration CRD42018105337

E-Poster Viewing: Infancy

MATERNAL VITAMIN D STATUS DURING PREGNANCY AND THE RISK OF ECZEMA, WHEEZING AND RESPIRATORY INFECTIONS IN THE FIRST YEAR OF LIFE: A SYSTEMATIC REVIEW

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Background: Historical studies highlighted the possible role of maternal vitamin D status during pregnancy in the risk of atopic conditions and respiratory infections in the early life. However, the results were inconsistent and inconclusive. Most studies were conducted in mixture age of children. Thus, it was difficult to determine either the in-utero vitamin D exposure plays an important role in the development of atopic conditions and respiratory in infant. **Aim:** The objective of this study was to conduct a systematic review to elucidate the association of maternal vitamin D in pregnancy and the risk of developing wheeze, eczema and respiratory infections in the first year of life.

Methods: Literature search from PubMed, MEDLINE, ProQuest, Scopus, CINAHL, the Cochrane Library and Academic Search Premier was performed. **Study selection:** The literature published up to September 2017 was searched for studies reporting on the association between maternal vitamin D during pregnancy, wheezing, eczema and respiratory infections in the first year of life.

Data extraction: About 6765 articles were identified and 32 studies met the inclusion criteria. Of 32 studies, 6 studies were identified after full review.

Result: One study showed that higher maternal vitamin D concentration during pregnancy increases risk of eczema in the first year of life while 2 studies reported lower risk of RTs in the first year of life. No association were found in wheezing outcomes. **Conclusion:** Overall, this systematic review found there are still limited evidence on utero vitamin D exposure on the allergy and respiratory infections in infant.

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CHILD MALNUTRITION ASSOCIATED WITH SAFE FOOD PREPARATION BEHAVIORS OF MOTHER IN BENIN, SUB-SAHARAN AFRICA

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Objective

Malnutrition continues to contribute to a high under five mortality rate.

The objectives of this study were to evaluate the nutritional status and factors associated with malnutrition in children aged under five years old who live in Cotonou, Republic of Benin and investigate the safe food preparation behaviors of their mothers.

Subjects and Methods

Mothers (n = 300) were interviewed using a structured questionnaire. Height (H), length (L), and weight (W) measurements of the child were determined along with Z-scores (Z) of WHO child growth standards. Children's nutritional status data to be used for analysis was evaluated using corrected age in the case of premature infants born before gestational week 36 or children under age 1 (n=49).

Results

The prevalence of stunting (H/LAZ < -2 standard deviations [SD]) and underweight (WAZ < -2SD) were 11.0% and 14.7%, respectively. Results from the logistic regression analysis revealed that stunting was selected as significant with respect to 1-month increased child age and birth weight of 2.5kg or more. Underweight was also correlated significantly with birth weight of 2.5kg or more. As a remarkable point, food preservation in refrigerator was statistically significant. Food preservation in refrigerator can be regarded as one of safe food preparation behaviors.

Conclusions

We suggest that maternal safe food preparation behaviors can prevent child malnutrition.

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ASSOCIATION BETWEEN TOBACCO AND ALCOHOL CONSUMPTION DURING PREGNANCY AND CHILD DEVELOPMENT

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Background and aims: Exposure of the fetus to the toxic components of tobacco and alcohol during pregnancy can lead to disturbances in child development. Studies have had controversial results because of different methods and samples. We studied the association between smoking and/or alcohol use during pregnancy and the development of children between 13 and 30 months of age. **Method:** Prenatal convenience cohort study (2010), evaluated at birth and between 13 and 30 months (2011/2013) in Ribeirão Preto, SP, Brazil. The association of the mean scores of the *Bayley Scales of Infant and Toddler Development Third Edition Screening Test®* with tobacco and/or alcohol consumption during gestation (no consumption, isolated consumption of tobacco or alcohol and concomitant use of both) was evaluated by means of crude and adjusted linear regression. **Results:** Of the 998 pregnant women evaluated, 12.1% smoked and 24.6% consumed alcoholic beverages; alcohol consumption was 18.6% and tobacco alone was 6.1%. Combined consumption of the substances was 6.0%. There was no difference in the means of the cognitive score according to the consumption of the substances. Concomitant consumption was associated with a smaller difference in the mean of the communication subscale scores (1.12 points for receptive communication, 95%CI 0.45-1.79, 1.19 points for expressive communication, 95%CI 0.31-2.07) and motor (1.20 points for fine motor, IC95% 0.55-1.85, 0.70 points for gross motor, IC95% 0.13-1.28), compared to no consumption. **Conclusion:** Concomitant consumption of tobacco and alcohol had a significant but small effect on communication and motor scores, but not on the cognitive subscale.

Support: FAPESP, FAEPA.

E-Poster Viewing: Infancy

THE RELATIONSHIP BETWEEN MATERNAL AND CORD BLOOD HYPOVITAMINOSIS D WITH STUNTING: COHORT STUDY ON VITAMIN D STATUS AND IMPACT DURING PREGNANCY AND CHILDHOOD IN INDONESIA

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Background and aims

Stunting in early life impaired growth that is caused by poor nutrition. Fetal growth restriction was associated with vitamin D. The aim of study was to analyze the relation between maternal and cord blood hypovitaminosis D.

Methods

Prospective pregnancy cohort of 141 women in West Java Province, Indonesia started in July 2016. Concentration of 25-Hydroxyvitamin D was measured within 1st trimester gestation, and cord blood at birth. The anthropometric offspring infants were measured at 3, 6, 12 months of age. Statistical test using paired t-test and X^2 with significance based on p value <0.05

Results

Between the maternal and cord blood, hypovitaminosis D (< 20 ng/mL) were found 94 (66%) and 112 (80.5%), the mean 25-hydroxyvitamin D concentration were 17.52 ± 7.25 ng/mL and 16.21 ± 6.15 ng/mL, respectively. The prevalence of stunting ($HAZ \leq -2SD$ of the WHO Growth Standard) at 3, 6, 12 months age were 24.1; 1.4; 25.5, and among hypovitaminosis D of maternal and cord blood were 19; 1.1; 14.9 and 22.8; 1.1; 19.6, respectively. There was no statistically significant difference in maternal age, education, body mass index (BMI), parity, and employment status, gestational age, breastfeed and birth weight between women and offspring with hypovitaminosis D. Stunting prevalence at 12 months age was related with both maternal and cord blood 25(OH)D, but the risk estimates were very small, OR 0.51; [95% CI 0.33, 0.78] and 0.75; [95% CI 0.56, 1.0]

Conclusions

No significant relationship between hypovitaminosis D and stunting in early life.

E-Poster Viewing: Infancy

FOOD INTAKE AND DIETARY ADEQUACY AMONG INFANTS FROM RIBEIRÃO PRETO, SP, BRAZIL

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Background and aims: Infant complementary feeding may influence health and food preferences throughout life. Dietary adequacy regarding the intake of portions of food groups and macro/micronutrients was assessed in a convenience sample of 491 12-to-32-month-old children in Ribeirão Preto, Brazil. **Methods:** Foods and preparations were evaluated by means of the 24-hour food recall. Proportions of children with nutrient intake below or above the Brazilian recommendations were described. Chi-square test was used for analysis. **Results:** Children aged 18-23 months (52%), preterm (22%), with normal weight (92.9%), girls (52.5%), and whose mothers had 9-11 years of schooling (57.4%), were predominant. There was insufficient carbohydrate and fat intake (38.5%, 29.5%), and excessive protein intake (79.8%). Adequacy of iron, vitamin C and Vitamin B12 was high (98.6%, 97.0%, 94.9%), whereas it was low for calcium and vitamin E (27.3%, 37.7%). Intake above recommendations was observed for vitamin A (43.6%) and zinc (33.6%). Infants up to 23 months of age showed insufficient food portion intake regarding meat, eggs (42.7%), milk group (47.7%), and excessive regarding cereal group, fat group and fruits. Children $\geq$ 24 months showed insufficient intake regarding cereal group (56.1%) and fruits (75.8%). All children showed a markedly insufficient intake of vegetables and excessive intake of sugars and sweets. **Conclusion:** Children's diet showed inadequate nutrient intake, insufficient vegetable intake and excessive intake of sugars and sweets. Low rates of inadequate intake were observed for iron and vitamin A, the more deficient micronutrients in Brazil.

Supported by FAPESP, FAEPA, CAPES

E-Poster Viewing: Infancy

INFANT FEEDING PRACTICES AS CORRELATES OF NUTRITIONAL STATUS OF 6-23 MONTHS OLD BABIES IN A RURAL COMMUNITY IN NIGERIA

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Background and aims: Infant Feeding Practices (IFP) and Nutritional Status (NS) of children between 6 – 23 months were investigated in a rural community in Nigeria.

Methods: Simple random sampling technique was used to select 368 mothers with children 6 – 23 months. Semi-structured questionnaire was used to elicit information on IFP and anthropometry was done using appropriate instruments. NS was defined as wasting (WHZ), stunting (HAZ) and underweight (WAZ) according to World Health Organisation standard. IFP were determined by Exclusive Breastfeeding (EBF), Minimum Meal Frequency (MMF) and Mean Dietary Diversity (MDD). Data were analyzed using SPSS 20.0. Logistic regression was done and significance taken at $p < 0.05$.

Results: About 60%% had EBF for 6 months. Majority, (94.3%) scored high in MMF while 83.3% rated low in MDD. Wasting was 22.9%, 28.3% stunted, and 17.1% underweight. EBF and MDD affected all categories of NS. MMF affected wasting and stunting. Children without EBF were twice more likely to be underweight (OR = 2.189, $P = 0.058$), stunted (OR = 2.189, $P = 0.058$) and thrice more likely to be wasted (OR = 3.454, $P = 0.001$). Those with low MMF were twice more likely to be stunted (OR = 1.674, $P = 0.124$) and thrice more likely to be wasted (OR = 3.451, $P < 0.001$). Those with low MDD were thrice more likely to be underweight (OR = 3.295, $P = 0.083$) and stunted (OR = 3.295, $P = 0.083$).

Conclusion: EBF and MDD affected wasting, stunting and underweight among children 6-23 months.

E-Poster Viewing: Infancy

FAILURE TO THRIVE RISK IN AN OLDER INFANT POPULATION OF A MOUNTAIN RANGE REGION IN ECUADOR

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Background and Aims

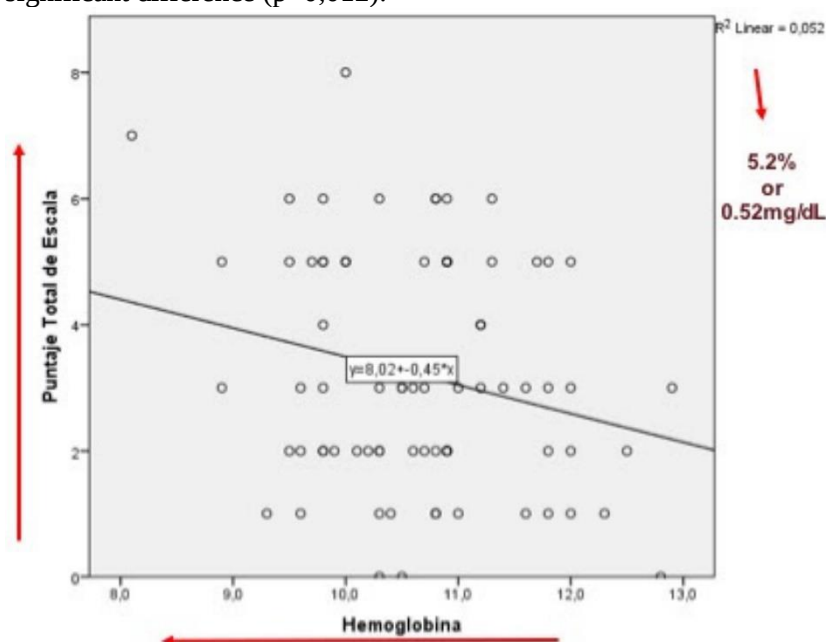
Failure to thrive (FTT), is a condition associated with low caloric intake cause by organic or inorganic causes that results in a patient's growth below the normal range of his age group. Currently, the world is facing a double charge of nutrition issues that includes malnutrition and excessive feeding. Until 2012, the rate of chronic malnutrition in mountain range population was 42.3%. There's no screening tests to assess the potential risk of this condition. The aim was to identify the FTT risk in an older infant population from a mountain range city of Ecuador and distinguish the factors that influence in that risk.

Method

An observational, cross-sectional, non-randomized study was conducted; where FTT risk was identified in older infants through a predictive scale in a population in a mountain range region in Ecuador.

Results

76 subjects where included, 32,9% presented a positive risk for FTT. It was found that 53.94% presented a moderate/high risk. Hemoglobin was altered outside the normal range by 40.8%. When comparing the hemoglobin value versus moderate/high risk and severe risk, there was a significant difference ($p=0,012$).



Conclusion

The statistics obtained are new for the region and relevant due to the lack of statistics in FTT subjects. Inorganic and maternal factors are the most influential in the FTT risk. Hemoglobin and the total score of the scale are inversely proportional.

E-Poster Viewing: Infancy

IS IT APPROPRIATE TO APPLY MULTI CENTER GROWTH REFERENCE STUDY (MGRS) DATA DIRECTLY TO SRI LANKAN CHILDREN?

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Introduction

Growth monitoring is an important means of ensuring well-being of children. It helps to identify a child with a potential problem early and intervene. Meaningful growth monitoring depends on having appropriate growth charts for the population. Presently charts produced by MGRS is used in Sri Lanka. In our practice we often find Sri Lankan children are being placed between mean and mean minus two standard deviations (SD). This study was conducted to find out whether MGRS data can be directly applied to Sri Lankan children.

Method

During one month period weight, length and head circumference (HC) were measured at birth of all normal, term babies born in the Gampaha district, Sri Lanka. . The measurements were made on day one. Beam balance scale, infantometer and non stretchable tapes were used to measure Weight, length and HC respectively. A total of 2215 babies were included

Results

Mean birth weight for boys and girls were 2.9 and 2.8 kg respectively. These were were falling on mean minus one SD on MGRS charts. Mean birth weights of MGRS (3.4 Kg and 3.3 kg) were falling on mean plus one SD of our children. Mean birth length for boys and girls (48 and 47 cm) and mean HC of 33.6 cm, were also on minus one SD.

Discussion

All three growth parameters at birth of Sri Lankan children are falling on mean minus 1 SD according to MGRS curves. Growth of Sri Lankan children will be underestimated if MGRS data are directly applied on Sri Lankan children.

E-Poster Viewing: Infancy

THE IMPACT OF ALIMENTATION ON THE CHILDREN ' S HEALTH DURING THE FIRST YEAR OF LIFE

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Background: The importance of the alimentation during the first year of life is well known because of the impact on the health and harmonious development.

Aim: The aim of our study was to analyze the impact of the alimentation in the first year of life on the somatic development, the nutritional status and the occur of nutritional disorders as anaemia and rickets.

Method: The study was a retrospective one, included 171 children aged of 12 months, admitted in Children Hospital Brasov between January 2018 and January 2018 for acute respiratory and digestive infection. We had performed a detailed history regarding alimentation from birth until age of 12 months, anthropometric measurements, clinical exam and blood tests.

Results: The study group was balanced regarding gender (49% girls and 51% boys), medium (43% urban area and 57% rural area). Alimentation history had shown us: 38% were still breastfeed and solid food, 30% were formula feeded and solid food, 32% were cow milk feeded and solid food. We found nutritional disorders as carential anaemia (iron deficiency), rickets and malnutrition all children feeded with milk cow (32%), 5% breast feeded and 7,3 % formula feed.

Conclusions: Breastfeed was the best choice regarding harmonious development. Milk formula was also a good choice with low incidence of nutritional disorders. Milk cow was an option but the incidence of carential disorders was high.

E-Poster Viewing: Infancy

COMPLEMENTARY FEEDING PRACTICES OF MOTHERS OF INFANTS AND YOUNG CHILDREN AND ITS DETERMINANTS IN DIFFERENT SOCIO ECONOMIC STRATA IN DELHI

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Background: Optimum nutrition is indispensable for a child's growth, health and behavioural development from birth to two years of age. Infant and young child feeding practices (IYCF) are an important determinant of nutritional status for a child.

Aims and Methods: This is a cross sectional study, that will be carried out in an urban area of Delhi in India, on mother-child dyads (infants and young children (IYC) 6-23 months of age). The study will assess the extent and pattern of complementary feeding practices of mothers of IYC, 6-23 months of age from high income group, middle income group, low income group and urban slums in an urban area of Delhi using the World health organization (WHO, 2008) IYCF indicators and will also determine the demographic and socio economic factors of complementary feeding practices. The study will also explore association of maternal dietary diversity with child dietary diversity using the minimum dietary diversity tool for women (MDD-W) by FAO (Food and Agriculture organization) 2016 and minimum dietary diversity (MDD) indicator for infants and young children by WHO, 2008. Detailed diet and nutrient intake of IYC and the consumption pattern of sugary, savory snacks and sweetened beverages will be assessed using a two day 24 hour diet recall and food frequency questionnaire respectively. Comparison of the child growth indicators such as weight for age (WAZ), height for age (HAZ), weight for height (WHZ) and body mass index (BMI) for age with regard to the IYCF practices of mothers will also be done.

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FAMILIAL MARASMUS SYNDROME OF UNKNOWN CAUSE

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Background. The authors present a case report of two brothers presenting severe cachectic features of unknown cause.

Patient 1 currently 3,7 years old; was born at 34 weeks gestational age (IV pregnancy III childbirth delivery by C-section) birth weight: 2750g - 75th pc; birth length 48cm – 75th pc). Patient 2 currently 3 months old who was born at 33 weeks gestational age (pregnancy V childbirth IV delivery by C-section birth weight: birth weight: 1980g - 25th-50th pc; birth length 41cm – 10th - 25th pc). Both patients were born following pregnancies complicated by HELLP syndrome. For 24 hours after birth they needed respiratory support due to respiratory insufficiency.

In both cases no weight and length gain with progressing malnutrition was observed since birth. Regular diet provoked severe abdominal pain and total parenteral nutrition (TPN) was introduced. Hirschsprung disease was excluded. 1st patient underwent laparotomies, resulting in colostomy, and later ileostomy. Despite high caloric intake with TPN (up to 125 kcal/kg/day) no weight gain was observed, the 2nd patient was malnourished and dependent on continuous parenteral nutrition infusion.

Methods and results

Performed biochemical (endocrinology, proteinogram, capillary gas chromatography-mass spectrometry, tandem mass spectrometry, carnitine in serum and urine; plasma lactic acid; plasma pyruvic acid) were within the normal range. Colonoscopy, gastroscopy and histopatological tests were normal. Neuroimaging with MRI showed not changes.

Presented set of symptoms and clinical outcome in brothers suggests genetic background (Smith-Lemli-Opitz syndrome, Silver Russel syndrome, SHORT syndrome, Marshall-Smith syndrome, Opitz-Kavereggia syndrome, Costello syndrome, lipodystrophy were excluded). Whole-Exome Sequencing was inconclusive.

E-Poster Viewing: Infancy

THE DIFFERENCE OF EXCLUSIVE AND NON-EXCLUSIVE BREASTFEEDING TO STUNTING IN 6-9 MONTHS CHILDREN ON JATINANGOR WEST JAVA INDONESIA

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Stunting has become a public health problem in Indonesia, with the prevalence of stunting is 37.2% nationally and 25.6% in West Java. One of the causes of stunting is malnutrition that may occur because of not giving exclusive breastfeeding on the first 1000 days of life (FDL). This study was conducted using a cross-sectional analytic study design on mothers and children aged 6-9 months who reside in villages which are within the work area of PuskesmasJatinangor. Nutritional status is determined based on length-for-age z score. The type of breastfeeding is known based on the questionnaire. The results of this study indicate that the incidence of stunting is 12.7%, consisting of 14 people. The number of children who receive exclusive breastfeeding was 50 people (45.5%), while those who don't receive exclusive breastfeeding were 60 people (54.5%). Of the 14 stunting subjects in the study, 10 were included in the non-exclusive breastfeeding group. Chi-square test result indicates that this study has a value of $p>0.05$. It can be concluded that there is no difference in the proportion of stunting in children aged 6-9 months who are exclusively breastfed or those who aren't, yet the number of stunting is higher in non-exclusive breastfeeding group.

E-Poster Viewing: Infancy

EVOLUTION OF CHOLESTEROL CONTENT AND INTAKE THROUGHOUT LACTATION

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Cholesterol is the main sterol in human milk (HM), necessary for infant's correct growth and development since it is involved in the synthesis of tissues and several compounds. Aim: To compare cholesterol content determined by chromatographic (GC-FID) and enzymatic-spectrophotometric (E-S) methods in HM throughout lactation from Spanish coastal and central areas and estimate its intake.

GC-FID: HM (0.5 mL), hot saponification, unsaponifiable extraction, TMS derivatization and analysis. E-S: HM (1 mL), hot saponification, unsaponifiable extraction and enzymatic kit application (R-Biopharm®).

Sterols (cholesterol, desmosterol, lathosterol, lanosterol, campesterol, stigmasterol and β -sitosterol) were quantified by GC with matrix added calibration curves. In general, cholesterol content decreased to half throughout lactation (22-11 mg/100 mL, from colostrum to 6 months) and no differences between geographical settings were found. Cholesterol content by E-S method was overestimated <20%, since other minor 3β -hydroxyl sterols react with the enzymatic kit. Cholesterol intake from HM was estimated ranging between 63 (colostrum) and 88 mg/day (6 months), being 2 to 7-fold higher than that from infant formulas (IF) (9-51 mg/day).

Conclusions: Both methodologies for cholesterol quantification can be useful for food industry, being E-S faster and easier to be applied to a larger number of samples. New formulation of IF could be designed, considering the evolution of cholesterol content during lactation and the difference in its intake when comparing to HM, being these facts probably relevant to infant health in short and/or long term.

E-Poster Viewing: Infancy

OBESITY IN WOMEN AND THE GROWTH RATE OF THEIR INFANTS: THE ROLE OF GENETIC POLYMORPHISM AND ENVIRONMENTAL FACTORS

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Fast growth rate during infancy may increase obesity risk. Obesity development is influenced by both external (mother anthropometry, climate, etc.) and internal factors (genetic predisposition). We aimed at studying the genetic polymorphism effect on the growth rate of infants from mothers with and without obesity in warm climate.

Anthropometric indices of 100 infants from Astrakhan were measured from birth to 12 months of age and Z-scores weight for age (WAZ), length for age (LAZ), weight for length WLZ, and body mass index for age (BAZ) (ANTHRO, 2005) at birth and their changes (delta) from 0 to 12 months were calculated. Infants were genotyped by the rs9939609 polymorphism of the FTO gene by real time PCR.

For mothers with obesity (n=40), infants with the AA genotype of rs9939609 had higher body weight, WAZ ($p = 0.032$), LAZ ($p = 0.038$), and BAZ ($p = 0.038$) at birth compared with carriers of the AT genotype, and a significantly lower growth rate for 1, 3, 6, and 9 months of life (lower values of delta WLZ and BAZ). Growth rate increase tendency was observed in these infants from 9 to 12 months of life. In mothers without obesity, the same effect of genotype on infants' growth rate was observed, but without significance.

The AA genotype of the rs9939609 polymorphism in combination with mother obesity contributes to increased intrauterine fetus weight accumulation, possibly because of warm climate. Increased birth weight might be inhibiting growth of infants up to 9 months of age.

E-Poster Viewing: Infancy

GROWTH MILK VERSUS MEDICINAL IRON FOR THE TREATMENT OF MILD IRON DEFICIENCY ANEMIA IN INFANTS

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Background and Aims

Oral iron is the usual treatment for iron deficiency anemia, but gastrointestinal adverse events may affect therapeutic compliance. The aim of our study was to compare the effectiveness of growth milk formula (GF) versus medicinal oral iron (MI) in the treatment of mild iron deficiency anemia (Hb <11 and ≥ 9 g / dL).

Method

Nine-month-old infants with mild iron deficiency anemia received after parental consent, either an oral solution of MI [sodium feredetate (SF) or ferric hydroxide polymaltose (FHP)], at a dose of 3 mg/kg/day (n = 111), or a GF enriched with 8.8 mg iron/100 mg of powder (n = 30). The primary endpoint was the correction of anemia after 3 months of intervention.

Results

Mean Hb levels increased significantly on day 30 and day 90 for both groups. This increase in day 30 with respect to the base rate that was significantly greater in the medicinal iron group (MI) versus GF group (0.92 ± 0.28 g / dL versus 0.74 ± 0.25 g / dL , $p = 0.002$), was no longer at day 90 compared to J30 (1.29 ± 0.44 g / dL versus 1.11 ± 0.39 g / dL, respectively, $p = 0.055$).

Conclusion

Growth formulas could be an alternative in the treatment of mild iron deficiency anemia.

E-Poster Viewing: Infancy

INTERRELATION BETWEEN NUTRITIONAL STATUS AND RESPIRATORY TRACT INFECTIONS IN INFANCY

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Introduction. Respiratory tract infections are the most common cause of morbidity in infants, resulting in hospitalizations and important mortality rates. There is a strong connection between nutritional status and infections in infants.

Aim. To investigate epidemiological data, assess the interrelation between the respiratory infections, immunological status and nutrition. There is also an impact of immune modulation on those pathologies.

Material and methods. The study group comprised a total of 102 children admitted in 2nd Pediatrics Clinic - Children's Emergency Clinical Hospital "Sf. Maria" Iasi, during six months (January-June 2018), diagnosed with upper and lower respiratory infections and precarious nutritional status.

Results and discussions. Spectrum of respiratory infections in the infant (mean age 1 year 9 months) was dominated by bronchiolitis and pneumonia (57%). The severity and frequency of respiratory infectious episodes were more prevalent and severe in patients with poor nutritional status. Specific therapies have been based on antibiotherapy, mucolytic and anti-thermic / anti-inflammatory drugs. The duration of hospitalization and the need for antibiotics were more important in patients with poor nutritional and immune status. **Conclusions.** Respiratory infections, nutritional and immune status form a specific pathogenic tripod in children, responsible for a number of challenging and sometimes worrying pathologies for practitioners. On long term, alongside specific respiratory infectious therapy, nutritional measures are needed.

E-Poster Viewing: Infancy

THE HUMAN MILK OLIGOSACCHARIDE, 2'FUCOSYLLACTOSE, IS WELL TOLERATED IN A 100% WHEY, PARTIALLY HYDROLYZED INFANT FORMULA

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BACKGROUND AND AIMS: Human milk oligosaccharides (HMOs), like 2'fucosyllactose (2'FL), provide breastfed infants immunological advantages. Tolerance data from randomized trials do not exist on 2'FL in 100% whey, partially hydrolyzed formulas (PHF-W) or on formulas containing a probiotic. The primary objective of this multicenter, double-blind study was to compare tolerance using the Infant Gastrointestinal Symptom Questionnaire (IGSQ) between infants fed a PHF-W with 2'FL and *Bifidobacterium lactis* (*B.lactis*; Test) and infants fed PHF-W with *B.lactis* without 2'FL (Control).

METHODS: Following informed consent by caregivers, healthy formula-fed infants ages 14 ± 5 days were randomized to receive Test or Control formulas. The IGSQ was conducted at enrollment and after 6 weeks of feeding. Secondary outcomes (stool characteristics, spit-up, vomiting, fussing, crying) were captured on diaries by caregivers. Adverse events (AE) and caregiver formula satisfaction were also reported. Adverse events were classified into System, Organ, and Class categories.

RESULTS: 79 infants were enrolled, and 63 completed the study per protocol (PP). IGSQ scores at the end of the study in the PP population were similar between Test (20.9 ± 4.8) and Control groups (20.7 ± 4.3) ($p = 0.82$). Stool consistency, vomiting, fussing, spit-up occurrence and crying did not differ between groups. AEs were similar between groups; however there was a trend toward fewer infections in Test ($p = 0.05$). 97% of PP infants were perceived to be comfortable on both formulas.

CONCLUSION: 2'FL in PHF-W with *B.lactis* is well tolerated and may help support the developing immune system in infants.

E-Poster Viewing: Infancy

DIETARY INTAKE, ADIPOCINES AND INFLAMMATION IN INFANTS BORN WITH LOW BIRTH WEIGHT

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Background and aim: To describe dietary intake, adipokines and inflammation in infants with low birth weight (LBW) and association with adequacy for gestational age and overweight. *Method:* Cross-sectional study, 54 LBW infants (mean birth-weight: 2231, gestational-age: 35.9 weeks). *Data:* pregnancy evaluation; birth (weight and gestational age); current anthropometry (overweight: BMIZ score/age > +1); dietary intake (one nutritional frequency and three 24-hour reminders); leptin, adiponectin, IL-1, IL-6, TNF- α , us-CRP. *Results:* The infant's mean age was 10.3 $\pm$ 1.5 months, 24 (42.9%) male, 27 (48.2%) twins, 38 (67.9%) preterm, 23 (41.1%) small-for-gestational-age (SGA). All infants had energy (118.3 $\pm$ 25.5 kcal/kg/day) and protein (5.1 $\pm$ 1.5 g/kg/day) dietary intake above recommended levels; 49 (87.6%) received ultraprocessed food. Overweight/obese children 10 (17.9%) had lower energy (94.6 $\pm$ 8.8 vs 121.8 $\pm$ 25.6 kcal/kg, p = 0.005) and protein intake (4.0 $\pm$ 1.1 vs 5.4 $\pm$ 1.5 g/kg, p = 0.033). Higher percentage of energy (50.5 $\pm$ 20.3% vs 38.9 $\pm$ 9.5%, p = 0.012) and protein (43.3 $\pm$ 19.9% vs 31.7 $\pm$ 11.5%; p = 0.023) from bottles feeding (cow's milk or infant formula), no differences observed in adipokines and inflammatory markers. SGA infants showed higher leptin's and lower adiponectin's concentrations, respectively [3.0 pg/mL vs 1.6 pg/mL p = 0.030 and 26.8 μ g/mL vs 32.2 μ g/mL; p = 0.050]. *Conclusions:* LBW and overweight infants had lower nutritional intake and higher percentage of energy and protein from bottles. These findings reinforce the importance of complementary feeding quality in this group of risk for obesity. Support: FAPESP.

E-Poster Viewing: Infancy

THE ASSOCIATION OF MATERNAL COLECALCIFEROL AND OFFSPRING DEVELOPMENTAL STATUS: A COHORT STUDY ON VITAMIN D STATUS AND ITS IMPACT DURING PREGNANCY AND CHILDHOOD IN INDONESIA

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Background. Vitamin D is associated with fetal brain development and postnatal neurodevelopment. Maternal vitamin D deficiency can cause disruption in several developmental domains. The evidence that stated vitamin D deficiency during early childhood might affect the development is still limited and conflicting.

Objective. To examine the extent to which maternal vitamin D deficiency (<10 ng/ml) is associated with neurodevelopment in infant.

Methods. A cohort study was done in 2 cities in West Java in July 2016. Maternal serum 25(OH)-vitamin D was measured using the Enzyme Linked Fluorescent Assay (ELFA) at 10 to 14 weeks gestation. Child development was measured using Ages and Stages Questionnaire-3 (ASQ-3) at ages 3, 6, and 12 months. Statistical test using paired t-test and X^2 with significance based on p value <0,05.

Result. A total of 141 mother-offspring pairs participated in this study. One child was excluded due to anencephal. Twenty-seven (19%) mothers had vitamin D deficiency (<10 ng / mL). Delays in gross motor aspects (76.1%) and problem solving (43.7%) were found mostly at 3 months old. However, the presentation of the disorder decreased at age 6 and 12 months. The paired t-test analysis revealed a significant gross motor delay with $p = 0.022$. The X^2 analysis showed the same significant gross motor delay at age 3 months $p = 0.029$, RR 1.20 95% CI 1.089,1.485.

Conclusion. The association of neurodevelopmental delay with maternal vitamin D deficiency was only found in gross motor aspects at 3 months of age. However, this was not found in other aspects of development at three times of observation.

E-Poster Viewing: Infancy

RISK FACTORS ASSOCIATED WITH INITIATION OF BREASTFEEDING AMONG MOTHERS WITH LOW BIRTH WEIGHT CHILDREN

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Background and aims: Early initiation of breastfeeding (BF) is important for good lactation outcomes. The World Health Organization (WHO) has long made this recommendation, based on research that BF practices save children's lives, particularly among low birth weight (LBW) infants. The rate of LBW deliveries is rising and in spite of the importance of BF on LBW infants' survival, a dearth of research exists regarding BF initiation among LBW infants.

The aim of this study was to investigate the prevalence of and factors associated with initiation of BF among LBW children aged less than two years in Abu Dhabi, United Arab Emirates (UAE).

Methods: The data for this cross-sectional study was collected from health centers in Abu Dhabi. A structured questionnaire was used to collect the related data using trained research assistants who interviewed mothers, with ethical clearance and consent.

Results:

A total of 1822 mother-child pairs participated in the study; 175 of the children were sorted as LBW (9.6%). The mean weight (SD) of the LBW children was 2032 (300.8) grams. Eighty-seven (53.7%) mothers timely initiated BF. In multivariable logistic regression analysis, factors associated with the delay of BF initiation among LBW children were gestational age and caesarean section.

Conclusions:

Timely initiation of BF should be promoted for all newborns. However, LBW infants are recognized as a vulnerable group and thus require extra support. More emphasis should be stressed to support BF in LBW newborns especially those with more advanced gestational age and who were delivered by CS.

E-Poster Viewing: Infancy

NUTRITIONAL STATUS OF PREGNANT WOMEN AND ITS RELATION WITH BIRTH WEIGHT AND GROWTH OF INFANTS DURING FIRST YEAR OF LIFE IN SLUM POPULATION OF DELHI

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Aims: This longitudinal study was conducted with the objective to understand the influence of maternal nutritional status during pregnancy on birth outcome and growth during infancy.

Method: A total of 178 pregnant women during their third trimester were recruited from an urban slum of West Delhi. Nutritional assessment of pregnant women was made through anthropometric, biochemical, clinical and dietary methods. Nutritional assessment of infants using anthropometric measurements was made at birth and quarterly upto one year of age.

Results: Results reported that 19.4% pregnant women had height <145 cm, 19.4% had weight less than 45 kg and 50.3% had MUAC <23 cm. Prevalence of anemia, ferritin deficiency and B12 deficiency was 71.5%, 65.8% and 68.5% respectively. Overall 30.9% pregnant women had deficient levels for serum retinol and 36.4% had zinc deficiency. The median urinary iodine concentration was 132.5µg/L and 59.9% pregnant women had iodine deficiency. Median nutrient intake was found lower than RDA. Prevalence of low birth weight (<2500g) was 25.6% and mean birth weight was 2708g +420.5. Prevalence of stunting, wasting and underweight of infants was 15%, 24.8% and 19.5% at birth and 20.2%, 26.6% and 30.9% respectively at one year of age. Maternal anthropometric measurements (weight, height and MUAC) were found positively correlated with birth weight ($p<0.01$). Weight of infants at 12 months increased significantly with increase in maternal weight ($p<0.05$).

Conclusion: Maternal nutritional status was found significantly correlated with nutritional status of infants and prevalence of under nutrition among infants at birth and one year of age.

E-Poster Viewing: Infancy

CHALLENGES OF THE NUTRITIONAL THERAPY IN CONGENITAL CARDIOPATHY: A CASE REPORT

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Background and aims: Malnutrition in children with heart disease results from a significant increase in energy expenditure, associated with insufficient or inadequate food intake, impairing growth and development. This study objective was to report nutritional intervention in a child with DiGeorge Syndrome, Pulmonary Atresia, ventricular septal defect and systemic-pulmonary communication. Methods: Clinical report of the evolution of S.H.B., female, 5 years old, evaluating: weight, height, body mass index (BMI), body composition by electric bioimpedance (BIA), energy and macronutrient intakes. Results: The initial evaluation showed weight=12.6kg, height=99cm and BMI=12.8kg/m², representing malnutrition according to WHO growth charts, in z-score: weight/age=-2.71, height /age=-2.26 and BMI/age=-1.87. BIA indicated 4kg of muscle mass, 1.5kg of fat mass and 22.2% of total body fat, lower values than the expected for the age. The diet offered during 70 days was hypercaloric (234 kcal/kg), hyperproteic (8.5g/kg) and hyperlipidic (37% of total caloric offer), 64% of the calories (1900kcal) coming from the oral diet, 21% (600kcal) of oral food supplements and 15% (450kcal) of enteral nutrition. Due to the difficulty of gaining weight, reduced oral food acceptance (46% of the supply) and the length of hospital stay, a new oral supplement with a higher caloric-protein intake (600kcal and 2.8g/kg) was introduced. Total energy supply was then 3550kcal, with acceptance of 57% (2025Kcal/day), resulting in a weight gain of 500g and 6cm in height, at hospital discharge, after 8 days. Conclusions: Children with cardiopathy present important nutritional deficits and need specific dietary care in order to contribute to their recovery.

E-Poster Viewing: Infancy

LEVEL OF PARENT LEARNING AND CHILD NUTRITION

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Background and aims: Undernutrition is a problem frequently found in children, hence the importance of determining the various etiological factors, so is there a link between parents' level of education and children's undernutrition? The purpose of our work is to study the likely association between low parental education and undernutrition among their children.

Methods: Our study was conducted in the pediatric ward at Mohammed VI UHC in Oujda from July 2015 to September 2015. Children aged 1 month to 15 years were included. The exclusion criteria were: newborns, children with severe dehydration, children rehospitalized during the study, and children transferred from another department, so that 150 children were enrolled. The socio-economic level of the parents as well as their level of education. The parents were divided into two groups, illiterate and educated. The nutritional status of the children was evaluated by calculating the P / A, T / A, P / T ratios. $P < 0.05$ was considered significant.

Results: Collected children were divided into 89 boys and 61 girls. 32% of the children were born to illiterate fathers, against 68% of educated fathers. Among children from uneducated mothers, 58% of the patients were malnourished and 33.3% children from educated mothers were malnourished. Among children from uneducated fathers, 68.7% of cases were malnourished while 36.2% of children with educated fathers were malnourished. Thus, there is a statistically significant association between child undernutrition and low birth control. parental instruction.

Conclusion: Our study concluded that malnourished children come from parents with a low level of education, hence the importance of strengthening strategies to combat illiteracy.

E-Poster Viewing: Neonatal & Prematurity

IRON AND CALCIUM CONTENT OF BREASTMILK FROM BREASTFEEDING MOTHERS OF 0 TO 6 MONTHS INFANT BABIES IN ABIDJAN, COTE D'IVOIRE

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BACKGROUND AND AIMS: Literature and practice have always showed the undeniable benefits of breast milk. Breastfeeding in early infancy is beneficial at different levels such as growth, weight gain, long term prevention of diseases... This study aimed to i) evaluate total mineral content in breastmilk, ii) determinate specifically iron and calcium content iii) appreciate the nutritional habits of breastfeeding mothers.

METHODS: The study included a nutritional survey of sixty-four (64) consenting breastfeeding mothers of 0 to 6 months infant babies. Breastmilk was withdrawn after the survey and submitted to different analysis: i) total mineral content by ash determination, ii) iron and calcium content by atomic absorption spectrometry (AAS). Analysis of these values in relationship with the breastfeeding mothers' alimentation was performed.

RESULTS: The study showed that alimentation of breastfeeding mothers was varied, containing food from at least four groups of the food pyramid. Mean total mineral content in samples was 211.06 mg. 100 mL⁻¹. Iron (0.093 mg. 100m L⁻¹) and Calcium (24.01 mg. 100 mL⁻¹) did not vary significantly between breastfeeding mothers. These values were not very different though slightly lower than those reported by literature. The results of the nutritional survey could partly explain the minerals' content found. Local food frequently consumed, particularly milk, vegetables and fruits, most reported by mothers are known sources of minerals.

CONCLUSIONS: This study must be pursued to investigate other micronutrients content in breastmilk such as other essential minerals and vitamins. Evaluation of breastmilk composition is useful for the management of infant nutrition.

E-Poster Viewing: Neonatal & Prematurity

THE EFFECTS OF MATERNAL AGE ON NEONATAL OUTCOMES

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Background and Aims:

Children born premature or Small for Gestational Age (SGA) represents a major public health concern worldwide.

The aim of this study is to evaluate association between neonatal outcomes and mother's age at birth.

Methods:

We retrospectively evaluated 588 patients in Pediatric Department of Constanta Clinical County who were born in May-June 2018.

Results:

Related to mother's age at birth, in 1% mother's aged is under 15 years, 12% cases mother's aged between 15-19 years, 20% between 20-24 years, 32% between 25-29 years, 23% between 30-34 years, 10% between 35-39 years, 3% between 40-44 years.

The Apgar Score 10 is most commonly found among newborns whose mothers are between 30-34 years (43%), while the Apgar Score 7 and the Apgar Score 8 are found in 7%, respectively 29% in newborns whose mothers aged between 40-44 years.

Regarding the gestational age and birth weight, we observed that mothers below 19 years are having an increased risk of giving birth to prematures (50%) or SGA (25%), while mothers over 40 years gave birth to prematures in 25% and in 29% to macrosoms. Mothers aged 20-39 years in 70% of the cases gave birth to Appropriate for Gestational Age (AGA).

Conclusions:

The mother's age at birth below 19 years and over 40 years represents a risk factor for premature birth. Prevention of premature birth starts with a good prenatal nutrition and care, especially if mother is very young.

E-Poster Viewing: Neonatal & Prematurity

STANDARDIZED PARENTERAL NUTRITION IN PEDIATRICS: A DECADE OF EXPERIENCE

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BACKGROUND AND AIMS

The use of standardized parenteral nutrition (SPN) in pediatric patients is a minority due to the difficulty of adapting to the different physiopathological situations.

The aim of this study is to analyze all the pediatric parenteral nutrition (pedPN) prescribed for children over 10Kg, during a decade. To determine the use of SPN and to study the adequacy to the pediatric patient.

METHODS

Observational and descriptive study (2008-2018) of all children, older than 10Kg and/or 1 year old, who had pedPN, in a tertiary hospital.

Recorded variables: age, weight, diagnosis, type of individualized PN or SPN, and changes of the SPN.

9 SNP were approved in our protocol. The initial formula contributes: 10g of protein, 360kcal in 390mL; the following SNPs have progressive increases around 100mL/100kcal.

RESULTS

91 children with a mean weight of 24.5kg (9-53) and mean age 6.5 years (0.6-14) received 1001NP. The most frequent indication was digestive pathology(62). Other indications were: respiratory affections (8), neoplasia (8), septic shock (6), brain-head trauma (5), heart disease (1), nephropathies (1). 84% of patients received SPN (840). Their total energy requirements were reached within 1-3 days by using one to three types of formulas. 32% need modifications, which included: increase in volume for peripheral administration (200), glucose lowering (10), variation potassium (45) and amino acids (13). The most used formula was P2 (810mL, 840kcal and 3.8g of N₂).

CONCLUSIONS

Our experience corroborates the use of SPN because 84% were adapted to the nutritional needs of children according to their pathology highlighting their adaptability and versatility.

E-Poster Viewing: Neonatal & Prematurity

NEONATAL LYMPHOPENIA: 3 CASES REPORTED

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Introduction

Newborn lymphopenia of incidental discovery is a common biological sign. Often benign and transient, lymphopenia can be associated with serious pathologies. Diagnosis and referral to specific care is known by practitioners. We want to shed light on the possible etiologies of lymphopenia through three cases collected in the neonatology department of the University Hospital Center of Oujda.

Case report 1: This is a neonate admitted to life for neonatal seizures, male, from a non-consanguineous marriage, in a state of convulsion for which he was intubated, dysmorphic facies, splenomegaly. Thoracic showed the absence of the thymic shade. Thus the DiGeorge Syndrome has been strongly suspected. An echocardiogram that was normal and a karyotype was completed to confirm the diagnosis.

Case report 2: It was a newborn female admitted to life for management of a macrosomia, from a diabetic mother. During his hospitalization, the newborn developed cutaneous abscesses at the points of the venous punctures. The biological assessment showed a persistent lymphopenia at 500 / mm³. The diagnosis of an immunodeficiency was suspected and an immunoglobulin assay was planned at the age of 6 months.

Case report 3: This is a newborn female admitted to life for the management of respiratory distress. The clinical examination found a newborn with a dysmorphic facies in respiratory distress. The biological assessment showed persistent lymphopenia at 1080 / mm³. Turner syndrome was confirmed on karyotype.

Conclusion: Lymphopenia is very common in neonates and is most often transient secondary to sepsis. When persistent, a diagnostic procedure must be conducted to find the cause and treat it.

E-Poster Viewing: Neonatal & Prematurity

EPIDEMIOLOGICAL STUDY ABOUT COMPLICATION DURING THE CHILDBIRTH IN THE PROVINCIAL HOSPITAL OF ERRACHIDIA, MORROCO

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Introduction

Death of women is linked directly or indirectly to conditions of pregnancy, during the childbirth or at the time of the postpartum.

Objective

The objective of this epidemiological study is to draw up the profile of the women having complications of childbirth, consulting the Provincial Hospital of Errachidia.

Methods

A study was carried out at the provincial hospital center of Errachidia. The sample of this study consists of 854 women.

Results

According to our results we find that most women have an age range between [16-29] years old. They have a normal delivery with a frequency of 46.88%. Women having an age between [29-38] years old have normal delivery with a percentage of 46.60 %. On the other hand, the most elderly women [38-52] years old have a caesarean delivery with a percentage of 52.47%.

We notice 65.2 % of women with normal weight. 47.77 % were overweight. For obese women we find that caesarean delivery was higher more than normal delivery.

Conclusion

Age and body weight, are risk factors of a complicated childbirth.

E-Poster Viewing: Neonatal & Prematurity

NEONATAL SEIZURE DUE TO MATERNAL VITAMIN D DEFICIENCY- CASE REPORT NUHA ELMAMOUN¹, LEINA AHMED², SARA EL BADRI²,KANWAL A MALIK², SYED FAIZAN QASIM², BABU PATURI¹

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Neonatal seizure due to Maternal Vitamin D deficiency Case report

A 10 day-old boy was admitted with new onset jitteriness and GTC seizures .10 days proceeded admission, his parents noted frequent episodes of alternating jitteriness of the limbs and episodes of up rolling of eyes with GTC and loss of consciousness .These episodes lasted seconds to minutes (maximum 2-3 minutes) and their frequency had increased to almost 5 times /hour during last few days.

The pregnancy was unremarkable and baby was SVD, His birth weight was 2.77 kg.Mother from Bangladesh.

On admission ,frequent episodes of jitteriness lasted 10-15 seconds with stable vitals , however baby had one episode of GTC seizure with up rolling of eyes and desaturation down to 91% with L.O.C during admission. Normal physical exam

Initial bloods revealed hypocalcaemia ,total calcium 1.37 mmol/l,and ionized calcium 0.7 mmol/l , Hyperphosphotemia 3 mmol/l, hypomagnesaemia 0.5 mmol/l, , vitamin D level was 3.1. Maternal blood revealed normal electrolytes,low vitamin D level 8.6 ng/ml ,so the diagnosis was hypocalcaemia seizure secondary to maternal and infant vitamin D deficiency .

During admission ,patient required one dose of phenobarbitone and 4 doses magnesium ,started on calcium supplement 4 times /day for 3 months and vitamin D 3 for 3 months 2000 IU, and alfa calcidol 50 ng for 1 month .Patient required 1 week of admission during which he did not have further seizure after first dose of oral calcium ,his electrolytes PTH and vitamin D normalized then send home with supplement for both (infant and mother).

E-Poster Viewing: Neonatal & Prematurity

FATTY ACID PROFILE OF MATERNAL AND FETAL ERYTHROCYTES AND PLACENTAL EXPRESSION OF FATTY ACID TRANSPORT PROTEINS IN NORMAL AND INTRAUTERINE GROWTH RESTRICTION PREGNANCIES

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Background and aims: Long-chain polyunsaturated fatty acids (LC-PUFA), mainly docosahexaenoic (DHA) and arachidonic acids (AA), are critical for adequate fetal growth and development. We investigated mRNA expression of proteins involved in hydrolysis, uptake and/or transport of fatty acids in placenta of fifteen full term normal pregnancies and eleven pregnancies complicated by intrauterine growth restriction (IUGR) with normal umbilical blood flows.

Methods: Fatty acid methyl esters in the placenta and maternal-fetal erythrocyte compartments were separated and detected on an Agilent Technologies 7890 A CG chromatograph. The expression of genes that encode proteins involved in the uptake and transport of fatty acids in human placenta was evaluated by *q*RT-PCR in both groups.

Results: The mRNA expression of LPL, FATPs (−1, −2 and −4) and FABPs (−1 and −3) was increased in IUGR placentas, however, tissue profile of LC-PUFA was not different between groups. Erythrocytes from both mothers and fetuses of the IUGR group showed lower concentrations of AA and DHA and inferior DHA/ALA ratio compared to normal pregnancies ($P<0.05$).

Conclusions: We hypothesize that reduced circulating levels of AA and DHA could up-regulate mRNA expression of placental fatty acids transporters, as a compensatory mechanism, however this failed to sustain normal LC-PUFA supply to the fetus in IUGR.

E-Poster Viewing: Neonatal & Prematurity

SUCCESSFUL MANAGEMENT OF EXTREMELY LOW BIRTH WEIGHT INFANT: A CASE REPORT

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Abstract

Background: Low birth weight (LBW) is one of the most common causes of neonatal death. LBW is defined as neonate weighs less than 2500 grams at birth, subcategorized as: very low birth weight (VLBW) for neonate weighs <1500 grams and extremely low birth weight (ELBW) for neonate weighs <1000 grams. Sequelae of LBW including hypoxemia, respiratory failure, nutrient deficiency, etc. At birth, management for LBW infants is the same with normal infants, but more attentions are needed on several aspects such as maintaining a patent airway and breathing, thermal control, heart rate and respiration monitoring, oxygen therapy, fluid and nutrition requirements, infection prevention.

Objective: To report a case of successful management of extremely low birth weight infant

Case: A 3 days old baby boy, 26 weeks gestational age, weighing 920 grams was referred to Cileungsi District Hospital. The infant was diagnosed with ELBW, respiratory distress syndrome and sepsis. Noninvasive positive pressure ventilation (NIPPV) was given at maximal setting. Antibiotics injections were given to eradicate the infection. Aminophylin was also given to relieve the respiratory distress. The infant was put in incubator. Peripherally inserted central catheter (PICC) was inserted due to problem on intravenous route insertion. The infant was admitted in neonatal ward for 52 days. At discharge, body weight was 1116 grams.

Conclusion: Proper care and knowledge of the healthcare providers, detailed routine examination and quick decision making for management play important roles in successful management of extremely low birth weight infant.

E-Poster Viewing: Neonatal & Prematurity

BIRTH WEIGHT AND THEIR INTERRELATIONSHIPS WITH LATER NUTRITIONAL STATUS, COGNITION AND SCHOLASTIC ACHIEVEMENT

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Background and aims: Prenatal nutritional indicators such as birth weight, birth length head circumference at birth are considered of great importance for later nutritional status, cognition and scholastic achievement (SA) at school-age. The aim of this study was to assess the association of birth weight with later nutritional status and SA in the 2009 Quality Education Measurement System (SIMCE) and in the 2013 University Selection Test (PSU) both language (LSA) and mathematics (MSA).

Methods: From a representative, proportional and stratified sample of 1,353 school-age children, of both sexes, enrolled in 5th grade of elementary school and in 1st grade of high school in the Metropolitan Region of Chile in 2010, 814 of them reports their birth weights. Nutritional status was assessed through anthropometric parameters of Z-weight (Z-W), Z-height (Z-H) and Z-head circumference (Z-HC). Intellectual ability (IA) was measured by the Raven Progressive Matrices test and SA by the SIMCE and PSU tests. Data were analyzed using multiple regression analysis from the SAS software. **Results:** Birth weight was positively and significantly correlated with Z-HC ($p < 0.0001$), Z-H ($p < 0.0001$), and Z-BMI ($p < 0.0001$). Z-HC was the most important anthropometric indicator (of nutritional background and brain development) positively and significantly correlated with SIMCE outcomes at the end of elementary school and with PSU results, both LSA and MSA at the end of high school ($p < 0.0001$) and with IA ($p < 0.0001$). **Conclusions:** These findings confirm that birth weight is significantly associated with later nutritional status, especially Z-HC and this with cognition at school-age.

E-Poster Viewing: Neonatal & Prematurity

INDOOR AIR POLLUTION - A NEGLECTED CAUSE OF PREMATUREITY AND LOW BIRTH WEIGHT

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BACKGROUND: Indoor Air Pollution (IAP) refers to chemical, biological and physical contamination of indoor air. Nearly two million people die each year from IAP mainly due to solid biomass cooking fuel and passive smoking. Since women and young children often spend considerable time indoors, they are at greatest risk for exposures to IAP.

AIM: To determine the association of indoor air pollution during pregnancy on Low Birth Weight (LBW) and prematurity.

METHODS: A case control study with babies with birth weight >2500gm as controls and birth weight <2500gm as cases was done. Sample size was 200 cases and 200 controls.

RESULTS: Passive smoking during pregnancy was present in 89 (44.5%) case mothers compared to 35 (17.5%) control mothers ($p < 0.001$). IAP as a result of cooking using biomass fuel (cow dung cakes, wood, coal) and kerosene during pregnancy was identified in 43.0% cases which was more than the controls (20.5%) ($\chi^2 = 24.325$, p value < 0.001).

CONCLUSION: Exposure to passive smoking was associated with an increased odds of 3.78 for risk of LBW compared to mothers with no exposure to passive smoking during pregnancy. Indoor air pollution resulting from use of cooking fuel in the form of biomass fuel (cow dung cakes, coal, wood) and kerosene had odds of 2.93 when compared to mothers who used LPG fuel for cooking during pregnancy. It is recommended that due emphasis should be given on creating awareness among communities about the hazards of indoor air pollution especially to prevent adverse pregnancy outcomes.

E-Poster Viewing: Neonatal & Prematurity

EXCLUSIVE BREASTFEEDING. IDENTIFICATION OF FACTORS THAT INFLUENCE DURATION OF EXCLUSIVE BREASTFEEDING

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Exclusive breastfeeding during the first 6 months of life, constitutes one of the main goals of the healthcare programs all over the world. There are numerous factors that influence the duration of exclusive breastfeeding, like: socio demographic factors, biophysical factors, psychological factors and factors that are associated on supporting interventions. In this paper we had evaluated the impact of these factors on the duration of exclusive breastfeeding. This is a cross sectional study. Mothers with age, 26 to 35 years old and unemployed mothers are more inclined towards exclusive breastfeeding. The factor that affect more often for the interruption of exclusive breastfeeding was: "I thought I had not enough milk". Supporting of medical personnel is seen as the dominant factor in mothers who have conducted exclusive breastfeeding for 5- 6 months.

E-Poster Viewing: Neonatal & Prematurity

NUTRITIONAL MANAGEMENT FROM THE MIDDLE OF THE GROWTH PHASE IS EFFECTIVE IN PREVENTING ELEVATION OF BLOOD PRESSURE IN FGR MODEL MICE WITHOUT INHIBITION OF NEURODEVELOPMENT

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Background and aims

Fetal growth restriction (FGR) is a risk factor for neurological deficits and metabolic syndromes such as hypertension. The objective of this study was to evaluate the effects of nutritional management on hypertension and neurodevelopment after the juvenile period in FGR mice.

Methods

Pregnant female mice were randomly divided into two dietary groups: normal-protein diet (NP) and low-protein diet (LP). After birth, both LP and NP mice were kept on a normal-protein diet until 20 weeks of age. From 6 weeks of age, a cohort of the LP mice received a medium-low protein diet (LP-NM). From 20 to 30 weeks of age, all mice were fed the same high-fat diet.

Results

While the birth weights of LP mice were reduced, both LP and LP-NM mice experienced catch-up growth at 8 weeks after birth. At 30 weeks of age, systolic blood pressure and the expression of TGF- β and renin were significantly higher in LP mice compared to NP mice. These phenotypes were not observed in the LP-NM cohort. No differences were found between the three groups from the morphological analysis of the brain nor the behavior analyses performed at 10 weeks of age.

Conclusions

These findings reveal that this nutritional management plan (i.e. protein restriction after the juvenile period) is effective in preventing elevation of blood pressure in FGR mice without inhibiting neural development and that the changes in expression levels of TGF- β and renin are involved in the process of this prevention.

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FANCONI – BICKEL SYNDROME : CASE REPORT

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introduction:

The Fanconi – Bickel syndrome (FBS), is a rare, well-defined clinical entity that is inherited in an autosomal recessive mode. It is characterized by hepatorenal glycogen accumulation, fasting hypoglycemia as well as postprandial hyperglycemia and hypergalactosemia, proximal renal tubular dysfunction, rickets and markedly stunted growth. We report a case of FBS first detected during the neonatal period.

case report:

A male infant was born at **39** weeks of gestational age by spontaneous delivery, his birthweight was **3230 g** and the perinatal period was normal.

At 15 days of age, the infant was admitted to the hospital because of hypotonia and refusal of feeding. Physical examination did not show clinical evidence of other disease with the exception of a left duplicated thumb; his

growth parameters were within normal range. Polyuria, fasting hypoglycemia and postprandial hyperglycemia were detected, Urinary pH was normal urine samples showed glycosuria (0.02 g/L), proteinuria (<68.000mg/L), phosphaturia (60mg/L). Molecular genetic analysis confirmed the diagnostic.

discussion:

The originality of this case is the timing of diagnosis in the neonatal period because of the early observation of polyuria and hyperglycemia and duplicated thumb. The incidence of FBS is not known; 109 cases from 88 families have been described over the world four other cases of FBS have been reported and has been diagnosed in the neonatal period. To confirm the diagnosis, we performed molecular genetic analysis.

conclusion:

The symptoms of kidney disease and the swelling of the liver and spleen typically resolve before adulthood. However, dietary treatments and supplements typically do not improve growth.

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COLOSTRUM AND HOSPITALIZED PREMATURES

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introduction: Breastfeeding, especially Colostrum, has a protective effect for the newborn and especially for the premature infant. We conducted a prospective study, spanning a year, from May 2017 to May 2018

discussion: For a period of one year, we hospitalized 58 preterm infants, only 35 infants (60.3%) were able to benefit from colostrum for the first 3 days. In the remaining 23 cases we were unable to administer Colostrum. This is due to the absence of the mother, who in most cases gives birth in a maternity hospital in rural areas, often unable to afford to stay nearby. In our study, we found a mortality rate high (64.5%) in premature infants who did not receive colostrum compared with preterm infants who received it (35.5%). The deaths were due to complications such as: Pulmonary hemorrhage (35.5%), Hyaline membrane disease (19.3%), neonatal infection (32.2%), cardiac complications (6.4%) and enterocolitis. ulcerative necrotizing (6.4%). the majority (74%) of surviving infants are followed up for consultation and we find that Psychomotor and Thick-weight development is better in the population receiving colostrum.

conclusion: Colostrum significantly reduces premature mortality (53% in our series)

E-Poster Viewing: Neonatal & Prematurity

SEPTIC SHOCK IN NEONATAL RESUSCITATION ,ABOUT 27 CASES

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introduction:The septic shock is a major concern of the neonatal intensive care units in the world because of its frequency and especially of its mortality which remains high in spite of the progress made in the quality of care and the early management.

Objectives:The aim of our study is to evaluate the epidemiological, clinical and prognostic aspects of neonatal septic shock, to define the main risk factors, to describe the treatment used and to specify the evolution and the outcomes of neonatal septic shock in the neonatal intensive care unit of MOHAMMED VI University Hospital Center of OUJDA.

methodes:This is a retrospective and descriptive study of 27 cases of neonatal septic shock performed over a period of 2 years from August 2016 to August 2018, including all newborns admitted to the neonatal intensive care unit for clinical confirmation of septic shock or developing during their hospitalization.

results:27 cases of septic shock were collected from 490 admissions in the neonatal intensive care unit; which represents an incidence of 5.51%. Prematurity represents the majority of cases with an incidence of 59%; with a predominance of males with an incidence of 52% and 46% of all newborns had low weight birth. 81% of newborns have presented between 1 and 3 failing organs; while 19% of them had >3 failing organs. The overall mortality was 89% with the most important death causes were: disseminated intravascular coagulation, heart failure and respiratory distress. Most of the results of our studies join the recent studies.

conclusion:neonatal sepsis still remains an enigmatic area for neonatologists due to changes in epidemiology and the lack of ideal diagnostic markers.

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MATERNAL DIET AND GESTATIONAL DIABETES MELLITUS DEVELOPMENT

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Background and aims

Maternal diet plays an important role in the progress of gestational diabetes mellitus (GDM). The aim of the present study was to explore this association.

Methods

The full course of the study was completed by 55 pregnant women, patients of the Gynaecology and Obstetrics Training Hospital, Poznań University of Medical Sciences. Diet was assessed with a food-frequency questionnaire (FFQ) 12 months before pregnancy and during pregnancy (before enrolment). Current eating habits were evaluated using a 3-day food record. The patients were divided into two groups: H – healthy pregnant women (n=42) and GDM – women with gestational diabetes mellitus (n=13), based on the result of Oral Glucose Tolerance Test (at 24-28 week of gestation). The study compared the results of both groups.

Results

Significantly higher total fat intake was observed in the GDM in comparison to the H group (vs.36,2 vs. 32,1 % DRP). Moreover, the total fat, SFA and MUFA intake in this group was higher than nutritional recommendations.

Conclusions

Excessive fat intake may contribute to the occurrence of GDM.

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FACTORS INFLUENCING PARENTS' CHOICES OF INFANT FORMULA

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Background: Human milk is the gold standards for infant feeding. When the infant is not exclusively breastfed, Infant Formula (IF) is used. The aim of this study is to present factors influencing parents' choices of nutrition selection and IF for their infant, and examine whether these choices are influenced by socio-economic status (SES).

Methods: A cross-sectional survey, by interviewing mothers attending family health centers (FHS) in various areas of Tel Aviv, Israel.

Results: 239 mothers were recruited. Choice of infant's nutrition source were exclusive breastfeeding, combination of IF and breastfeeding, and exclusive IF (86 (36%), 81 (34%) and 72 (30%), respectively). Exclusive breastfeeding was related to higher SES (40.4% vs 23%, $P=0.02$). In the majority of cases IF was added to infant nutrition due to maternal difficulty in breastfeeding (60%) with no differences between SES groups. Leading factors influencing the choice of certain IF product were continuation of IF given in the hospital (20%), advice from friends or family (20%) and infant's compliance (16%). Higher SES parents tended to continue nutrition with the IF that was supplied in the hospital and lower SES tended to choose a formula according to its price ($P=0.02$, $P=0.01$ Table 1). A choice of "Premium" IF products correlated with higher SES (66% vs 17% in higher and lower SES, respectively, $P<0.02$).

Conclusion: We found a positive relation between SES and exclusive breastfeeding for infants up to 6 months of age. Various factors influence parents' choices of IF brand for their infant which in part were influenced by SES.

Table 1: Reasons for choice of IF in all participants and difference between SES

Reasons N (%)	All participants that combine IF in infant nutrition N=153	High SES N=105	Low SES N=48	P value
Availability	16 (10)	13 (12.3)	3 (6.4)	NS
Advertisement	6 (3.9)	4 (3.8)	2 (4.3)	NS
Professional advice from Pediatrician	17 (11)	10 (9.4)	7 (14.9)	NS
Continuation from hospital	30 (19.6)	26 (24.5)	4 (8.5)	0.02
Friends advice	30 (19)	21 (19.8)	9 (19.1)	NS
Infant compliance	24 (15.7)	18 (17)	6 (12.8)	NS
Experience with previous child	13 (8.5)	5 (4.7)	8 (17)	NS
Price	4 (2.6)	0 (0)	4 (100)	0.01
Other *	15 (10)	9 (8)	6 (12)	NS

- Kashrut, Preference of international or Israeli brand, random decision

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DHA SUPPLEMENTATION IMPROVES PLACENTAL DMT1 TRANSPORTER

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- Background and aims: Anaemia is a common nutrient deficiency during pregnancy, affecting 40–50% of vulnerable women and their infants. Moreover, DHA plays important roles in neuronal growth and differentiation, modulating physical properties of biological membranes and gene expression of various key proteins. The purpose of this study was to investigate, for the first time, the effects of DHA supplementation on the expression of iron metabolism in the placenta.

- Methods: One hundred and ten healthy pregnant mothers were enrolled. Mothers were randomly assigned to control group or DHA supplemented group. After delivery, a sample of placental cotyledons was obtained. Total RNA was extracted from placental tissue. Real-time PCR was set up and we determine DMT1 mRNA expression. In addition, Western blotting and immunocytochemistry was performed to measure DMT1 protein expression

-Results: DMT1 gene expression in placenta of the DHA-supplemented mothers increased 115% with regard to the non-supplemented mothers ($P < 0.001$). In addition, DMT1 protein level was differentially expressed in response to the DHA supplement ($P < 0.01$).

-Conclusions: supplementation with DHA enhanced the expression (gene and protein) of DMT1 in maternal placenta. This presumably will be beneficial to placental Fe and Ca transfer to the neonates.

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ERYTHROCYTE MINERAL PROFILE IS IMPROVED IN MOTHERS TAKING A DHA SUPPLEMENT

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- Background and aims: Minerals are cofactors for enzymes involved in cell division, neurotransmitters, myelination and biologically active lipid mediators and therefore is crucial for normal cognitive development and functioning, therefore mineral deficiency in early stages of life impairs cognition, motor development. DHA plays important roles during gestation. The purpose of this study was to investigate, for the first time, the effects of DHA supplementation on the erythrocyte mineral profile in gestating mothers.

- Methods: One hundred and ten healthy pregnant mothers were enrolled. Mothers were randomly assigned to control group or DHA supplemented group. Blood samples were obtained from mothers at the time of delivery and from the umbilical vein and arteries. Blood samples were centrifuged at 1750 g for 10 min at 4 °C to separate plasma and red blood cells. Erythrocyte cytosol was prepared by differential centrifugation. The erythrocyte cytosolic fractions samples were mineralised and Ca and Fe analysis was undertaken using an inductively coupled plasma optical emission spectrometry with a segmented-array charge-coupled device high-performance detector.

- Results: Fe concentration was higher in erythrocyte cytosol, umbilical cord vein and umbilical cord artery of the DHA-supplemented group ($P < 0.05$). Ca concentrations were also higher in umbilical cord vein and umbilical cord artery of the DHA-supplemented group ($P < 0.05$).

- Conclusions: DHA supplementation improves erythrocyte cytosolic mineral profile in mothers, increasing Ca and Fe, which could be beneficial to the neonates and boost their mineral stores at delivery.

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DHA SUPPLEMENTATION IMPROVES NEONATAL BONE TURNOVER AT DELIVERY

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- Background and aims: Bone turnover process begins in uterus, during the early stages of pregnancy, to ensure proper foetal development. Although many studies have focused on DHA supplementation, there are many other effects that have not been deeply studied, for example, bone metabolism, which has a key role in the development of the neonate.

- Methods: One hundred and ten healthy pregnant mothers were enrolled. Mothers were randomly assigned to control group or DHA supplemented group. After delivery blood samples were collected. After delivery blood samples were collected from the umbilical vein and arteries and at 2.5 months of life a sample of blood from all the neonates was obtained. Bone metabolism biomarkers analysis was performed with Luminex xMAP technology.

- Results: The supplemented group showed a higher concentration of OPG, with statistically significant differences, in umbilical artery of DHA the with respect to that found in the control group ($p < 0.05$) and higher OC in neonates at 2.5 months ($p < 0.05$). For RANKL we found statistically significant differences in the umbilical cord vein, with a lower value in the supplemented group ($p < 0.05$).

- Conclusions: DHA supplementation during pregnancy and lactation has beneficial effects on bone turnover in neonates, being the most noteworthy effect recorded in the neonate at birth and during first two months of postnatal life.

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ANTIOXIDANTS IN NEONATAL HEMOCHROMATOSIS

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1. Introduction

Neonatal hemochromatosis is the most common cause of acute liver failure in the neonatal period, associated with high morbidity and mortality due to iron overload in hepatic and extra-hepatic tissues.

Gathering laboratory results to history and clinical examination associated to high ferritinemia allow decisive anti-oxidant therapies.

2. Case Presentations

First case:

A 45 days girl presents pallor, fatigue and failure to thrive, laboratory tests reveal acute hepatitis with liver failure. Alpha -fetoprotein is 64,000 IU and serum ferritin > 2000 ng/ml. The most likely diagnosis, neonatal hemochromatosis, required to initiate combination therapy with vitamin E and N- acetylcysteine. No more stigmata of liver failure were detected after 60 days of follow up

Second case:

An 1,600-g female infant is delivered by emergency cesarean section for preeclampsia. The baby had correct Apgar scores and was well till day 10 when she presents anemia, jaundice and hypotonia.

Investigations were similar to the first case along with moderate coagulopathy.

She recovered progressively after 15 days of vitamin E with N- acetylcysteine and supportive therapy

3. Discussion

Identifying the characteristic presentation of neonates with neonatal hemochromatosis may help to outline different management strategies for infants, such as similar antioxidants

Currently, alloimmune forms benefit from intravenous immunoglobulin (IVIG) and exchange transfusion, a successful therapy widely reported.

4. Conclusion

Anti-oxidants may offer a window of opportunity in suspected neonatal hemochromatosis, while immunoglobulins seem to be the cornerstone treatment in alloimmune forms

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THE SURVIVAL OF BREAST MILK CELLS UNDER VARIOUS CONDITIONS OF STORAGE.

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Background and aim. The unique component of breast milk are living cells received from the tissues of the mammary gland or maternal blood. These cells are able to thrive in gastrointestinal tract of a newborn and integrate into its tissues. The aim of our study was to evaluate the cell survival under various conditions of breast milk storage.

Method. Samples of breast milk were obtained from healthy mothers on 10-14 day after delivery. 10 ml of breast milk was collected into a sterile container and stored at + 4C or + 23C for 4 hours. An aliquot of breast milk was 5-fold diluted in PBS, the cells were pelleted by centrifugation (330g, 10 minutes). The cells were analyzed using TC20™ automated cell counter (Bio-Rad).

Results. Breast milk contained a variety of cells including leukocytes, luminal epithelial cells, myoepithelial cells, and mesenchymal stem cells. After one hour the proportion of living cells in the samples stored at room temperature and at + 4C did not differ significantly and amounted to $40.0 \pm 10.7\%$ and $45.6 \pm 13.2\%$. After 4 hours the proportion of living cells decreased to $22.9 \pm 6.3\%$ in milk samples stored at + 23C, while the + 4C milk samples contained $37.6 \pm 7.1\%$ of all cells remained alive.

Conclusions. Storing breast milk at + 4C makes for better survival of the cell component compared to storing milk at room temperature.

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ADIPOKINES LEVELS IN THE CORD PLASMA OF THE NEONATES FROM ADOLESCENT AND ADULT MOTHERS AND THEIR RELATIONSHIP WITH ANTHROPOMETRIC PARAMETERS AND FETAL SEX-GENDER

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Fetal growth is result of the interplay among genetic, nutritional, and endocrine factors. Insulin is one of the key regulators of fetal growth, but recently some adipokines have also emerged as potential metabolic programming factors. Also, sex differences may be important, as studies revealed that female neonates had significantly higher levels of umbilical cord plasma leptin than males. However, there is a lack of similar studies regarding pregnant adolescents. Adolescent pregnancy is associated with an increased risk of adverse outcomes such as maternal and neonatal mortality, cesarean section, preterm birth and low birth weight. This cross-sectional study aimed to evaluate the association between leptin, insulin and adiponectin levels and anthropometric measurements of term newborns of adolescent and adult mothers. Umbilical cord plasma samples were obtained from 80 healthy term neonates (40 from teenagers and 40 from adult mothers). Adiponectin, insulin and leptin concentrations were measured. Cord plasma adiponectin levels were higher in boys from adult mothers than in boys of the adolescents ($p < 0.05$), while plasma leptin levels in boys of the adults were significantly lower ($p < 0.05$) than those of girls from both groups. Univariate correlation analysis showed that leptin umbilical cord plasma levels were positively associated with birth weight in neonates from adolescents and adults. Multiple linear regression analysis revealed that leptin levels showed significant positive predictor for birth weight specifically in the adult mother. Gestational age, but not adipokines, showed to be a significant positive predictor factor of birth weight in adolescent pregnancy.

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MATERNAL NUTRITION AND BIRTH WEIGHT: ROLE OF VITAMINS AND TRACE ELEMENTS

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Introduction: Pregnancy is a period of increased metabolic needs. Vitamins, minerals and trace elements are major determinants of the health of the pregnant woman and the fetus.

Objective: To evaluate maternal intakes of vitamins and trace elements in the first, second and third trimesters of pregnancy and assess their effect on birth weight.

Materials and methods: A prospective and longitudinal study have been conducted among 226 pregnant women throughout the whole period of pregnancy in the centers of prenatal consultations and follow up in Constantine (Algeria) from December 2013 to June 2016. We analyzed maternal intakes of iron, minerals and vitamins by comparing them to the normally recommended dietary allowances (ANC) and then by multivariate analysis, we studied the correlation between these intakes and birth weight. Statistics were performed using the Statview TM and SPSS software.

Results: This study noted the positive effect of some maternal factors on birth weight, such as maternal age, parity, pre-pregnancy BMI and pregnancy term. The average daily intake of minerals (iron, calcium, zinc and magnesium) and vitamins (B9, B1 and E) were below the ANC. In contrast, average intakes of vitamin C in the 2nd and 3rd trimesters of pregnancy corresponded to the ANC. Only magnesium intakes in the first trimester ($p=0.02$) and vitamin B9 in third one ($p=0.004$) were significantly correlated with birth weight.

Conclusion: Intakes of trace elements and vitamins in our study population are reduced compared to the ANC. The correction of the pregnant women diet is urgently needed.

E-Poster Viewing: Neonatal & Prematurity

THE EFFECT OF MATERNAL HIV STATUS AND DURATION OF TREATMENT ON BODY COMPOSITION OF HIV-EXPOSED AND HIV-UNEXPOSED PRETERM, VERY AND EXTREMELY LOW-BIRTHWEIGHT INFANTS

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Background and aim: There is an evidence gap regarding the relationship between HIV exposure, body composition and preterm infants. This study aimed to determine the body composition of HIV-exposed, preterm very low-birthweight (VLBW) and extremely low-birthweight (ELBW) infants and to assess the effect of maternal HAART duration on the body composition of this vulnerable population.

Methods: A descriptive cross-sectional study was conducted. HIV-exposed and -unexposed preterm infants with a birthweight of ≤ 1200 g were included. Each infant's maternal medical background was recorded. Infant anthropometric measurements including skinfolds were recorded weekly during the 28-day follow-up period.

Results: Thirty of the preterm infants (27%) were HIV-exposed. HIV-exposed infants had significantly ($=0.01$) lower gestational ages than HIV-unexposed infants within the group. HIV-exposed infants had lower measurements on day 21 and day 28 for triceps skinfold (TSF) (2.5 mm vs 2.7 mm, $=0.02$ and 2.6 mm vs 2.9 mm, <0.01), subscapular skinfold (SSSF) (2.3 mm vs 2.6 mm, $=0.02$ and 2.4 mm vs 2.7 mm, $=<0.01$) and fat mass percentage (FM%) (0.9% vs 1.4%, $=0.02$ and 1.0% vs 1.5%, $=0.03$). HIV-exposed infants whose mothers received HAART for ≥ 20 weeks were heavier and had a higher FM% and lower fat-free mass percentage (FFM%) at birth than HIV-exposed preterm infants whose mothers received highly active antiretroviral therapy for ≥ 4 – <20 weeks.

Conclusion: Mothers receiving HAART could have an increased risk of preterm delivery, and the duration of maternal HAART affects postnatal body composition of their infants. Body composition differs between HIV-exposed and HIV-unexposed preterm infants.

E-Poster Viewing: Neonatal & Prematurity

GROWTH AND NUTRITIONAL INTAKE OF HIV EXPOSED PRETERM, VERY LOW AND EXTREMELY LOW BIRTH WEIGHT INFANTS AT TYGERBERG HOSPITAL, WESTERN CAPE, SOUTH AFRICA

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Background and aims: Determining the growth of HIV-exposed preterm infants would create a better understanding of the effects of this infectious disease on the nutritional status. This study aimed to determine the growth and nutritional intake of HIV-exposed and -unexposed preterm, very low birth weight infants.

Methods: A descriptive cross-sectional study was conducted at Tygerberg Children's Hospital. Very low birth weight (<1200g) HIV-exposed and -unexposed infants were included. Anthropometrical measurements, intakes and feeding tolerance were monitored for 28 days.

Results: 113 Infants were included in the study (26.5%; $n = 30$ HIV-exposed and 73.5%; $n = 83$ HIV-unexposed). The mean birth weight was 971.06 g (± 162.92 g). The HIV-unexposed infants had a higher mean birth weight than the HIV-exposed group. The two groups gained weight at a similar rate until day 14 of life. The HIV-unexposed group had greater lengths at birth ($p = 0.016$) and day 28 of life ($p = 0.004$). Full feeds were achieved on day 12.5 (± 3.71) and day 11.37 (± 3.31) of life for the HIV-exposed and unexposed groups respectively, but the difference was not significant.

This study found that there was no correlation between the duration of maternal HAART and gestational age ($r = 0.06$) or birth weight ($r = 0.08$). There were no differences in the incidence of signs of feeding intolerance between the groups.

Conclusion: HIV exposure influences the growth of premature infants, irrespective of nutritional intake. HIV-exposed infants had poorer growth rates.

E-Poster Viewing: Neonatal & Prematurity

THE LEVEL OF INSULIN-LIKE GROWTH FACTOR-1 NEONATES BORN TO MOTHERS WITH OBESITY.

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Introduction: The increased incidence of obesity is a significant issue in both women of reproductive age and children born to such mothers.

Aim of Study: Analysis of anthropometric measurements and level of insulin-like growth factor (IGF-1) in newborns born to mothers with obesity.

Methods: 78 newborns were examined: 33 (42.3%) were born to mothers with class I obesity, 14 (17.9%) – with class II obesity and 7 (9.0%) – with class III obesity. The control group included 24 (30.8%) children.

Results: Control group data: body weight – 3,350.0 [3,060–3,785] grams, body length – 52.0 [50.5–53.0] cm, head circumference (HC) – 35.0 [35.0–36.0] cm. IGF-1 – 26.1 [14.9–33.5] µg/l.

Newborns born to mothers with class I obesity: body weight – 3050.0 [2,290–3,850] grams, body length – 50.0 [45.5–53.5] cm. HC – 35.0 [32.0–36.5] cm. IGF-1 – 20.3 [14.5–25.9] µg/l.

Newborns born to mothers with class II obesity: body weight – 3140.0 [2,900–3,700] grams. Body length – 50.0 [49.0–54.0] cm. HC – 35.0 [34.0–36.0] cm. IGF-1 – 20.3 [15.8–27.6] µg/l.

Newborns born to mothers with class III obesity: body weight – 4,125.0 [3,800–4,125] grams ($p<0.01$). Body length – 54.0 [53.0–54.0] cm ($p<0.05$). HC – 37.0 [37.0–37.0] cm ($p<0.01$). IGF-1 – 31.2 [24.2–31.2] µg/l ($p>0.05$) versus the control group.

Conclusions: Newborns born to mothers with class III obesity had significantly higher anthropometric measurements versus the control group.

Key words: obesity, newborn, IGF-1, anthropometric measurements.

E-Poster Viewing: Neonatal & Prematurity

AVOIDING MISDIAGNOSIS OF INHERITED METABOLIC DISORDER IN NEWBORN - GALACTOSEMIA CASE STUDY

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Background: Galactosemia is a rare carbohydrate metabolism disorder, which may threaten a patient's life at the end of the first week of life. National newborn screening program is still unavailable in Latvia and many other countries in Europe.

Case report: A 5 days old newborn male patient presented with icterus, weight loss (- 9.5 % of birth weight) and elevated total bilirubin (BR 560 umol/L). Breastfed by mother's milk. At clinic, phototherapy was initiated, but condition became worse because of frequent vomiting with curdled milk. Despite nutrition through nasogastric tube with mother's milk and partial parenteral nutrition, patient had not gained weight. Instrumental examinations were performed due to suspicion of intestinal malrotation and obstruction. Blood tests detected signs of liver injury, metabolic acidosis and changes in coagulogram (PT 17.9%, INR 3.74). During ophthalmological investigation patient was diagnosed with haemophthalmus in the left eye and also congenital cataract was detected. Nosocomial sepsis occurred due to contamination of intravenous catheter. Metabolic disorder galactosemia was suspected. Urine tests revealed massive aminoaciduria so citrin deficiency was a differential diagnosis. The decision was to stop nutrition with mother's milk and to initiate Lactose-free formula - the patient's general condition improved rapidly.

Results: The patient was discharged on 25th day of life with galactosemia diagnosis.

Conclusion: Prevention of mortality and complications of galactosemia is frequently contingent on early diagnosis. Awareness of conditions features may help reduce misdiagnosis and promote early detection. National screening for galactosemia should be available for all newborns.

E-Poster Viewing: Obesity

PREVALENCE OF OBESITY AMONG SCHOOL-AGE CHILDREN AND ADOLESCENTS IN THE GULF COOPERATION COUNCIL (GCC) STATES: A SYSTEMATIC REVIEW

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The Gulf Cooperation Council (GCC) countries have among the highest prevalence of adult obesity and type 2 diabetes in the world. This study aimed to estimate the recent prevalence of obesity among school-age children and adolescents in the GCC States. The literature search for obesity prevalence data was carried out in July 2017 in Google Scholar, Physical education index, Medline, SCOPUS, WHO, 2007–2017, and updated in November 2018. 22 experts from the GCC were contacted to check the search results, and to suggest studies or grey literature which had been missed. Eligible studies were assessed for quality by using the Joanna Briggs Institute (JBI) tool for prevalence studies. Conduct of the systematic review followed the Assessment of Multiple Systematic Reviews Tool (AMSTAR) guidance. A narrative synthesis was conducted. Out of 392 studies identified, 41 full-text reports were screened for eligibility; 11 of which were eligible and so were included, from 3 of the 6 GCC countries (United Arab Emirates, Kuwait, Saudi Arabia). Surveillance seems good in Kuwait in compared to other countries, with one recent national survey of prevalence. Quality of the eligible studies was generally low-moderate according to the JNBI tool: representative samples were rare; participation rate slow; power calculations were mentioned by only 3/11 studies and confidence intervals around prevalence estimates provided by only 3/11 eligible studies; none of the studies acknowledged that prevalence estimates were conservative. The prevalence of obesity among school-age children and adolescents appears to have reached alarming levels in the GCC; gaps and limitations are discussed.

E-Poster Viewing: Obesity

RELATIONSHIP BETWEEN DIETARY HABITS AND ADIPOSITY MEASURES AMONG SAUDI CHILDREN AND ADOLESCENT

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Background and aims: The etiology of childhood obesity is growing at alarming rates in developed and developing countries. The relationship between dietary factors and obesity development is complex and poorly investigated. Data on dietary habits among Saudis are limited. Thus we aimed to assess the relationship between dietary habits and nutrients intake as determined by food frequency questionnaire (FFQ) and adiposity measures in Saudi children and adolescents.

Methods: A cross-sectional study was conducted on 200 Saudi children, who were randomly selected from the Paediatric clinics, at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. Anthropometric variables were measured in all study subjects. Structured questionnaire was self-administered to determine socio-demographic and dietary habits. Dietary intake was assessed using a pre-validated semi-quantitative FFQ.

Results: Almost half of the study population was overweight and one tenth was obese according to body mass index levels irrespective of gender. The prevalence of central obesity is higher using waist height ratio as opposed to waist circumference and it is true in both genders. Most of healthy foods were never or seldom consumed. Unhealthy foods were always or often consumed.

Conclusions: Severity of overall and abdominal obesity in Saudi children is associated with a higher prevalence of cardiovascular risk factors, with relationship strength varying by gender. Dietary habits indicate the need for a national strategy at the community levels aiming at modifying the unhealthy lifestyle among Saudi children. Primary prevention of obesity by promoting a healthy diet and active lifestyles should be a national public health priority.

E-Poster Viewing: Obesity

DIETARY HIGH PALMITIC ACID IN SN-2 POSITION OF TRIACYLGLYCEROLS MAY EXERT ITS PHYSIOLOGICAL FUNCTIONS BY MODULATING ENDOCANNABINOIDS AND CONGENERS BIOSYNTHESIS

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Human breast milk fat contains >75% of palmitic acid (PA) at sn-2 position (Hsn-2 PA) of the triacylglycerols (TAG). This peculiar position of PA provides specific physiological properties to human milk fat. However, it is not clear by which mechanism Hsn-2 PA exerts its activities. One possibility may be reconducted to an increased PA incorporation into tissue phospholipids (PL), which may modify biosynthesis of fatty acid – derived bioactive lipids, such as endocannabinoids (EC) and their congeners.

To test our hypothesis, we fed rats for 5 weeks diets containing Hsn-2 PA or PA randomly distributed in TAG (Lsn-2 PA), with similar total PA concentration. Fatty acid profile, EC and congeners were measured in different tissues by LC-MS.

Rats on Hsn-2 PA diet had lower levels of the EC anandamide (AEA) with concomitant increase of its congener palmitoylethanolamide (PEA) and its precursor PA into visceral adipose tissue PLs. In addition, we found an increase of oleoylethanolamide (OEA) in liver, muscle and brain, associated to higher levels of its precursor oleic acid in liver and muscle. Changes in EC and congeners were associated to a decrease of circulating TNF alpha after LPS challenge, and to an improved feed efficiency.

Our data suggest that dietary Hsn-2 PA, by modifying EC and congeners biosynthesis in different tissues may concur in the physiological regulation of energy metabolism, brain function and body fat distribution.

E-Poster Viewing: Obesity

STUNTED OBESITY IS A MAJOR PUBLIC HEALTH PROBLEMS IN INDIA

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Introduction: Childhood malnutrition of India in declining trend but is still an alarming level. The prevalence of malnutrition in India is also among the highest in the world. However, the standard against which nutritional status of the sample population should be determined has been controversial. In view of the above, present study was conducted to assess the childhood nutritional status and construct weight, height and BMI percentile for child growth monitoring.

Materials and Methods: The cross sectional study was conducted in different geographical regions among children aged 0-18 years. Weight and height was taken by trained staff following standard anthropometric techniques. The z-score of weight-for-height, weight-for-age and height-for-age, BMI-for-age was calculated by using World Health Organization (WHO) child growth reference. Selected percentile values of weight, height and BMI was calculated following LMS method.

Results: The prevalence of underweight, stunting and wasting was high as per WHO classification. More importantly it was observed that the prevalence of at risk of overweight, overweight and obesity was found to be higher among stunted children. Moreover, the 50th percentile values of weight and height of Indian children at all age groups was found to be lower than the WHO standard. Whereas, the mean BMI is found to be higher almost all age groups.

Conclusion: There is urgent need for regular child growth monitoring. Thus, weight and height percentile values of this study may used for child growth monitoring till ethnic and regional specific child growth standard is not available.

E-Poster Viewing: Obesity

NO SIGNIFICANT ASSOCIATIONS BETWEEN BREASTFEEDING PRACTICES AND OVERWEIGHT IN EIGHT YEAR-OLD CHILDREN

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Aim

To examine whether breastfeeding practices are associated with body mass index (BMI) and risk of being overweight or obese (OWOB) amongst children in third grade (eight years) of elementary school.

Methods

In a regional cohort we related BMI z-scores, and presence of OWOB with breastfeeding practices, including whether the child had been breastfed or not and the duration of exclusive or partial breastfeeding after adjusting for potential confounders. Parents completed questionnaires on breastfeeding and sociodemographic and lifestyle factors at school entry. Public health nurses measured height and weight. For non-participants the nurses anonymously reported these measurements together with sex and age.

Results

No significant differences were found in anthropometric measurements between participants (n=951) and non-participants (n=1,061). 90% of the children had been breastfed, and prevalence of OWOB in third grade was 21%. In adjusted analyses, BMI z-scores were not significantly related to whether or not the child had been breastfed (p=0.64), or to the duration of exclusive (mean 4.6 months, p=0.80) or partial breastfeeding (mean 10.7 months, p=0.94). Logistic regression also showed no significant association between breastfeeding measures and OWOB.

Conclusion

This study does not support the commonly held notion that breastfeeding reduces the risk of becoming overweight or obese during childhood.

E-Poster Viewing: Obesity

REDUCTION OF SALT CONSUMPTION IN MOROCCO

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Background: worldwide, excess of salt intake presents a several health problem that lead to many non communicable diseases such as hypertension and obesity. 41% of the Moroccan population suffers from hypertension (WHO) mainly related to its diet habits based on a large intake of bread. Hence the major need to limit dietary salt intake to reduce NCD.

The aim's study is to examine salt-related knowledge, the attitude and self-reported behaviors among Moroccan bakers.

Methods: This is a quantitative and qualitative exploratory study based on the use of a multicomponent questionnaire. Recruitment will be carried out in the twelve administrative regions of Morocco according to a random systematic sampling (n = 573). A pilot survey was conducted on a sample of 24 bakeries to test the questionnaire.

Results: Results of this pilot survey showed a low level of knowledge about the recommendations of the Ministry of Health, only 16.67% of the bakers interviewed had heard these recommendations. The average salt added to the bread is 13.91 ± 5.85 g / kg ranging from 4 g / kg to 20 g / kg. The majority of surveyed bakers had shown an interest to participate in the process of progressive reduction of added salt in the bread in the next two years.

Conclusion: Findings from this survey offer a precious insight on salt-related knowledge, attitude and behaviors in a sample of Moroccan bakers and provide key information that could stimulate the development of salt reduction interventions based on evidence specific to the Arab region

E-Poster Viewing: Obesity

TYPE OF FEEDING IN RELATION TO FAT MASS AND FAT FREE MASS INDICES IN INFANCY

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Background

Infant body composition influences the development of obesity in adulthood, with a critical window for adiposity programming during the first three months. Feeding type in infants can be an important factor. Fat mass index [FMI] and fat free mass index [FFMI] data allow comparison in body composition between infants with different lengths.

Aims

To investigate the correlation of FMI and FFMI development during the first three months with body composition at 24 months. To investigate the effect of exclusive breastfeeding [BF] or formula feeding [FF].

Methods

From the Sophia Pluto Cohort, 89 exclusively BF ($BF \geq 3$ months) infants (47 boys) and 48 exclusively FF (start FF ≤ 1 month) infants (32 boys) were included.

We measured body composition at 1, 3 months by PEAPOD (COSMED) and 24 months by DXA (Lunar Prodigy). Abdominal FM was measured by ultrasound. FMI (fat-mass/length²) and FFMI (fat-free mass/length²) were calculated.

Results

Median FMI increased from 2.3 at 1 month to 3.7 kg/m² at 3 months, followed by a decrease to 2.6 kg/m² at 24 months. Median FFMI was 11.9, 12.2 and 13.0 at 1, 3 and 24 months, respectively. FMI_{1-3mo} correlated with FMI ($R=0.278$, $p < 0.001$) and subcutaneous FM ($R=0.204$, $p=0.003$), but not with visceral FM at 24 months.

Change in FMI_{1-24mo} ($p=0.500$) and FFMI_{1-24mo} ($p=0.424$) did not differ between BF and FF infants.

Conclusions

Irrespective of infant feeding type, gain in FMI_{1-3mo} correlates with body composition outcomes at 24 months, supporting a critical window for adiposity programming in infancy.

E-Poster Viewing: Obesity

DIAGNOSTIC DIFFICULTIES - MOTHER WITH TYPE 1 DIABETES AND AN OBESE PRETERM INFANT: A CASE REPORT

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Background. Mother with poor type 1 diabetes mellitus compensation can cause severe complications for the baby - most severe - diabetic fetopathy. It presents as fetal macrosomia in the third trimester of gestation. The accelerated growth results from fetal hyperinsulinemia. One of the most significant clinical signs is birth weight over 4000 grams.

This case report aims to assess diagnostic parameters between diabetic fetopathy and infant overfeeding.

Methods. The patient was studied under close observation in the ICU. Family history, physical examination, growth charts for preterm infants, blood tests and CGMS were used to determine the diagnosis.

Results. A 2-month-old boy presented with an increased appetite, regurgitation and excess weight. The patient was born during an emergency Caesarean section in the 32nd week of gestation with birth weight of 4300g. After birth he was hospitalized in ICU due to respiratory distress. Objective - increased subcutaneous fat, asymmetrical muscle tone. The patients weight 8260 g (+ > 3 SDS), height 66 cm (+> 3 SDS). Neurosonography, USG, urine and blood analysis showed no abnormalities. CGMS 5 day average glycemia was 5.6 mmol/L and showed no episode of hypoglycemia. The mother was feeding him 960-1200 ml Friscolac infant formula every 2.5 - 3 hours, including night time.

Conclusion. 1. Diabetic fetopathy - main risk factor of early onset infant obesity. 2. To lower the risk of obesity, it is important to educate mothers about correct infant feeding pattern early on. 3. In cases of early onset infant obesity, genetic causes and endocrinopathies must be excluded.

E-Poster Viewing: Obesity

THE PREVALENCE OF OBESITY AMONG ADOLESCENTS IN ALL REGIONS OF THE RUSSIAN FEDERATION

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Background

Obesity, being a global problem in many countries, has not bypassed Russian adolescents.

Objective. To study the prevalence of underweight, overweight and obesity among students in the Federal Districts at the age of 11 and 15 years.

Materials and Methods. The study includes data from 2023 schoolchildren of 11 and 15 years recruited in nine regions of the Russian Federation. The estimation of body mass index (BMI) was made according to the standard deviation score tables.

Results

In assessing the BMI in boys of 11 years in the regions of Russia, obesity was recorded in 18.6%, overweight in 15.4%, and underweight in 5.4%. Among boys of 15 years, obesity was detected in 10%, overweight in 11.5%, underweight in 8.5%. The total number of girls with overweight was 17% for the younger age group and 11% for the older. The number of girls with underweight was 20% for 11-year-olds and 26% for 15-year-olds.

Among girls of 11 and 15 years, regions from the Siberian (12.3%), Southern (10.9%) and Far Eastern (10.7%) Federal Districts were the leaders in the prevalence of obesity. Among boys aged 15 overweight ranged from 5% to 25%, the largest percentage was in boys of 11 years in the North-West Federal District, and the smallest (4.3%) in girls of 15 years in the Volga Federal District.

Conclusion

In this way, the study found that the prevalence rates of obesity are characterized by regional differences. The data obtained can be used in the development of regional programs aimed at preventing obesity in children.

E-Poster Viewing: Obesity

OCCURRENCE OF OVERWEIGHT AND OBESITY AMONG YOUNG FEMALE STUDENTS IN ASSOCIATION WITH BMI

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The study is designed to obtain the occurrence of obesity among 180 young female students of university, age 19-23 years in association with body mass index (BMI) according to WHO classification. A Questionnaire was prepared to collect information, including age, height, body weight, and socioeconomic status. Among 180 girls 18.33% (33) of girls were under weight, 58.88 % (106) were normal, 16.66 % (30) were overweight and 6.11 % (11) of girls were obese. Overweight was more common among female students than obesity. The dietary practices and choices of young female girls have been evaluated by using food frequency questionnaire and found majority of students were used to skipped breakfast and frequent consumption of fast food including burgers, pizzas and coca cola due to lack of knowledge on healthy balance diet and adverse effect of obesity. Healthy living, eating healthy balanced diet and regular exercise help to maintain standard body weight and health.

E-Poster Viewing: Obesity

NUTRITIONAL STATUS OF PREGNANT WOMEN IN AUSTRIA AND ITS INFLUENCE ON INFANTS' BIRTHWEIGHT

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Despite of various information and intervention programs, overweight and obesity remain on a high level in Austria with a prevalence of 41% in adults. According to the WHO Childhood Obesity Surveillance Initiative, overweight and obesity prevalence among Austrian 8-9 year olds is even rising at an alarming rate having reached about 30% in boys and 25% in girls. As childhood overweight and obesity often persist into adulthood, the upward trend poses a major public health challenge by giving further rise to chronic noncommunicable diseases.

Fetal nutrition plays a crucial role in the aetiology of obesity, however knowledge is lacking as to which nutritional factors exert the strongest influence on the lifelong weight development of the child. Despite of the importance of maternal nutrition in pregnancy for fetal growth, the latest Austrian nutritional report lacks current data on food consumption and nutrient supply in pregnant women living in Austria. Thus within the "Josef Ressel Centre for Early Life Metabolic Programming of Dispositions of Obesity" we analyse the food consumption and nutritional status of pregnant women using a food frequency questionnaire combined with a 24h-dietary recall. Out of a cohort of 100 healthy, non-obese (pre-pregnancy BMI 19.5 – 30 kg/m²), non-smoking women, the food and drink consumption of 27 Austrian women during the last trimester of their pregnancy in 2017 is presented and compared to national recommendations. Furthermore, a potential influence of the nutritional status on the birthweight of the child as a first risk factor for later overweight development will be deduced.

E-Poster Viewing: Obesity

PREVALENCE AND DETERMINANTS OF OVERWEIGHT AND OBESITY AMONG MOTHERS AND YOUNG CHILDREN IN RURAL KENYA

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Although overweight and obesity is rising worldwide, relatively fewer studies have examined overweight and obesity patterns in sub-Saharan Africa. The aim of this analysis was to explore prevalence and determinants of overweight or obesity among mothers and young children in rural Kenya.

A total of 192 generally healthy mothers, 18-49 years old, with at least one young child, ages 12-36 months, residing in Seme sub-County in Kenya were included in the analysis. Study participant's weight and height/length, and mother's waist and hip circumference were determined. Demographic, socio-economic and dietary intake information was collected. Logistic regression was utilized to examine associations between socio-economic, demographic and dietary intake indicators, and overweight/obesity.

Eight percent of children older than 24 months old were at risk of being overweight. No child was overweight or obese. Thirteen percent of the mothers were overweight, three percent were obese, twenty-nine percent had a waist circumference greater than 80 cm, eleven percent had a waist circumference greater than 88 cm and twenty-four percent had a waist to hip ratio above 0.85. Higher maternal education was associated with higher odds of children falling within the at-risk of overweight category. Higher household food insecurity score was associated with higher odds of mothers being overweight/obese while consumption of fruits was associated with lower odds of mothers being overweight or obese. Additional analysis will explore determinants of maternal abdominal obesity.

These results show presence of overweight/obesity in rural Kenya and contribute to the discourse on nutrition transition in low-income countries.

E-Poster Viewing: Obesity

PROBIOTIC INTAKE IN CHILDHOOD OBESITY: IMPROVEMENT OF CHRONIC INFLAMMATION

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Introduction: Low grade inflammation is one of the main characteristics associated to obesity, participating to the development of numerous comorbidities. The gut microbiota has been evidenced to interact with the host metabolic and inflammatory condition. We investigated the effect of an alimentary supplementation of *Bifidobacterium pseudocatenulatum* CECT 7765 on different elements of obese children health: gut microbiota global composition, inflammatory cytokines and cardiometabolic risk factors.

Methods: The study included 48 obese children with insulin resistance. They received dietary recommendations and a capsule of probiotic (10 CFU) or placebo daily for 13 weeks. Clinical, biochemical and gut microbiome measurement were made at baseline and at the end of the intervention.

Results: All children displayed body mass index (BMI) improvement consecutive to the intervention. Probiotic intake impacted gut microbiota, increasing the proportion of Rikenellaceae family, particularly the *Alistipes* genus. Regarding metabolic and inflammatory parameters, the children who received the probiotic displayed significant decrease in circulating high-sensitive C-reactive protein ($P=0.026$), and monocyte chemoattractant protein-1 ($P=0.032$) and an increase in high-density lipoprotein cholesterol ($P=0.035$) and omentin-1 ($P=0.023$) compared to the placebo group.

Conclusion: The global BMI diminution reveals the benefits provided by the dietary changes. Complementing this intervention with *B. pseudocatenulatum* CECT 7765, the gut microbiota has been modified, with an increase of bacterial groups associated to lean phenotypes. In parallel, those children displayed a greater improvement on inflammatory and metabolic status. Our results suggest modulation of gut microbiota with probiotic as an tool to improve obesity-related alterations in children.

E-Poster Viewing: Obesity

DETERMINATION OF THE THRESHOLD PERCEPTION OF SALTY TASTE IN MOROCCO

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Background

Adhering to the World Health Organization recommendations to reduce the average salt consumption of people by 30% within 2025, Morocco has developed a Salt consumption's reduction plan to strengthen the prevention of Non-communicable diseases. The present study is a masterpiece of this national strategy as its objective is to determine the threshold of salty taste perception among the Moroccan population. Outcomes of this study will be considered by the national salt reduction plan in the gradual reduction of salt content in processed foods.

Methods

The study involved 201 testers divided into 4 ages. They tested NaCl solutions at concentrations of 1, 2, 4, 8, 15, 30, 60, 125, 250 and 500 mmol/l in random order using the blind method Alternative Forced Choice .

Results

The results show that 38.80% of the testers started to perceive the salty taste at the concentration 30 mmol / l (1.75 g / l) while 31.84% of the testers perceived salty taste at the concentration 15 mmol / l (0.875 g / l).

The chi-square test shows a significant correlation between the perception of salty taste and gender ($p = 0.035$ value) and the perception of salty taste and BMI ($p = 0.034$). Age has no significant effect on the perception threshold of salty taste (p value 0.500)

Conclusion

This study revealed that Moroccan women and men perceived the salty taste differently; and showed that there is a correlation between the salt perception and the BMI.

Keywords: Salty taste, Perception threshold, Morocco

E-Poster Viewing: Obesity

FACTORS THAT PREDICT ABNORMAL GROWTH

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Background and aims

The main aim of the study is to identify the primary trajectories of Body Mass Index (BMI) development. More specific, the aim is to identify the trajectories that may lead to overweight or obesity for children at later stages of life and which factors are affecting this abnormal growth.

Methods

The longitudinal data consists of growth measurements from 6906 Finnish children from six birth cohorts: 1974 (n=1108), 1981 (n=977), 1991 (n=586), 1995 (n=786), 2001 (n=765) and 2004 (n=2684). The anthropometric data was collected from birth up to age 15 in the health records as well as the pregnancy health data for birth cohorts 1991, 1995, 2001 and 2003-04. From 624 children in birth cohorts 1995 and 2001 lifestyle factors and other background determinants were collected.

A trajectory analysis was used to identify trajectories for BMI development. Factors that lead to abnormal growth tracks were analyzed using Structural Equation Models (SEM).

Results

Trajectory analysis identified four main trajectories of BMI growth. Two of these trajectories doesn't seem to follow the normal growth pattern. The highest growth track appears to lead to overweight while the low growth track differs among the sexes.

Maternal factors, lifestyle and other background determinants were affecting the abnormal growth tracks differently for boys' and girls'.

Conclusion

Trajectory analysis provides a powerful tool to analyse longitudinal data and the development of BMI. Study results suggest that primary prevention strategies for child obesity should start early by targeting maternal pre-pregnancy BMI and gestational weight gain.

E-Poster Viewing: Obesity

ADVERSE CHILDHOOD EVENTS, INTERNALISING AND EXTERNALISING SYMPTOMS AS A WEIGHT STATUS PREDICTORS IN SCHOOL AGE CHILDREN

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Background and aims: Adverse childhood events (ACE) significantly increase the risk of obesity in adulthood, nevertheless the mechanism of the ACE – obesity association was not examined in details. Moreover, the question remains if the association between ACE and obesity is already visible in childhood. The aim of the study was to assess effects of ACE on underweight, overweight and obesity rate and their relation to behavioral and emotional disorders as a possible mediating factors.

Method: The sample included 285 boys and 262 girls in age of 6-12y. TESI-PRR questionnaire was used to assess ACE. The IOWA Conners Scale was applied to assess externalizing symptoms (ES), ADHD and oppositional-defiant disorder (OD) symptoms. The Mini-KID interview was used to assess internalizing symptoms (IS), including depression (DE) and anxiety disorders (AD) symptoms. Underweight, overweight and obesity were diagnosed according to IOTF criteria.

Results: ACE were a significant predictor of DE (OR=1.92, $p=0.01$), OD (OR=2.17, $p=0.01$) and hyperactivity (OR=1.98, $p=0.04$) in unadjusted analysis. ACE, but not IS and ES, were also related to increased prevalence of underweight (OR=2.70, $p=0.001$), overweight/obesity (OR=1.70, $p=0.02$) and obesity (OR=5.50, $p=0.0008$). Similar results were found when sex, socioeconomic status, IS and ES were controlled. Independently to applied analysis, IS and ES were not associated to weight status.

Conclusions: Adverse childhood events are related to internalising and externalising symptoms and both underweight and obesity risk, but internalising and externalising symptoms don't play mediating role in the ACE-weight status association.

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E-Poster Viewing: Obesity

COMPARISON OF TRI-PONDERAL MASS INDEX AND BODY MASS INDEX IN THE PREDICTION OF METABOLIC SYNDROME IN CHILDREN AND ADOLESCENTS

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Background: Body mass index (BMI) and Tri-Ponderal mass index (TMI) are anthropometric measures to evaluate body adiposity in the various age groups. The present study aims to compare the predictive value TMI and BMI for metabolic syndrome (Mets) in children and Adolescence for both genders.

Methods: A cross-sectional study conducted on 3731 Iranian children and adolescents aged 7–18 years obtained from the fifth survey of ‘Childhood and Adolescence Surveillance and Prevention of Adult Non-communicable Disease’ (CASPIAN-V) study. The predictive value of BMI and TMI for MetS were determined using Receiver-operator curves. Logistic regression analysis was used to assess the relationship between these indices with MetS.

Results: 52.6% of participants were boys. The age means (standard deviations) for boys and girls were 12.62 (3.02) and 12.25 (3.05) years, respectively. In boys, the area under the curve (AUC) of TMI was greater than BMI for all age groups. AUC of TMI was also greater than BMI for age group of 11-14 years (AUC= 0.743; 95% CI (0.672, 0.811)) in girls. Furthermore, our findings showed that odds ratio of Mets for TMI was greater than BMI in age groups of 11-14 years (OR= 1.332 vs 1.223) and 15-19 years (1.160 vs 1.145) in girls and boys, respectively.

Conclusion: TMI and BMI had moderate diagnostic accuracy for identifying MetS. However, TMI was better predictor of MetS than BMI in both genders, especially the age groups 11-14 and 15-19 years for girls and boys

E-Poster Viewing: Obesity

OPTIMAL CUT-OFF POINTS OF WAIST CIRCUMFERENCE FOR DEFINING OBESITY AMONG MYANMAR SCHOOL CHILDREN

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Background: Childhood obesity is a growing problem and has reached epidemic levels in many countries around the world . Body Mass Index(BMI) is the most frequently used measure for obesity and waist circumference is also used to define obesity. The aim of the study was to determine cut-off value of Waist Circumference for defining Obesity among Myanmar School children

Methods: This was a cross-sectional study. A total of 2852 between the ages of 7 and 13 years of Primary School Children were participated in the study . Weight ,height and waist circumferences(WC) of the children were measured with standard procedure and equipment. The obesity was defined by BMI for age and sex according to WHO growth chart 2007.The optimal cut-off points for the diagnosis of obesity by WC was generated by the receiver operating characteristic curves (ROC).

Results: Using BMI cut-off points by WHO growth chart 2007(BMI > + 2SD), the overall prevalence of obesity in the study population was 3.0% (4.0% in boys and 1.9% in girls). Mean(SD) waist circumferences of boys and girls were 55.7(8.1) and 53.6 respectively. Optimal cut-off values of WC to identify obesity for boys and girls were 62.4 cm (sensitivity 84% and specificity 90%) cm and 61.1cm(sensitivity 84% and specificity 91%) respectively. Area under the ROC curve of waist circumferences were 0.90 for boys and 0.92 for girls.

Conclusion: The growth pattern of children depend on age and sex, therefore the gender and age specific cut off of waist circumference is more needed to explore.

E-Poster Viewing: Obesity

THE ASSOCIATION BETWEEN HOMA IR, HOMA S, HOMA B AND DIETARY INTAKE WITH OBESITY IN INDONESIAN ADOLESCENTS

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Background and Aim: Prevalence of adolescent obesity was progressively increasing every year. Previous study in Indonesian obese female adolescent showed that insulin resistance that occurred in parents was associated with insulin resistance among obese adolescents. The aim of this study was to determine the association between insulin resistance, sensitivity, secretion and dietary intake with obesity in Indonesian adolescents.

Methods: This unmatched case control study involved 261 students of ten high schools in Yogyakarta, Indonesia. The subjects were obese and normal adolescents with age between 16-18 years old. Body weight, height, fasting blood glucose and fasting insulin were assessed. Insulin resistance, insulin sensitivity and insulin secretion were determined by HOMA IR, HOMA S, and HOMA β , respectively. Dietary intake including energy, protein, fat and carb measured using semi-quantitative food frequency questionnaire.

Results: Mean of body weight, BMI, waist and neck circumference, fasting insulin level, HOMA IR, HOMA S, HOMA β , energy and carb intake were higher in case group ($p < 0.05$). Moreover, HOMA IR (OR: 21.95; 95% CI: 9.08-60.10), HOMA S (OR: 7.30; 95% CI: 3.23-18.59), HOMA β (OR: 3.42; 95% CI: 1.87-6.38) and energy intake (OR: 6.81; 95% CI: 3.79-12.28) were risk factor for incidence of obesity in Indonesian adolescent ($p < 0.001$). Among those factor, energy intake had the biggest effect on incidence of adolescent obesity (z : 5.05; $p < 0.001$).

Conclusion: Excessive energy intake had the biggest effect on obesity in Indonesian adolescents.

Table 1. HOMA indexes in case and control group

Variable	Case		Control		OR	95% CI	p
	n	%	n	%			
HOMA IR							
High (>3,16)	54	50,94	7	4,52	21,95	9,08-60,1	<0,01
Normal(<=3,16)	52	49,06	148	95,48			
HOMA %S							
Abnormal	98	92,45	97	62,58	7,3	3,23-18,59	<0,01
Normal (>50%)	8	7,55	58	37,42			
HOMA β							
High	85	80,19	84	54,19	3,42	1,87-6,38	<0,01
Normal	21	19,81	71	45,81			

Table 2. Dietary intake between groups

Variable	Case		Control		OR	95% CI	p
	n	%	n	%			
Energy intake							
High	73	68,87	38	24,52	6,81	3,79-12,28	<0,01
Normal	33	31,13	117	75,48			
Carb intake							
High	30	28,30	44	28,39	1,00	0,55-1,78	0,99
Normal	76	71,70	111	71,61			
Refined carb intake							
High	81	76,42	136	87,74	0,45	0,22-0,91	0,02
Normal	25	23,58	19	12,26			

E-Poster Viewing: Obesity

EFFECT OF ORAL INGESTION OF LOW-MOLECULAR COLLAGEN PEPTIDE DERIVED FROM SKATE (RAJA KENOJEI) SKIN ON BODY FAT IN OVERWEIGHT ADULTS: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

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Collagen peptide derived from Skate (*Raja kenoei*) Skin was reported to have anti-obesity effects through suppression of fat accumulation and regulation of lipid metabolism. No studies have yet been performed in human. This randomized, placebo-controlled, double-blind study was designed to investigate the efficacy and tolerability of skate collagen peptide (SCP) for reduction of body fat in overweight adults. Total body fat mass was measured by whole body dual energy X-ray absorptiometry. Reports of adverse events were collected throughout the study. Ninety subjects were randomly assigned to receive either 2,000mg of skate collagen peptide (SCP) per day (n=45) or placebo (n=45) for 12 weeks; no differences in total body weight, lipid profile, free fatty acid, and adiponectin were observed between the two groups. However, the body fat in the SCP group was found to be significantly better than that of subjects in the control group (-1.2% vs. 2.7%, $P = 0.024$). SCP was well tolerated, and no notable adverse effects were reported. These results suggest the beneficial potential of SCP in reduction of body fat in overweight adults. Further studies are required to determine the optimal dose and duration of SCP supplementation to confirm the first-stage study results for clinical application.

E-Poster Viewing: Obesity

HOT AND COOL EXECUTIVE FUNCTIONS IN SCHOOL-AGED CHILDREN – HOW DO THEY RELATE WITH CHILDREN'S WEIGHT STATUS AND BODY COMPOSITION?

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Background and aims: There is growing evidence that poor cognitive functioning may be associated with the risk of obesity. The objective of the study was to examine the association of the hot and cool executive functions (EF) with body mass and composition in school-aged children.

Method: The sample included 254 boys and 233 girls aged 7-12. Underweight, overweight and obesity were diagnosed according to IOTF criteria. The body size and proportions were assessed by BMI and WHR. The electric bioimpedance method (TANITA MC-980) was applied to assess the children's body composition (BC). The following methods were applied to assess cool EF – the Stroop Color-Word Interference Test (SCWT), the Continuous Performance Test (CPT), the Trial Making Test (TMT). The Hungry Donkey Task (HGT) and the Delay of Gratification Task (DGT) were used to assess hot EF.

Results: TMT was associated with body fat (BF, $r=0,095$, $p<0,05$) and fat free mass ($r=-0,106$, $p<0,05$). CPT was associated with WHR ($r=0,118$, $p<0,05$). CPT was significant predictor of being obese but not overweight (Wald=180,564, $p<0,0001$). DGT was significant predictor of WHR result (R-squared=0,021, $p<0,05$) and associated with excess weight ($\Phi=0,118$, $p=0,014$). HGT was not associated neither with weight status nor BC.

Conclusions: The better cool executive functioning, the greater chance for lower amount of BF and not being obese. The better ability to delay gratification (hot EF), the lower children's WHR, however, the affective decision making function is not a significant predictor for children's body weight status.

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E-Poster Viewing: Obesity

BREASTFEEDING DIFFICULTIES, BREASTFEEDING DURATION, AND MATERNAL BMI: ARE THEY RELATED?

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Background and aims

Maternal overweight and obesity are associated with increased breastfeeding difficulties. We aimed to examine the influence, if any, of maternal body mass index (BMI), and of breast and nipple anatomic variations, upon breastfeeding difficulties and breastfeeding duration.

Methods

This a prospective, observational study in 109 breastfeeding mothers of full term newborns. Healthy women were classified as underweight, normal weight, overweight and obese using the WHO definitions. Demographic and breast anthropometrics assessments were recorded after delivery. Breastfeeding duration was assessed by phone interview at 3, 6 or 24 months post-delivery.

Results

The four pre-pregnancy BMI groups included 12 underweight, 59 normal weight, 20 overweight and 18 obese women. The higher the BMI, the larger the breast ($p=0.005$). In univariate regression, nipple diameter correlated significantly with breast size ($R^2=5.7\%$, $p=0.014$). A total of 14 participants were lost to follow up in terms of exclusive breastfeeding (table 1). Follow up on the remaining mothers showed that exclusive breastfeeding at 6 months of age (BF-6) was significantly negatively associated with breast size ($p=0.025$ by ANOVA with Bonferoni correction). In backward logistic regression analysis we found that (1) the higher the BMI, the lower the likelihood of BF-6 (odds ratio (OR) = 0.88, 95% CI, 0.79-0.99); (2) the higher the birth order, the higher the likelihood of BF-6 (OR = 3.36, 95% CI, 1.44-7.83).

Conclusions

We concluded that large breast size and to a lesser extend high pre-pregnancy BMI have a negative impact on breastfeeding initiation and duration.

Table 1: Duration of Breastfeeding

	Underweight (n=12)	Normal (n=59)	Overweight (n=20)	Obese (n=18)
Breastfeeding at least 6 months (%)	6 (66.7)	42 (76.4)	8 (47)	7 (50)
Breastfeeding less than 6 months (%)	3 (33.3)	13 (23.6)	9 (52.9)	7 (50)
Lost to Follow-up	3	4	3	4

E-Poster Viewing: Obesity

MELATONIN IN CHILDHOOD OBESITY: ASSOCIATION WITH ALTERED METABOLIC MARKERS

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Introduction: Circadian rhythms are the changes in biological processes occurring with a period of 24h, such as numerous reactions involved in the metabolic homeostasis. Melatonin is the main circadian hormone, which level increases in the evening in preparation for sleep. Alterations in circadian rhythms are evidenced by impaired melatonin expression, and in adult age, this condition is associated to metabolic dysregulations.

Methods: One group of obese children and a control group were constituted based on their BMI percentile for age and sex. The variations of the main circadian hormone, melatonin, are assessed in saliva by immunoassay, while hormonal levels are measured in blood samples with Luminex technology. Life habits are assessed by self-reported questionnaires. Preliminary results on 14 patients (7 obese and 7 controls).

Results: The children from the obese group displayed poorer metabolic characteristic and increased inflammation markers: C-reactive protein, Gamma-glutamyl transferase, albumin, monocyte chemoattractant protein-1 are altered. In the control group, melatonin in saliva increased during the evening ($+20,46 \pm 16,1$), whereas in the obese group, the melatonin profile was altered and globally decreased ($-3,05 \pm 28,4$).

Conclusion: In conclusion obesity seems to be associated with circadian rhythm impairment even at a young age. The continuation of this study, in association with other studies investigating circadian rhythms and health during childhood will facilitate the development of life habits prevention campaigns, adapted to the children physiology and development.

E-Poster Viewing: Obesity

GROUP BASED TRAJECTORY MODELLING FOR BMI TRAJECTORIES IN CHILDHOOD: A SYSTEMATIC REVIEW

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Background

Childhood obesity is associated with obesity in later life and is a risk factor for multiple non-communicable diseases. We aimed to systematically review studies that have used group-based trajectory modelling approaches to investigate BMI trajectories in early childhood, associated determinants, and association with body composition outcomes.

Methods

MEDLINE, CINAHL, EMBASE, Scopus, and Web of Science were searched systematically for studies using group-based trajectory modelling approaches to track BMI trajectories from birth. A minimum of four assessment points was required for inclusion. PRISMA guidelines were followed throughout.

Results

14 studies using latent class growth analysis or growth mixture modelling to track BMI trajectories were identified. Three or four trajectories were identified by most studies. Stable-average and trajectories characterised by rapid weight gain were identified by all studies. High maternal pre-pregnancy BMI was the most frequently identified risk factor for membership of a rapid gain trajectory. Significant associations between rapid weight gain and stable high trajectories and body measures at follow-up were identified by several studies, including higher BMI and fat mass index.

Conclusion

Relatively similar trajectories were identified across studies. Trajectories characterised by rapid weight gain were associated with several predictors, as well as body measures at follow-up, however not with great consistency. Similar associations with body measure outcomes were found for stable-high and rapid gain trajectories, suggesting that long-term outcomes do not differ greatly between children with consistently high BMI and children with rapid increases in BMI. As the shape and timing of the trajectories differed between studies it is difficult to draw conclusions.

E-Poster Viewing: Obesity

A COMPLEX INTERACTION BETWEEN MATERNAL AGE, NUTRITIONAL STATUS AND PREGNANCY OUTCOMES - RESULTS FROM THE CRIBS BRITH COHORT STUDY

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The CRoatian Islands Birth Cohort Study (CRIBS) is the first birth cohort study ever conducted in Croatia and Southeastern Europe, designed to prospectively follow a sample of 500 pregnant women and their children up to two years of age. The aim is to assess the prevalence of risk factors for the metabolic syndrome (MetS) and other NCDs in Croatia. This study presents data of 296 mother-child dyads from CRIBS. Maternal age ranged from 19 to 41 years, with the mean age of 29.7 years. On average, women in our study gained 15.3 kg of weight during pregnancy. Their mean pre-pregnancy BMI was 22.8 kg/m² (15.7 kg/m² - 45.2 kg/m²). According to their pre-pregnancy BMI, 6.4% of our participants were underweight, 74.4% were normal weight and 19.2% were overweight or obese. Although the majority of our pregnant women was in the normal pre-pregnancy BMI category (74.4%), there were more women aged > 35 in the overweight and obese category. According to our results, the risk of being overweight or obese also increased with the number of pregnancies, which indicates possible accumulation of weight between pregnancies. Additionally, a trend of higher rate of Caesarean section was observed in the overweight/obese category. In conclusion, pregnancy should be planned before 35 years of age, if possible, and women should be encouraged to enter a new pregnancy only when the desired pre-pregnancy body weight is accomplished. This will then also prevent possible adverse pregnancy outcomes, such as Caesarean section.

E-Poster Viewing: Obesity

PERCEPTIONS OF CHILD OBESITY ON THE PART OF PARENTS WHO UNDERWENT BARIATRIC SURGERY

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Introduction

We noticed a recent increase in prevalence of families in whom more than one member underwent a bariatric surgery. The aim of our study was to assess the perception of child obesity by the parent who underwent a bariatric surgery compared to parents who did not.

Methods

Cross-sectional survey by interviewing families in which one/ both parents underwent a bariatric surgery (bariatric group) and compared it to families in which parents did not (control group). The children of both groups were overweight/obese and were treated at the Obesity Clinic of Dana Dwek Children's Hospital.

Results

Thirty-six children (mean age 10.6 years, 18 in each group, matched for age and sex) were recruited. There were no group differences in sociodemographic parameters. All 18 children in the bariatric group had an obese family member compared to 12 (67%) in the control group ($p<0.02$). The parents in the bariatric group were more likely to agree that weight plays an important role in determining the self-image of the child, were more likely to think that a child's obesity is a health problem and that the number of friends a child has is related to the child's weight ($p<0.05$, Table 1). Twenty-eight percent of "bariatric group" children thought they would need bariatric surgery compared to none in the control group, ($p<0.02$), with a similar trend among the respective parents (44% vs. 11%, $p<0.07$).

Conclusion

"Bariatric families" have a different understanding of the implications of childhood obesity and different perception regarding the intervention needed to treat it.

Table 1: Perception and attitudes of parents towards child obesity

Question (answer on a scale of 1-5)	Bariatric group	Control group	P value
My child's weight influences his/her self-image	4.28	3.67	0.03
My child's weight puts his/her current health at risk	4.06	2.89	0.04
My child's weight puts his/her future health at risk	4.89	3.78	0.007
The number of friends my child has is related to his/her weight	2.56	1.78	0.03
My child needs outside intervention in order to lose weight	4.39	3.56	0.02
Weight is determined by fate	2.00	1.82	NS
I'm worried that my child will be overweight in the future.	4.5	4.11	NS
Exercising regularly is needed in order to lose weight	4.5	4.44	NS
Healthy nutrition is needed in order to lose weight	4.72	4.67	NS
Does your child's weight put him/her at risk of the comorbidities of obesity? (yes/no)	2 / 16	3/5	NS
Do you think your child will need bariatric surgery? (y/n)	8/10	2/16	0.07
Are you satisfied with your bariatric surgery? (y/n)	15/3		
Do you consider your bariatric surgery successful? (y/n)	13/5		
Looking back – would you choose to do it again? (y/n)	15/3		

E-Poster Viewing: Obesity

ASSOCIATIONS OF DIETARY INFLAMMATORY INDEX WITH BIRTH OUTCOMES AND WEIGHT STATUS AT AGE 5 AND 9: RESULTS FROM THE LIFEWAYS CROSS-GENERATION COHORT STUDY

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Background and aims

Maternal diet and chronic inflammation may influence early-life offspring health. No comparative data regarding parental or intergenerational associations between dietary inflammation and offspring growth exist. We investigated potential associations between maternal, paternal and grandparental dietary inflammatory index (DII) with offspring birth outcomes and childhood adiposity.

Methods

This analysis of the Lifeways Cross-Generation Cohort Study includes 1082 mother-child pairs, 333 index-child's fathers and 707 grandparents. Energy-adjusted DII (E-DII) scores were derived from a validated FFQ for expectant mothers, fathers and up to four grandparents. Birth outcomes were abstracted from hospital records. Childhood BMI was determined at age 5 and 9 years. Logistic regression and mediation analyses were performed.

Results

After adjustment for confounders, higher maternal E-DII scores, reflecting a more pro-inflammatory diet, were associated with increased risk of low birth weight (LBW) (OR:1.20; 95% CI:1.02-1.47; $P=0.03$). Higher maternal grandmothers' (MGM) E-DII scores were associated with increased risk of macrosomia (OR 1.35, 95% CI 1.02-1.79, $P=0.03$). Higher paternal and paternal grandmothers' (PGM) E-DII scores were associated with greater risk of childhood overweight/obesity at 5 years (OR: 1.03; 95% CI:1.01-1.19; $P=0.04$ and OR: 1.07; 95% CI:1.05-1.09; $P=0.01$, respectively). The association with the PGMs' E-DII persisted at age 9 (OR:1.13; 95%CI:1.01-1.90; $P=0.04$). Mediation analysis results were inconclusive.

Conclusions

Dietary inflammation is associated with adverse offspring birth outcomes and childhood adiposity. A more pro-inflammatory maternal line diet appears to influence early-life growth whereas the paternal line influences childhood weight status.

Acknowledgements

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TABLE Associations between parental DII scores and binary offspring outcomes at birth¹

<i>DII scores</i>	Low birth weight		Macrosomia		Preterm birth		Post-term birth	
	Unadjusted	Multivariable	Unadjusted	Multivariable	Unadjusted	Multivariable	Unadjusted	Multivariable
<i>Maternal</i>								
T2	1.01 (0.47, 2.13)	1.02 (0.40, 2.59)	1.14 (0.78, 1.67)	1.11 (0.72, 1.71)	1.25 (0.63, 2.51)	1.35 (0.57, 3.18)	1.81 (0.82, 3.97)	1.64 (0.66, 4.09)
T3	1.76 (1.02, 3.49)*	1.85 (0.79, 4.27)	0.98 (0.67, 1.46)	1.00 (0.64, 1.57)	1.46 (0.73, 2.90)	1.67 (0.71, 3.94)	1.87 (0.84, 4.14)	1.72 (0.68, 4.34)
Cont.	1.17 (1.01, 1.37)*	1.20 (1.02, 1.47)*	0.98 (0.90, 1.08)	1.01 (0.91, 1.12)	1.09 (0.93, 1.28)	1.15 (0.94, 1.40)	1.18 (1.00, 1.41)*	1.14 (0.92, 1.41)
<i>P_{trend}</i>	0.04	0.03	0.74	0.25	0.27	0.16	0.04	0.12
<i>Paternal</i>								
T2	0.33 (0.03, 3.19)	0.45 (0.04, 5.15)	0.75 (0.39, 1.46)	0.58 (0.24, 1.40)	0.47 (0.11, 1.93)	0.53 (0.08, 3.39)	0.23 (0.05, 1.10)	0.24 (0.05, 1.25)
T3	1.70 (0.39, 7.29)	2.17 (0.36, 12.90)	0.85 (0.44, 1.62)	0.58 (0.24, 1.43)	0.82 (0.24, 2.79)	0.94 (0.16, 5.42)	0.73 (0.24, 2.20)	0.50 (0.14, 1.79)
Cont.	1.14 (0.76, 1.71)	1.34 (0.71, 2.53)	0.98 (0.84, 1.14)	0.89 (0.71, 1.11)	0.86 (0.64, 1.17)	0.87 (0.56, 1.37)	0.97 (0.72, 1.29)	0.85 (0.63, 1.15)
<i>P_{trend}</i>	0.51	0.37	0.76	0.29	0.34	0.55	0.82	0.30

¹Values are OR (95% CI) expressed for 10-point increment in DII scores for continuous analysis and with reference to the lowest tertile (T1) for tertile analysis. Multivariable models were adjusted for maternal and paternal socio-economic status, education status, marital status, cigarettes smoking and alcohol consumption, household income, age at recruitment, pre-pregnancy body mass index, and child sex (for overweight and obese status child sex was intrinsically adjusted). Missing covariate information was handled by pooling effect estimates from 20 multiply-imputed datasets. *p<0.05

E-Poster Viewing: Obesity

DISCLOSURE OF DIETARY INTAKE INFORMATION AND CHANGE IN WEIGHT

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Background and aims We designed a school-based individual intervention to reduce the prevalence of obesity in primary school children through disclosure of dietary intake information. The aim of this study was to assess the effect of disclosure of dietary intake information on weight.

Methods Schools were randomly allocated to an intervention group (2schools, n=810) or a control (2schools, n=1,373) group which consisted first grade to fifth grade aged 6yr to 11yr. Of 641 participants (response-rate: 29.4%), we analysed 156 participants in intervention group and 88 participants in control group. We delivered self-reported questionnaire about weight at the beginning of September to both groups. In only intervention group, brief self-administered diet history questionnaire (BDHQ) ⁽¹⁾ was additionally distributed to the parents. The individual dietary intake results from BDHQ were disclosed the parents of intervention group with leaflet of paediatric obesity as the intervention.

The outcome variables were change in self-reported weight during 1months after intervention. The outcomes were compared between the groups categorised “Intervention non overweight and obese” vs “Control non overweight and obese” and “Intervention overweight and obese” vs “Control overweight and obese”. We used ANCOVA to assess differences in weight change between the groups.

Results Significant difference between pre and post weight was found among the groups without intervention overweight and obese category. In contrast, no significant difference between pre and post weight was found among the intervention overweight and obese group.

Conclusion Disclosure of dietary intake information to parents appears to be useful to prevent weight-gain in overweight and obese children.

E-Poster Viewing: Obesity

NONALCOHOLIC FATTY LIVER DISEASE IN CHILDREN

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AIMS:

The aim of this study is to investigate the clinical and laboratory characteristics of nonalcoholic fatty liver disease (NAFLD) in a referral center of pediatrics in the northwest of Iran.

METHODS:

In this cross-sectional study all subjects aged between six months to 15 years that were referred to the sonography unit, were investigated for fatty liver from March 2005 to August 2006. Patients with fatty liver change underwent detailed clinical and laboratory evaluation.

RESULTS:

From 1500 children who were investigated, 34 subjects with sonographic evidence of fatty liver were enrolled in this study (2.3%). The mean age was 6.53 +/- 3.07 years. Elevated aspartate aminotransferase and alanine aminotransferase was detected in 38.2% and 47.1% of patients, respectively. The mean level of cholesterol was 461 +/- 182.23 mg/dl and 94.1% of patients had hyper cholesterolemia. Total cholesterol level and serum aminotransferase levels had a significant positive correlation with severity of fatty liver ($p < 0.05$). Mean body mass index was significantly higher in patients with severe fatty liver ($p < 0.05$).

CONCLUSION:

The epidemiology of pediatric NAFLD should inform future attempts to develop evaluated screening protocols. Moreover, these data should guide efforts to delineate the pathophysiology of fatty liver in children.

E-Poster Viewing: Obesity

CASE REPORT OF SEVERE OBESITY WITH OBSTRUCTIVE SLEEP APNEA NEEDING INPATIENT ADMISSION FOR OPTIMIZATION OF BIPAP THERAPY AND FOR MULTI-DISCIPLINARY MANAGEMENT OF OBESITY.

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Prevalence of obstructive sleep apnea (OSA) is rising in obese Singaporean children and many remain undetected due to poor parental and patient perceptions. Compliance rates for non-invasive ventilation (NIV) is low in our local settings.

Our index patient Omar was noted to have severe obesity (BMI 42) with OSA score of 40 for which he was recommended for NIV initiation. Omar has a complex social background and suffered from physical abuse by his biological mother which also caused post-traumatic stress disorder (PTSD) with depression further complicating his road to recovery. He is also unsupervised most of the days leading to greater concerns for non-compliance to therapy. In view of such risk factors, the medical team had made a conscious decision for inpatient management to initiate the lifestyle changes needed in our patient.

As part of the educational initiation processes for NIV, we provide anticipatory guidance about the potential complications of NIV to prepare our patients and their parents for long-term use of NIV. Our centre facilitates Family-based therapy (FBT) with close monitoring and follow-up to facilitate NIV use while also targeting exercise regimes and dietary modifications for concurrent weight loss. There has been an increase in incidence of inpatient management of severe obesity to ensure the various disciplines work together on a regular basis to re-inforce the need for urgent intervention for the patient and to emphasize the urgency needed for treatment as obesity is becoming an epidemic.

E-Poster Viewing: Obesity

ASSOCIATION BETWEEN EARLY GROWTH PATTERN AND LATER OBESITY IN SRI LANKAN ADOLESCENTS

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Background and Aims

Growth pattern in early life is increasingly recognized as a factor of obesity in later life. This study aimed to identify the association between growth pattern in the first year of life with anthropometry and body composition during adolescence.

Methods

A cross-sectional study was conducted in 303 children aged 11-13 years from 12 urban schools selected through stratified-cluster sampling. Weight, height and waist circumference were measured. Fat-mass (FM) was assessed using population-specific prediction equations following Bio-electrical Impedance Analysis. Birth weight and weight at 12-months were extracted from the Child-Health-Development-Record. An increase in weight SD score (SDS) by ≥ 0.67 between birth and 12-months was defined as accelerated growth.

Results

The mean age was 12.2 years (SD 0.87) and 52.5% (n=159) were females. 108 (31.3%) had accelerated growth during the first year of life. High (>3.5 kg) birth weight was associated with overweight/obesity in adolescence (OR=8.9, 95%CI 2.7-29.5). Accelerated growth, after adjusting for birth weight, was significantly associated with overweight/obesity (OR=2.2, 95%CI 1.2-4.0) and high %FM (OR=1.8, 95%CI 1.04-3.1), but not with height-SDS, in adolescence. Low-birth weight children with accelerated growth had higher %FM at 11-13 years as compared to those with normal growth during the first year of life (71% Vs 22.2%, $p=0.013$).

Conclusions and Recommendations

Accelerated growth in early life, is associated with obesity and increased FM but not with linear growth in adolescence, and therefore, seems to occur through increasing fat-mass than the fat-free-mass. Hence, it is important to ensure optimum growth rate during the first year of life.

E-Poster Viewing: Obesity

LONG-TERM GROWTH FOLLOW-UP OF A INFANTS COHORT WITH A HISTORY OF EXCESSIVE WEIGHT GAIN WITH EXCLUSIVE BREASTFEEDING

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Childhood obesity has acquired epidemic characteristics, with early onset ages, severe and tracking effect of complications towards adulthood. The velocity of weight gain during the first months of life and the type of feeding could influence later weight in childhood.

We found a group of patients that are born with adequate weight and height and have an excessive weight gain from the first month of life, being fed with exclusive breastfeeding.

Aim: characterize the nutritional, clinical and metabolic status characteristics of a cohort of patients with excessive weight gain during the first year of life with exclusive breastfeeding, in the long term follow up.

Population: All the patients who were followed in the nutrition service in the period 2003-2015 who had excessive weight gain during the first year of life with exclusive breastfeeding were recruited prospectively.

Materials and methods: Prospective, cross-sectional, observational study of a cohort with a history of excessive weight gain during the first year of life with exclusive breastfeeding. Anthropometry was performed with measurement of weight, height, BMI, study of body composition with folds (%fat-mass and muscle-area) and laboratory tests.

Results: 26 patients, 11 men. 88.5% were obese or overweight. All but 1 patient have waist-pathological size as an indicator of central distribution of fat. We did not find important metabolic markers: Insulin Resistance in 25% of patients. At evaluation, 50% of mothers and 77% of fathers were overweight or obese.

Conclusions: At the time of the evaluation, 88% of the patients recruited continue to present overweight and obesity.

E-Poster Viewing: Obesity

EVALUATING STUDENTS' BEHAVIORS THAT LEAD TO FOOD DISORDERS. DOES THE LEVEL OF EDUCATION AFFECT THESE BEHAVIORS?

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Purpose of the study:

The assessment of the level of health education in the emergence of behaviors that orient toward food disorders to the student of the Faculty of Medical Technical Sciences in order to identify problems where they should intervene to make it possible to improve these behaviors.

Study Methods:

This is a cross-sectional study conducted during the period Aprile-June 2017. This study was attended by 305 students of the Faculty of Technical Medical Sciences. The self-administered questionnaire was used.

Specific Objectives:

The assessment of the level of health education in the emergence of behaviors that orient toward food disorders among students of the Faculty of Technical Medical Sciences. Assessing the distribution of students according to behaviors that indicate a risk for food disorders by academic year

Results:

48% of overweight students of the first year present a risk to food disorders. Also from the first year, 28.7% of students underweight and 24.3% of students in normal weight are at risk for food disorders. By the third year, this risk represents 38.3% of obese students. The level of health education is of great importance, closely related to getting students' knowledge, which seems to affect the appearance of different behaviors versus food. As in the first year and the third year, students seem not to be at the proper level of behavior toward food, as this appears to be their risk of developing a disorder in nutrition. The best orientation is to keep in touch with nutrition and direction to a specialist doctor to prevent a possible fatal consequence.

E-Poster Viewing: Obesity

GENETIC PREDICTORS OF THE EFFECTIVENESS OF THE STANDARD LOW-CALORIE DIET IN OBESE CHILDREN

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Background: Polymorphism of genes that regulate fat metabolism in obese patients can be considered as predictors of the effectiveness of diet therapy.

Aim: The study was to investigate the genetic predictors of standard low-calorie diet at different polymorphic variations ApoE and LPL genes in obese children.

Materials and methods: Our study involved 88 obese teenagers aged 15 to 19 years. Study of lipid metabolism includes the determination of total cholesterol, triglycerides, low-density lipoprotein, high-density lipoprotein determined by spectrophotometry and immuno turbidimetry. Analysis of polymorphisms of LPL gene Ser447Ter (c.1595C>G), Cys112Arg (c.388T>C) and Arg158Cys (c.526C>T) of ApoE gene was performed by polymerase chain reaction.

Results: The results show significant differences in the efficacy of diet, depending on the genotype. We found that obese teenagers have significantly higher carrier genotypes c.388 T/T + c.526 C/C (by 20% reduced total cholesterol, by 19% - triglycerides, by 20 % - low density lipoprotein, by 16% - high density lipoprotein, and by 9% - glucose), c.388 T/T + c.526 C/T ApoE gene (by 24% reduced total cholesterol, by 20% - triglycerides, and by 2% increased level of high-density lipoprotein) and C/C LPL gene (by 18% reduced total cholesterol concentration, by 17% - triglycerides, by 16% - high density lipoprotein, by 18% - low density lipoprotein, and by 9% - glucose).

Conclusions: Thus, ApoE and LPL genes alleles can be used as biomarkers of prognosis of efficiency of a standard low-calorie diet therapy in obese children.

E-Poster Viewing: Obesity

INFANT NUTRITION AND RISK OF OVERWEIGHT AND OBESITY IN FUTURE

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Background: Excessive weight gain in infancy is the risk factor of future obesity. One of the reasons may be infant nutrition impairment. Our aim was to evaluate adherence to national infant nutritional advice in overweight infants comparatively to normal weight infants.

Methods: We conducted a questionnaire survey of 218 mothers who had one year old children. Depending on the Z-score weight/height (Anthro, 2005) infants were divided into 3 groups: Z-score -1 - +1, n= 136 (group 1), Z- score +1 - +2, n=56 (group 2), Z- score >+2, n= 26 (group 3).

Results: The infants in the 3rd group began to receive complementary foods about 2 weeks earlier and received more often than infants in 2 other groups ($p<0.005$) juices (19,2%, 5,1%, 3,5% for the 3, 1 and 2 group, respectively) and less often ($P<0.005$) - vegetable puree (38,4%, 55,8%, 64,2%) as the first product of complementary foods. 85% of children from 3d group vs. 65% and 69% in the 1st and 2nd groups, respectively, were transferred to the regular diet up to a year. 96% of children of the 3d group vs. 82% and 84% in 1 and 2 groups began to receive salt and 81% of them vs. 66% and 75% in groups 1 and 2, respectively, - added sugar up to 24 months.

Conclusions: Juices as the first complimentary food, early introduction of sugar and salt in the diet and early transfer to the adult diet may enhance the risk of future obesity in infants.

E-Poster Viewing: Obesity

OVERWEIGHT, OBESITY AND CANCER RISK

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Background. The link between cancer and overweight/obesity is clear. Excess body weight is associated with an increased risk of at least 13 different cancers. About 40% of all diagnosed cancers are linked to overweight/obesity. However, less than a third of Americans realize that obesity increases cancer risk.

Aim. Assessing the knowledge of the city of Vlora community in the connection of Obesity and Risk for Cancer.

Objectives: Identifying community knowledge about Obesity that is thought to show cancer risk.

Materials and Methods: The type of study is cross-sectional. The sample consists of 475 people (280 women and 193 men). The data is stored and analyzed in SPSS 17.00, with summary measures, frequencies, chi2 and Anova.

Results: It is noticed that most of the population surveyed report that they see sedentary life as a risk factor for obesity. It is noticed that the largest proportion of 42.3% of the population surveyed describe the risk factor for developing obesity, genetic factors, lifestyle, physical activity, fast food consumption, fat-rich.

Conclusions: Lifelong weight change can also affect the risk of cancer.

Recommendations: Successful intervention strategies for weight loss and maintenance at the individual and community level are needed to reduce cancer risk.

E-Poster Viewing: Obesity

RISK OF OBESITY AMONG POST MENOPAUSAL WOMEN

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The risk of obesity is increasing day by day among man and women of developed and developing countries. The present study had been conducted in urban area of India on 100 postmenopausal women. On one hand the fat present in women after menopause change from gynoid to android and on another hand high intake of macronutrients like carbohydrate (330.73 ± 5.05) and fat (47.67 ± 0.49), sedentary life style with low or no physical activity increase the risk of obesity. During study it was found that majority of the subjects were obese (18%) and overweight (41%) with high body mass index (26.46 ± 5.46), high fat mass (38.68 ± 7.74), high waist to hip ratio (1.93), and high waist to height ratio (0.57 ± 0.06). the change in body weight after menopause become an important causative factor for various metabolic syndrome like hypercholesterolemia, dyslipidemia, diabetes, hypertension, etc. To counteract the risk of obesity and overweight there is great need to modify the sedentary life style along with their food intake, food choices, general health, physical activities, etc. of post menopausal women.

E-Poster Viewing: Obesity

EARLY NUTRITIONAL INTERVENTIONS IN PEDIATRIC DYSLIPIDAEMIAS AND RISK FOR METABOLIC SYNDROME

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Introduction. Lipid disorders (dyslipidemias) in children remain an important issue at pediatric age, often left at secondary level, but with long-term consequences. Early recognition and proper management are required to diminish later risks.

Material and methods. 89 patients with dyslipidaemias were found in a 12-month study period in Clinic II Pediatrics Iași; the mean age was 9.1 years, with higher prevalence in adolescence. Dyslipidemias in young age were due to food mistakes, family dyslipidemias or genetic diseases.

Results and discussions. Dyslipidemia has been associated mostly with overweight, unhealthy eating habits and hyperphagic obesity. Comorbidities of dyslipidemias are systemic: steatosis / steatohepatitis, respiratory problems, digestive disorders, cardiac involvement. 15% of patients with dyslipidaemias already had the elements of metabolic syndrome at pediatric age (9-11 years).

Conclusions. Metabolic syndrome was found in 1 of 6 dyslipidemic children. In the absence of approved and no-risk drug therapy, the only therapeutic options are nutritional measures and lifestyle changes; In this sense, it is necessary to identify early and correct the risk factors.

E-Poster Viewing: Obesity

EATING DISORDER RISK RELATED TO OVER INTAKE OF ENERGY AND MACRO NUTRIENT AMONG GIRLS STUDENTS IN MITRA KELUARGA SCHOOL OF HEALTH SCIENCES

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Groups of adolescents who have eating behavior disorders, food intake restrictions, alcohol consumption, drug addiction and other things require special nutritional needs to be considered. In 2013 there were 7.3% of obese teens in Indonesia. This prevalence increases every year. This study aims to determine the risk of eating disorders and their relationship with excessive intake. This study designed with cross sectional design, sample total was 97 girls in first grade (semester). Risk of eating disorders determined by using questionnaires Eating Attitudes Test (EAT-26). Intake of nutrient was collected by semi quantitative questionnaire. Data analyzed by chi square test using SPSS. The result founded 5% of high risk of eating disorder, more than 50% has over intake of energy, protein and fat, also 46,39% has over intake of carbohydrate. There was no relationship risk of eating disorder with energy and all macro nutrient intake but showed more than 40% students at high risk of eating disorder has over intake of energy, carbohydrate, protein and fat. Even though there was no significant relationship, adolescents still need to be alert to the risk of eating disorders. It is recommended for further research to pay attention to signs of risk of eating disorders and adolescent eating behavior and body image.

E-Poster Viewing: Obesity

EARLY PREDICTORS OF OBESITY AT 6-YEARS-OLD AMONG A ROMANIAN POPULATION

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Background and aims: We are dealing with epidemic non-communicable chronic diseases evolving since younger ages. Faster infant growth is an established risk factor for later obesity. This study was aimed to examine the association of individually derived infant nutritional factors with growth parameters at 6 years of age.

Methods: In a population-based prospective cohort study among 114 children, we used repeated growth measurements between 0 and 6 years of age to derive growth parameters with early nutrition.

Results: By the age of 12 months, 13.9% of the children were at least overweight, and by the age of 6, 21.4% were dealing with excessive weight. BMI at 6 years was positively correlated with birth weight ($p<0.05$) and with weight at 12 months old ($p=0.00$). While there was a significant higher proportion of overweight children in urban vs. rural areas ($p<0.05$), the level of education or family income had no influence on weight/growth. Overweight/ obese children had shorter duration of exclusive breastfeeding when compared to normal weight ($p=0.00$). Obese and overweight children at 6 years were fed with larger amounts of meat when they were 12 months (68.52 ± 26.56 g/day vs. 54.31 ± 26.28 g/day, $p<0.05$). Using online nutrition advice was positively correlated with overweight and obesity at 6 years of age ($p<0.05$).

Conclusions: Important aspects of early nutrition play a role in preventive strategies against further increases in the prevalence of overweight and obesity. Promoting caregivers over the internet and traditions in advising on early nutrition might prevent overweight and obesity.

E-Poster Viewing: Obesity

GOLD STANDART IN ANTHROPOMETRIC EQUATIONS ESTIMATION OF THE CORPORAL DENSITY IN TEENAGERS

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Background and aims:

- Analysis of the corporal composition (CC) is a fundamental part in the valuation of the nutritional condition.
- Anthropometry is considered a useful tool to examine the changes in the corporal composition: It is not invasive and low cost and it is recommended by the WHO.
- Some equations of regression combining different variables and parameters anthropometrics to estimate the percentage of total fat mass (%TFM).
- To obtain precise results in not adult population turns out to be complex, given the inability to assume a corporal constant composition.

The aim was to analyse which of the anthropometric equations most commonly used to estimate the percentage of body fat is the most suitable for the school and adolescent population.

Method:

Data obtained from %TFM were compared using Bioimpedance (BIA) and regression equations after anthropometric measurements in a population of 1518 children and adolescents (9-16 years of age).

Results:

The study reveals a marked sexual dimorphism between the boys and the girls. In this study the equations of Siri and Brozek seem to slightly overestimate the %TFM

Conclusions:

To calculate body density, equations should be used that consider the sex and age of the subjects. The equations of Behnke and Lohman were found to be the most accurate methods for measuring body density in the population studied.

E-Poster Viewing: Obesity

RELATIONSHIP BETWEEN WAIST TO HEIGHT RATIO AS A CENTRAL OBESITY INDICATOR AND INFLAMMATORY POTENTIAL OF THE DIET: A STUDY IN YOUNG PEOPLE

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Background and aims:

There is a general consensus that obesity is an eminently inflammatory process. The inflammatory response initiated in the white adipose tissue produces a chronic situation at the systemic level, generating a vicious circle, which finally leads to insulin resistance, atherosclerosis and alterations typical of the metabolic syndrome. Research has shown strong evidence of association between increasing inflammatory potential of diet and CVD risk and related mortality.

This index is widely used in the adult population, but there are few studies focused on children or adolescents. The objective of this work was to investigate in a sample of young people the association between the Dietary Inflammatory Index (DII) and central obesity, as in adult population.

Method:

Anthropometric measurement and body composition measurements were analysed by bioelectrical impedance analysis (BIA) on 428 Spanish young people ($\pm$ 12.32 years old). To calculate the DII, Dietary habits were assessed using a 24-hour diet recall over three days.

Results:

Results reveal a significant association between the DII and WHtR, suggesting that a more pro-inflammatory diet was associated with increased WHtR, an index of cardiovascular risk.

Conclusions:

More studies are needed on the relationship between Dietary Inflammatory Index and central obesity focused on young people, since this may be an effective method for establishing obesity prevention programmes and would help to reduce the impact of childhood obesity

E-Poster Viewing: Obesity

JOSEF RESSEL CENTRE FOR THE INVESTIGATION OF EARLY LIFE METABOLIC PROGRAMMING REGARDING DISPOSITIONS OF OBESITY

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As the worldwide prevalence of obesity has tripled since the 1980s, children are increasingly and strongly affected by it. Metabolic imprinting through early childhood nutrition seems to play an important role in the etiology of obesity. Overweight at age two and later is associated with excessive weight gain during the months of life. However, evidence is still lacking to precisely explain modifiable factors in early infancy that potentially contribute to health disparities later on.

The aim of the "Josef Ressel Centre for Early Life Metabolic Programming of Dispositions of Obesity" is the identification of maternal and infant predictors of metabolic risk in childhood obesity. The concept is based on overfeeding during the first four months of life, seen as a critical window for the development of obesity. The main considerations of modifiable factors are early infant nutrition, the infant growth, correlated to infant fatmassindex, and to molecular parameters. A second focus is put on maternal feeding style, infant eating behavior and the recognition of satiety cues.

A prospective longitudinal cohort of 100 healthy, normal-weight, non-smoking mothers and their term, healthy, normal-weight, singleton children are longitudinally observed (from the 36th week of pregnancy, follow up at one and two years of life) allowing the comparison of exclusively breastfed and exclusively formula fed children. Methods used are validated feeding questionnaires, fat mass index measurements by air displacement plethysmograph PeaPod® and BodPod®, MIRIS® breast milk analyzer. Samples, such as plasma, urine, saliva, and stool will be examined with GC/LC/, ELISA and more.

Timeframe: 2017-2021

E-Poster Viewing: Obesity

BARIATRIC SURGERY FOR ADOLESCENTS: INITIAL EXPERIENCE OF A CENTER

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Background and aims

The prevalence of obesity in pediatric age has been increasing, being an independent risk factor for early morbidity and mortality. Bariatric surgery has been presented as the most effective intervention in the consistent reduction of weight and improvement of cardiovascular and metabolic comorbidities in patients with morbid obesity. We present the results of the initial experience of implementing a bariatric surgery program for adolescents.

Methods

Adolescents undergoing bariatric surgery were retrospectively evaluated for a period of 3 years. Changes in body weight, coexisting conditions, cardiometabolic risk factors and postoperative complications were analyzed.

Results

Thirteen patients underwent bariatric surgery, one a Roux-en-Y gastric bypass and twelve a sleeve gastrectomy. The mean baseline age was 17.1 ± 0.9 years, and the mean body-mass index was 49.7 ± 4.2 kg/m² (variable between 42.6 and 59.2). Major cardiometabolic and respiratory comorbidities were a concern in almost all of the adolescents. There were no surgical complications. With a post-surgery period ranging from 2 to 36 months, there was an average weight loss of $32.7 \pm 8.7\%$ of the initial weight (variable between 15.1 and 56.5%) and improvement of associated comorbidities, namely elevated blood pressure, insulin resistance, dyslipidemia, hepatic steatosis and obstructive sleep apnea. After bariatric surgery, iron deficiency was observed in one patient and three developed vesicular lithiasis, two of them undergoing cholecystectomy.

Conclusions

The initial experience of a Bariatric Surgery Program for teens allowed a considerable reduction in weight as well as a significant improvement of comorbidities in morbidly obese adolescents with no relevant complications associated with the procedure.

E-Poster Viewing: Obesity

EARLY ONSET METABOLIC SYNDROME IN OVERWEIGHT AND OBESE CHILDREN – AN INCREASING CAUSE FOR CONCERN

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Background and aims: Worldwide, throughout one generation the prevalence of obesity in children doubled. Metabolic syndrome is a combination of large waist circumference ($\geq 95^{\text{th}}$ percentile) and at least two of the following: high triglyceride level (≥ 150 mg/dl), reduced HDL-cholesterol (≤ 40 mg/dl), increased blood pressure ($\geq 95^{\text{th}}$ percentile), elevated fasting blood sugar (≥ 100 mg/dl). The authors aimed to evaluate for metabolic syndrome a group of overweight/obese children.

Methods: We conducted a prospective study that included overweight (BMI 85^{th} to 95^{th} percentile) or obese (BMI $\geq 95^{\text{th}}$ percentile) 6-18 years old children. The patients were enrolled in the Pediatrics Department of "Grigore Alexandrescu" Children's Hospital where they were admitted for unrelated pathology. Clinical and biochemical parameters were evaluated to set the diagnosis of metabolic syndrome.

Results: Ninety one patients were enrolled (64.8% obese). The mean age was 11 years 9 months, the sex ratio M/F=1.27/1. 67% came from urban areas. All patients had waist circumference $\geq 95^{\text{th}}$ percentile. High blood pressure was diagnosed in 16.5% (80% of them being obese). 19.7% had high serum triglycerides and 25.3% low HDL-cholesterol levels. Increased blood glucose was found in 27.5%. More than half of the group (56%) fulfilled two criteria for metabolic syndrome and one quarter (26%) three criteria, data similar to the literature.

Conclusions: Obesity is a disease that generates complications from a young age. The number of overweight/obese children with metabolic syndrome is alarmingly high. Education and medical advice should target nutrition, normal growth and a healthy lifestyle in order to prevent an "epidemic" of early onset cardiovascular disease.

E-Poster Viewing: Obesity

PEDIATRIC OBESITY AND ITS CO-MORBIDITY

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Background and Aim

Childhood obesity remains the most important risk factor of developing type 2 diabetes in children. In the U.S.A, the Center of Disease Control and Prevention (CDC) estimates that greater than one third of the children and adolescents were overweight or obese.

In recent years, cases of pediatric type 2 diabetes in children have been diagnosed more frequently and at younger ages than previously seen.

Pediatric obesity and type 2 diabetes are more likely to continue into adulthood.

The objective of this study is to report the association of obesity in children 18 years old or younger with type 2 diabetes, dyslipidemia and hypertension.

Method:

The study population consisted of all patients seen in a pediatric endocrinology clinic. An analysis of ICD10 diagnosis codes was performed for a two year period from 2015 to 2016, to evaluate the association of diagnoses of obesity and abnormal weight gain with type 2 diabetes and other co-morbidities.

Results:

Of 189 overweight, obese or morbidly obese patients identified, twenty six patients (13%) had dyslipidemia, three (less than 1%) had type 2 diabetes and 3 (less than 1 %) had hypertension..

Conclusion:

All obese pediatric patients should be evaluated for comorbidities that include type 2 diabetes, dyslipidemia and hypertension. This screening should continue throughout life if obesity persists. The natural progression of comorbidity usually starts with dyslipidemia but often includes type 2 diabetes in adulthood. Early identification and therapy of type 2 diabetes in children can prevent the deterioration of the disease and its complications.

E-Poster Viewing: Other

NUTRITION THERAPY AND CHANGE IN EATING HABITS FOR DISEASES MANAGEMENT

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A study was carried out to assess the effects of nutrition therapy on people's eating habits predispose humans to diseases. Stratified method of sampling was used to select twenty-five respondents each from four treatment groups, diabetes, high blood pressure, the obsessed, and ulcer in a representative sample of patients at Nigerian Army Reference Hospital Yaba. Participants' eating habits were assessed before and after nutrition education were assessed and by having focused discussions and response to questionnaires. Results show 25% were obsessed, 23% diabetic, 36% have high blood pressure and 16% others have ulcer%. Twenty-five percent claimed it was easy to adjust to the new eating pattern, 50% claimed that it was difficult and 25% of the total population said it is very difficult. Nutrition education was done for eight weeks and responses show that nutritional therapy had positive effect on the health of 33% of high blood pressure group. Three percent did not know the effect of the therapy. Twenty-three percent of the total population's health improved. 23% of the obesity said nutrition therapy has improved their health status while 2% of the group cannot say whether the nutrition therapy has a positive impact on their health. 16% of the obesity group also stated that nutrition therapy has great influence. Dietary habits and choices play a significant role in the quality of life, health and longevity and therefore nutrition education should form major part of any intervention programme.

E-Poster Viewing: Other

ADHERENCE TO INFANT AND YOUNG CHILD FEEDING GUIDELINES BY A SAMPLE OF CAREGIVERS IN SRI LANKA

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Background and Aims

This study aims to assess the adherence to infant and young child feeding guidelines by a sample of mothers of infants and young children aged between 6 – 24 months.

Method

A cross sectional study followed by stratified random sampling method was used and it was conducted in Jaffna, Vavuniya, Batticaloa and Ampara districts in Sri Lanka. A total of 140 mothers were recruited. A pre-tested, interviewer-administrated questionnaire that includes questions on 17 infant and young child feeding guidelines issued by the Family Health Bureau of the Ministry of Healthcare and Nutrition, Sri Lanka was used to collect information. Dietary intake of infants and young children from different food groups was obtained from a 24-hour dietary recall. Adherence to guidelines was measured by using a scale of 0 – 17 and mothers who follow more than 8 guidelines out of 17 were considered as adherence while ≤ 8 guidelines followers were considered non- adherence. Descriptive analysis and SPSS version 16.0 were used.

Results

In the study population, mean age of the mothers was 31 (SD 3) years. Majority of the mothers (96%) adhered to infant young child feeding guidelines and among them 65% of mothers adhered to 10 guidelines out of 17. The lowest adherence (2.9%) was obtained for a guideline on feeding during illnesses.

Conclusion

Awareness programs on infant young child feeding guidelines are needed for the study sample to improve health and nutritional status of the infants and young children.

E-Poster Viewing: Other

LOW MATERNAL VITAMIN D AND CALCIUM INTAKE STATUS DURING PREGNANCY AMONG WEST SUMATRAN POPULATION

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Background and aims: Vitamin D deficiency in pregnancy is high all over the world. Low availability of vitamin D and Calcium (Ca)-rich foods and poor healthy lifestyles may affect the adequacy intake in difference regions. We investigated the association between lifestyles and place of residence with maternal vitamin D and Ca intake.

Methods: This cross-sectional study was conducted with 203 pregnant mothers who lived in two districts of coastal and mountainous areas of West Sumatra, Indonesia. Lifestyles of mothers were assessed through a questionnaire. We examined dietary assessment during pregnancy by validated SQ-FFQ based on Minangkabau food culture.

Results: The mean of maternal vitamin D and Ca intake was 7.92 ± 5.26 µg/day and 784.88 ± 409.77 mg/day, and there were no reports of vitamin D supplement intake during pregnancy. A total of 86.7% and 89.7% had low of vitamin D and Ca intake status, respectively. There was a significant association between vitamin D intake status and place of residence ($p=0.02$). The significantly difference mean levels between coastal and mountainous area were 9.04 vs 6.55 µg/day ($p=0.01$). Mothers who have higher education levels had adequate of calcium intake than low education levels ($p=0.015$).

Conclusion: Low vitamin D and Ca intake status were common in West Sumatera, Indonesia. Status of vitamin D and Ca intake may have differed with the place of residence. Authors would like to thank the Indonesian Government through the Indonesian Ministry of Research and Technology for the Hibah Kompetensi 2015 research grant.

E-Poster Viewing: Other

EFFICACY OF VITAMIN D SUPPLEMENTATION ACCORDING TO VITAMIN D BINDING PROTEIN POLYMORPHISMS

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The study aimed to determine the influence of DBP gene polymorphisms in vitamin D metabolites before and after vitamin D supplementation. Out of 234 participants (126 females and 108 males), 146 had vitamin D deficiency (25(OH)D <50nmol/l) and were given 2000IU daily dose of vitamin D for 12 months. Two common single nucleotide polymorphisms (SNPs), (rs4588 and rs7041) of the *DBP* gene were assessed. Post supplementation median 25(OH)D was significantly higher [61.2 (46.3-76.8) and 66.6 (53.2-83.7)] in participants with CC genotype of rs4588 and GG genotype of rs7041 than other genotypes ($p<0.001$). Participants with T allele are 2.9 (1.9-4.5) times more likely to be a non-responder (unable to achieve serum 25(OH)D post-supplementation) than those with G allele ($p<0.001$). Participants with A allele are 3.7 (2.1-6.6) times more likely to be a non-responder than those with C allele ($p<0.001$). Furthermore, participants with TT and TG are 6.2 and 4.2 times more likely to be a non-responder than those with the GG genotype (p -values <0.001) even after adjustments for age, gender, BMI, baseline 25(OH)D concentration and other alleles. Participants with AA and CA genotypes are 12.4 (1.4-110) and 4.1 (2.1-8.0) times more likely to be non-responders as compared to those with CC genotype but lost significance after adjustment. The SNPs, rs7041 and rs4588 variants of the *DBP* gene are associated with baseline 25(OH)D levels and modifies 25(OH)D response after vitamin D supplementation in Saudi adults.

E-Poster Viewing: Other

COMPARISON OF BREASTFEEDING PRACTICES AMONG POSTPARTUM WOMEN IN A BABY-FRIENDLY HOSPITAL AND A NON-BABY-FRIENDLY HOSPITAL

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The purpose of this study was to compare infant-feeding practices at birth and 4–6 weeks postpartum and to investigate differences in the breastfeeding intentions, knowledge, attitudes, and self-efficacy held by postpartum women in a Baby-Friendly Hospital Initiative (BFHI) hospital and a non-BFHI hospital in the State of Kuwait. A sample of 409 in-hospital postpartum mothers completed a baseline questionnaire during face-to-face interviews before discharge. At 4–6 weeks postpartum, participants were contacted by telephone for follow-up information about their current infant-feeding practices. Comparative statistics were calculated using independent-samples *t*-tests and chi-square (X^2) tests. At baseline, 90.5% of infants born in the BFHI hospital and 12% of those born in the non-BFHI hospital were exclusively breastfed. These rates fell to 60.7% and 9.6% respectively by 4–6 weeks postpartum. In addition, mothers who birthed at the BFHI hospital were more knowledgeable about breastfeeding and had higher breastfeeding confidence than those who birthed at the non-BFHI hospital ($p < .001$). They also had positive attitudes toward breastfeeding, while those who birthed at the non-BFHI hospital had neutral attitudes. Results suggest that birthing at the BFHI hospital significantly impacted mothers' breastfeeding knowledge, attitudes, and confidence and achieved a high rate of initiating breastfeeding at the hospital. Based on these results, BFHI hospitals have the potential to promote breastfeeding practices in Kuwait

E-Poster Viewing: Other

UNDERSTANDING THE ROLE OF CELL CYCLE IN THE FETAL PROGRAMMING RESPONSE TO AMINO ACIDS RESTRICTION

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Background:

Maternal undernutrition is associated with increased risk of adult disease, involving metabolic syndrome, diabetes, hypertension and cardiovascular disease. We have previously shown in animal studies, that maternal protein restriction during pregnancy programmes anatomical, physiological and metabolic changes in exposed offspring. These changes are closely associated with attenuation of cell proliferation and/or differentiation during development. Observations from transcriptomic studies in animals, suggest that the cell cycle is a target for nutritional programming. The aim of this study was to determine the progression of cell cycle in response to a challenging amino acids environment *in vitro*.

Method: C2C12 cells were cultured in growth media (DMEM and 10% fetal bovine serum). After 24h, cells were treated with varying amino concentrations for further 24h. Cell proliferation was observed and cell cycle arrest was monitored with FACS. The expression of genes in the cell cycle regulatory pathway was determined by RTqPCR.

Results: Our preliminary result have showed that the amino acids concentration in culture media has a significant impact on the progression of cell cycle. In our amino acids restricted media, cells grown in medium with 10% amino acids had significantly more cells arrested at G1 compared to cells grown at 100% amino acids (76% G1 arrest vs 67%, $P < 0.05$).

Conclusion: Limited amino acids concentration decreased the rate of C2C12 cell proliferation *in vitro*. An understanding of mechanism which drive these effects is required for the identification of biomarkers of use in guiding targeted health promotion that support strategies for healthy ageing.

E-Poster Viewing: Other

RURAL INCUBATION CENTER OF FOOD TECHNOLOGY: AN EFFECTIVE WAY TO IMPROVE THE NUTRITIONAL STATUS OF POPULATIONS

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Despite the multiple efforts of nutrition policies, malnutrition remains a public health problem in developing countries. According to the ranking of the human development index, Burkina Faso and Niger ranked 183rd and 189th place respectively (UNDP, 2018). Nearly one third of children under 5 suffer from stunting (SMART, 2016). The rural environment is the most affected. The low diversification and non-availability of good nutritional value foods are major causes. An innovative approach to technology transfer has been put in place in rural areas of Niger and Burkina Faso.

Our study has consisted in assessment of the contribution of the Rural Technology Incubation Center (CRITA) to the food security in Lebda in the Central Northern Region of Burkina Faso. Two enriched local products *mugdugu* and *bassi* were made by the women of CRITA. Individual interviews, surveys and focus groups were the main tools. It results that CRITA contributes directly to food security among Lebda families through the availability and accessibility of these good nutritional products. In addition, 97% of respondents ate the products weekly, 70% used the product as the main snack. Indirectly, the income generated by the CRITA enables women to cover food and non-food expenses, 53.82% of the amounts were used for households diet.

The rural incubation center of food technology created a life in the rural area. Women will be free to manage the diet of their children.

E-Poster Viewing: Other

STATUS NUTRITIONAL OF CHILDREN WITH CNS DISEASES.

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Objective: Children with neurological disorders are frequently subject to malnutrition, stunted growth or underweight. These are accompanied with oral cavity motility disorders, swallowing disorders and gastroesophageal reflux. Frequently, there is growing insufficiency of the body mass caused by the loss of adipose tissue, decreasing BMI and muscular atrophy. The aim of this research was to examine the state of nutrition of children with central nervous system damage, depending on age, a neurological disorder and the degree of dysphagia.

Materials and methods The research encompassed 74 children diagnosed with damage of the central nervous system and sent to the Pediatric Clinic of the Silesian University in Katowice. The children were between 2 and 16 years old. The research made use of the prospective method with the help of medical examination, documentation analysis, anthropometric measurements and laboratory tests of patients divided into groups depending on their age, a neurological disorder and the degree of dysphagia.

Results: Using cut-off values of BMI for the population of children according to the WHO reference grids, 62.16% of children showed significant underweight, and 4.06% of children were affected by overweight or obesity.

Conclusions: Children with cerebral palsy and encephalopathy are more frequently affected by malnutrition than with other causes of central nervous system damage. Children with a higher degree of dysphagia are more frequently affected by underweight and insufficient growth. The patients' age does not influence malnutrition in a substantial way.

E-Poster Viewing: Other

BECOME MALNOURISHED CHILDREN ONE YEAR AFTER NUTRITION EDUCATION IN THE KAYA NUTRITION EDUCATION CENTER IN BURKINA FASO.

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Background and Objective: Nutrition education is an integral part of successful care and prevention of malnutrition. We examined the outcome of malnourished children one year after nutrition education.

Methods: This is a cross-sectional study. We used logistic regression to identify factors associated with nutritional status after the exit in the center.

Results: A total of 135 children were included. We recorded five deaths and 30 children were not found. Among 100 children found one year after the release of CEN, we noted a relapse in malnutrition in 15% of cases. Also, 48% of children received food before 6 months of age. As for the vaccination, 16% was not up to date with their vaccine and 40% had a birth weight of less than 2500 grams. In univariate analysis, breastfed children up to 6 months were protected against relapse into malnutrition. Taking colostrum at birth was a protective factor against malnutrition (OR = 0.14, P-value = 0.002 and IC [0.41-0.49]), children born at home were 4 times more likely to relapse compared to children born in a health center. Low birth weight of less than 2500 grams was associated with relapse into malnutrition after discharge at CEN. In multivariate analysis, only low birth weight was significantly associated with malnutrition (OR = 4.9 P-value = 0.019 and IC [1.29-18.65]).

Conclusions: The nutritional situation one year after nutrition education is critical and deserves special attention from the different institutions involved in improving the living conditions of households and child survival

E-Poster Viewing: Other

A STUDY TO EVALUATE IRON DEFICIENCY ANEMIA AS A RISK FACTOR OF FEBRILE SEIZURE IN CHILDREN

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BACKGROUND: Febrile seizures(FS) are the most common type of seizures in children, occurring in 2-5% of children in the age group of 6 months to 5 years. Iron deficiency is the most common nutritional deficiency of infancy and childhood, especially between 6 and 24 months of age. It has been linked with depressed mental and motor development as Iron has a vital role in brain functions like synthesis of neurotransmitters and neuroenzymes. It has been postulated to decrease seizure threshold.

AIM: To find out the association between FS and IDA in children.

PATIENTS AND METHODS: A case control study was conducted with 50 cases in the age group 6 months to 5 years, admitted with FS, and 50 controls in the same age group, admitted with an acute febrile illness without seizure. Detailed history, and clinical examination in both cases and controls, blood investigations were done to diagnose IDA in both cases and controls. IDA was diagnosed as per WHO criteria for hemoglobin, MCV, MCH and serum ferritin values according to age.

RESULTS: Mean Hb, MCV, MCH and ferritin levels in case group were lower than the control group with statistical significance. A total of 18 (36%) of cases had IDA, compared to 8 (16%) of controls, which was statistically significant, $P = 0.01$ and Odd's ratio 3.45. There was no statistically significant relation of IDA with complex or recurrent febrile seizures.

CONCLUSION: IDA is a significant risk factor for simple febrile seizures in children of age group 6 months to 5 years.

E-Poster Viewing: Other

OBEAT – BEATING OBESITY: A FEASIBILITY TRIAL

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Background

Childhood obesity is a complex disease and may be related to early exposures prior to or around birth. Thus, individuals exposed to chronic stress *in utero* may be programmed to be more susceptible to stress-related disorders like overweight and obesity later in life.

Aim

This study assesses the feasibility of a stress reduction intervention among normal weight pregnant women aimed to improve maternal gestational and post-partum weight and benefit childhood growth and later risk of overweight.

Methods

This feasibility study will consist of an exploratory study of stressors in pregnant women by use of focus group interviews, a randomised controlled trial and a parallel process evaluation. 120 women with normal weight pregnancies will be included at their first midwife session. The intervention group will be introduced to the web-based stress reduction program.

The effect evaluation will analyse changes and correlations in chronic stress in mother and infant (measured by hair cortisol), maternal weight changes, perceived stress, physical activity- and dietary habits, and infant birth length and weight.

The process evaluation will use log-files from the web-program, questionnaires on frequency and satisfaction, and focus group interviews with pregnant women and midwives to investigate acceptability of the intervention.

Results

The results of the effect- and process evaluations will, depending on the results of the feasibility study, be implemented in the planning of a large RCT.

Conclusion

This project is expected to improve our understanding of the role of chronic stress during pregnancy in relation to early weight gain and childhood obesity.

E-Poster Viewing: Other

TECHNOLOGY FOR TOMORROW NEED FOR TECHNOLOGICAL INNOVATION IN DIETARY ASSESSMENT

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Recent advancements in technology in dietary assessment, specifically use of mobile phone and digital imaging of food, are promising areas in nutrition research and practice. Using mobile phones to record dietary intake and photograph food prior to consumption can be an effective method for dietary analysis, reducing reliance on self-report and recall. Research continues to focus on refining and creating new assessment methods to evaluate food intake with higher degrees of accuracy. Wearable and mobile phone technologies have seen vast advances in recent years which allows for continuous collection of biometric data, which can be integrated into nutrition assessment. This can reduce participant burden and provide more accurate, consistent data for a variety of health measures. The extensive availability and increasing use of mobile apps for nutrition-based health interventions makes evaluation of the quality of these apps crucial for integration into nutritional counseling. The purpose of this oral presentation is to introduce the audience to current and future mobile technology used in the areas of personal care, nutrition assessment and research; increase understanding of what patients want in a mobile device and learn how to evaluate mobile devices using a validated tool and integrate mobile devices into clinical practice. There are challenges but many opportunities for use of technology in the area nutritional care, which can positively impact patient health outcomes.

E-Poster Viewing: Other

NATURAL POLYPHENOL BASED CARDIO-ONCOLOGICAL THERAPEUTICS IN DRUG INDUCED CARDIOTOXICITY

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Background: Cardiotoxicity of anti-cancer drugs has emerged as an important factor for cardiovascular complications. There is a growing interest in natural bioactive compounds for targeting the same.

Objectives: Synergistic cardio-protective effects of Curcumin were studied in Doxorubicin (Dox) mediated cardiotoxicity.

Methodology: Curcumin mediated effects were investigated by various *in vitro*, *in silico* and *in vivo* studies. Various concentration and time dependent cell viability assays were conducted for Dox and Curcumin followed by microscopic, molecular and biochemical assays. *In silico* docking studies of Curcumin and Dox with cardiac stress molecules were performed. *The findings were validated in vivo* at transcriptomic and proteomic levels by expression studies. Synergistic effect was also studied on human breast cancer cell line by various assays.

Results: We observed that Dox induced cardiotoxicity occurs through ROS over production by exaggerating the inbuilt antioxidants. Interestingly, our study proposes that Curcumin exerts time-dependent opposite responses and validated by docking. Curcumin supplementation in cancer cells exaggerates oxidative stress and results in tumor by modulating pro- and anti-apoptotic biomarkers. *In silico* docking studies also proposed the signalling pathways operative in curcumin responses.

Conclusions: Pre-treatment of Curcumin can suppress the Dox induced cardiotoxicity and supplementing curcumin results in achieving the desired anti-cancerous effect of Dox without compromising its activity thereby reducing dose mediated Dox effects. Hence, Curcumin holds a great potential as future cardio-oncological therapeutics.

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E-Poster Viewing: Other

THE ROLE OF NURSES IN DIET-RELATED CHRONIC DISEASES- FUTURE PERSPECTIVES

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Diet-related chronic diseases, such as diabetes mellitus, hypertension, cardiovascular and renal diseases affected millions of individuals, resulting in disease-related complications such stroke and heart attack. Evidence strongly supports the fact that multiple dietary factors influence this diseases and the modification of diet can have powerful, beneficial effects in prevention and management but in most cases the modification of diet results after the disease is installed. Because of their interaction with patients, the nurse's role in preventive care includes observing the many factors that contribute to chronic conditions. The aim was to assess the patients with chronic diseases regarding their diet before – after the installation of the diseases. Study took place in Vlore Regional Hospital Albania, Pathology ward in May 2018, duration two weeks. The sample was composed of 12 patients. The study data collected by questionnaire which includes general and nutritional information. The Body Mass Index (BMI) was calculated in base of patient's height and weight. Mean age 67.25 years, SD±5.64. Most prevalent diseases were diabetes mellitus (25%), hypertension (25%), cardiovascular and renal diseases (35%), *hepatic cirrhosis (8.33%)*. 50% of patients were overweight BMI interval [25.00-29.99] and 17% were obese I category, BMI interval [35.0-40.00]. All patients reported that their diets changed after hospitalization. Diets modifications included no consumption of fats, sale and to quit smoking and alcohol consumption. Results suggest that prevention is crucial in the treatment of the chronic conditions and nurse's role is vital on helping patients by educating them on risks and promoting healthy lifestyles.

E-Poster Viewing: Other

PSYCHIATRIC MANIFESTATIONS IN A CHILD WITH NON-CELIAC GLUTEN SENSITIVITY

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Background

In recent years, NCGS (Non-Celiac Gluten Sensitivity) has evolved into an established syndrome. It is a clinical condition in which symptoms are triggered by gluten ingestion, after excluding the diagnosis of celiac disease and wheat allergy. Typical intestinal symptoms include diarrhea, abdominal pain, bloating and weight loss. Extra-intestinal symptoms such as fatigue, joint or muscle pain, headache, changes in behaviour and a feeling of 'a cloudy mind' have been reported as well. Psychiatric symptoms are rare, but possibly severe manifestation of this new clinical entity.

Case

Our case describes a 13-year-old girl who visited the pediatrician with gastrointestinal complaints such as abdominal pain, change in bowel structure and trouble maintaining weight. She also suffered from obsessive compulsive behavior and anxiety. All these symptoms disappeared after starting a gluten-free diet. Re-introducing gluten into the diet induced the same complaints.

Celiac disease was ruled out as a diagnosis on the basis of negative test results for HLA-DQ2, HLA-DQ8 and for tissue Transglutaminase(tTG) antibodies.

A negative blood test for wheat protein antibodies ruled out the possibility of wheat allergy. A double-blind placebo-controlled test (DBPC test) with gluten confirmed the diagnosis of NCGS.

Conclusion

This is one of the first well-documented pediatric cases of NCGS with psychiatric manifestations. It is important to consider the diagnosis NCGS in psychiatric patients with gastrointestinal symptoms.

E-Poster Viewing: Other

HOW IS THE FEEDING OF PREGNANT WOMEN IN BRAZIL? THE MODERN MOTHER AND THE CHALLENGE OF BALANCED NUTRITION

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Background and aims

During gestation, woman's body undergoes various transformations in order to create a harmonious environment for the baby that is developing.

During this period, women's nutritional needs also change. Their nutritional reserves and food intake are the primary sources of nutrients to ensure proper growth of the baby. However, with the day-to-day running of the modern woman the adoption of a healthy lifestyle can be hampered.

The aim of this project was to understand the dietary and nutritional habits of the new mothers in Brazil and their vision about an adequate diet during pregnancy.

Methods

Online interviews conducted by Ibope Conecta with 500 pregnant women, over 18 years old, from all regions of Brazil.

Results

Maintaining a balanced and healthy diet is the main concern of 73% of the interviewees; 31% of the women said that even pregnant they cannot maintain a balanced diet because their daily lives are very busy; more than one-third of study participants did not consume multivitamins and 12% did not take any supplement at all.

Several myths and conflicting information such as the beliefs that eating *canjica* (white corn dessert) in pregnancy helps have milk for breastfeeding and that women must 'eat for two' during gestation persist in some regions of Brazil.

Conclusions

Day-to-day running of the modern woman the adoption of a healthy lifestyle can be hampered and so multivitamin supplementation may be an important ally to ensure adequate nutritional intake for this period.

E-Poster Viewing: Other

A COMPARATIVE STUDY ABOUT CHILDREN WITH SEVERE MALNUTRITION HOSPITALIZED IN THE PAEDIATRIC HOSPITAL DAVID BERNARDINO 1ST TRIMESTER 2017 & 1ST TRIMESTER 2018

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Background and Aims:

Nowadays, maybe we might place the malnutrition into the group of neglected diseases in the country, as it has never been part of discussions as a problem affecting the families, mainly those with low incomes. The main aim of this study is to identify the number of children suffering from severe malnutrition and related pathologies, at the nutrition department of the Paediatric Hospital David Bernardino between the 1st Semesters of 2017 and 2018.

Methods:

The study is descriptive and a comparative one, in terms of gender there is a steadiness in the number and periods in question, even though there is a slight predominance of the male.

Results:

During the period of study, it was witnessed that most of the children were from 0 – 4 years of age. According to what could be observed, most of the children suffering from this problem and its related pathologies are from Maianga, Samba, Viana and Cacuaco (Luanda municipalities). However, 473 cases were registered in 2017 and 477 cases of the same period in 2018, a rise of deaths ranging the 100%, which constitutes a concern of 41 to 83. Still, according to the observations made the severe malnutrition kills less when compared to the severe malnutrition related to other pathologies.

Conclusions:

As conclusion, children suffering from malnutrition and related diseases need intensive medical care, given their physical and immunological conditions and ponder the nutrition department of the Hospital as the second emergency. Keywords: Severe malnutrition, Related pathologies, Caring.

E-Poster Viewing: Other

FEATURES OF DOSING OF ENZYME REPLACEMENT THERAPY IN CHILDREN WITH CYSTIC FIBROSIS IN THE RUSSIAN FEDERATION MAKSIMYCHEVA T., KONDRATYEVA E., MELYANOVSKAYA Y.

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Objective: To assess the dose of enzyme replacement therapy for lipase (U/kg and U/g) in different age groups.

Material and methods: 140 children with CF in the age from 1 to 18 (elastase less than 200 µg/g) were investigated, M (± SD) - 6.1 ± 4.0 y. The children were divided into 4 age groups - 1 group (1-2 y., N-37); Group 2 (3-5 y., N-40); Group 3 (6-9 y., N-40); Group 4 (10-18 y.,N-23).

Results: In the total group, the dose of lipase was Me - 8700.0 U/kg and 1500 U/g of fat per day. It was revealed that the dose of lipase in children with CF is statistically significantly reduced with age from 10620.0 U/kg to 7000.0 U/kg. In 1 group Me - 10,620.0 U/kg, in group 2 Me - 9,150.0 U/kg (p1-2=0.3); in group 3 Me -7450.0 U/kg (p1-3=0.008, p2-3=0.02); in group 4 Me - 7000.0 U/kg (p1-4=0.0003, p3-4=0.3). The following values were obtained for the dose of lipase based on the amount of fat in food: 1 group Me-1800.0 U/g, group 2 Me -1500.0 U/g, 3 group-1500.0 U/g, 4 group-1500.0 U/g (p>0.05).

Conclusions: The average daily lipase dose in the calculation of U/kg was within the recommended values (up to 10,000 U/kg) and decreased with age from 10 620.0 U/kg to 7000.0 U/kg (p<0.001). The daily dose of lipase U/g of fat in food was below the recommended values of 1500 U/g . The highest values were in group 1, 1800 U/g, in the 2,3,4 group-1500 U/g (p>0.05).

E-Poster Viewing: Other

THE EFFECT OF PHYSICAL ACTIVITY ON HUMAN MILK MACRONUTRIENTS CONTENT

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Background and Aims

There are multiple health benefits associated with both breastfeeding and participation in sport. Therefore, it is likely that many women might want to engage in both. However, little is known about the effect of physical-activity (PA) on human-milk (HM) macronutrients content. We thus designed the current study in order to examine the effect of moderate-intensity PA on HM volume and macronutrients content.

Methods

A prospective, randomized clinical-trial with cross-over on 31 healthy mothers who exclusively breastfed their infants. Mothers expressed HM for a total of 15-minutes twice a day on 2 consecutive days - with PA (1-hour before and 1-hour after PA) and with no-PA at the exact same hours. The sequence of days (with/without PA) was randomly determined. Immediately following expression, samples were stored at -20°C until analyzed using infrared transmission spectroscopy HM analyzer. Physical activity was graded according to the Borg-Rating-of-Perceived-Exertion scale (RPE scale).

Results

A total 124 HM samples from 31 mothers were analyzed. No statistically significant differences in any of the macronutrients were found between HM samples expressed before and after moderate-intensity PA (table 1). Delta macronutrients content from the day with PA (before-after PA) and of control day without PA (sample 1-sample 2) was not different. Milk volume also remained unaffected by PA.

Conclusions

Human milk volume and macronutrients content are not influenced by maternal physical activity. Lactating mothers can be reassured regarding their breast milk volume and composition while practicing sport of moderate intensity.

Table 1: Macronutrients and milk volume data (mean $\pm$ SD, range)

	Day of physical activity			Day with no physical activity		
	Before PA	After PA	Δ^*	Sample 1	Sample 2	Δ^*
Protein (g/100cc)	0.8 $\pm$ 0.2 (0.4 - 1.2)	0.8 $\pm$ 0.2 (0.3 - 1.4)	-0.05 $\pm$ 0.18 (-0.5 - 0.4)	0.8 $\pm$ 1.3 (0.7 - 1.1)	0.8 $\pm$ 0.2 (0.4 - 1.2)	-0.02 $\pm$ 0.22 (-0.8 - 0.4)
Fat (g/100cc)	3.7 $\pm$ 1.3 (1.4 - 5.8)	4.1 $\pm$ 1.5 (1.1 - 7.8)	-0.5 $\pm$ 1.7 (-3.7 - 2.3)	3.9 $\pm$ 1.3 (1.2 - 6.6)	4.3 $\pm$ 1.7 (1.8 - 9.6)	-0.5 $\pm$ 1.7 (-3.7 - 2.3)
Lactose (g/100cc)	7.7 $\pm$ 0.7 (4.6 - 8.7)	7.8 $\pm$ 0.3 (7.1 - 8.5)	-0.11 $\pm$ 0.69 (-3.0 - 0.8)	7.7 $\pm$ 0.8 (3.8 - 8.4)	7.7 $\pm$ 0.5 (5.4 - 8.3)	0.02 $\pm$ 0.88 (-3.6 - 2.7)
Energy (Kcal/100cc)	65.0 $\pm$ 11.5 (38 - 85)	70 $\pm$ 12.7 (45 - 99)	-5.2 $\pm$ 14.89 (-41 - 19)	66.4 $\pm$ 11.8 (40 - 90)	70.6 $\pm$ 13.5 (48 - 113)	-4.73 $\pm$ 14.47 (-39 - 17)
Milk volume (cc)	84.4 $\pm$ 13.7 (20 - 360)	54.6 $\pm$ 30.8 (20 - 130)	30.0 $\pm$ 58.8 (-20 - 240)	83.0 $\pm$ 73.3 (10 - 330)	47.5 $\pm$ 21.8 (20 - 100)	35.9 $\pm$ 71.5 (-15 - 290)

*Not significant by paired t-test

E-Poster Viewing: Other

IRON STATUS OF SICKLE CELL CHILDREN IN GABON : PREVALENCES AND ASSOCIATED FACTORS

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Background and aim : Iron is a micronutrient essential for an optimal growth and a strong immunity. The iron status of the general pediatric population in Gabon has been assessed. We aimed to evaluate the iron status of sickle cell children aged from 6 months to 15 years in Gabon. .

Methods: We conducted a prospective study, from October 2016 to February 2017, including sickle cell children aged between 6 months to 15 years. The iron status were determined by measuring Serum Ferritin, Transferrin, serum iron and calculation of Transferrin Saturation, erythrocyte parameters in cell blood count. The analyzed variables were: age, sex, medical history including blood transfusion, parents' level of education, and socioeconomic category of families.

Results: We included 122 cases. The sex ratio was 1.1, the average age was 7.4 ± 3.8 years, 71% of the subjects reported a having regular follow-up, 75.4% of the cases ($n = 92$) had previously received a transfusion. In total, 68% children had a normal iron status, 23.8% of cases had iron deficiency, and 8.2% of sickle cell children had iron overload ($p < 0.001$). Iron deficiency was linked with low maternal education ($OR = 4.3$ CI 95% [3.2 – 8.5]) and low socioeconomic status ($OR = 4.5$ CI 95% [3.8 – 7.6]). Iron overload was linked with transfusion ($OR = 6.1$ CI 95% [3.2 – 8.5]).

Conclusion: Sickle cell children are exposed to the same risk factors for iron deficiency as non-sickle cell patients. Iron overload is related to transfusion

E-Poster Viewing: Other

EFFECT OF WHEY BASED FILM COTINGS ON VARIOUS PROPERTS OF KASHAR CHEESE

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In this study, the effects of whey protein based films on various properties of kashar cheese were examined. In the study, edible film solutions based on whey protein isolate, whey protein isolate + transglutaminase enzyme and whey protein isolate + chitosan were produced and Kashar cheese samples were coated with these films by dipping method and stored at +4 °C for 60 days.

Chemical, microbiological and textural analyzes were carried out on samples at 0, 30 and 60 days of storage. As a result of the study, the highest dry matter and total nitrogen values were obtained from uncoated control samples This is an indication that the coatings limit water vapor permeability. The highest acidity and pH values obtained from the samples as storage results were 3.33% and 5.86%, respectively, in the control group samples. Both acidity and pH rise in these groups, is a consequence of the buffering of pH changes of hydrolsis products which are as a result of proteolysis occurring in the sample. Nitrogen changes and lipolysis values, which are indicative of the degree of hydrolysis of proteins and triglycerides in kashar cheese, were generally higher in the control group This result is due to limiting the micro organism reproduction by limiting the gas passage of the coatings.

E-Poster Viewing: Other

MODIFIED ATKINS DIET FOR INTRACTABLE SEIZURES AND RISK OF UROLITHIASIS

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BACKGROUND and OBJECTIVES: KD is a well-established treatment for drug-resistant childhood epilepsy with expanding indications in the neurometabolic field. MAD is one of the modalities of choice in intractable seizures in pediatrics being less restrictive. Renal calculi have been reported in patients on the KD and the current study was designed to evaluate the risk factors for their development in patients on MAD.

SETTING: Pediatric Neurology Outpatient Clinic and Pediatric Clinical Nutrition Unit, Children's Hospital Ain Shams University.

PATIENTS AND METHODS: Twenty patients with intractable epilepsy on MAD diet were subjected to full history taking, anthropometric measurements and laboratory investigations including complete urine analysis, urinary calcium after overnight fasting, calcium /creatinine ratio as well as pelvi-abdominal ultrasound basally, at 3 and 6 months from starting therapy. Frequency and severity of seizures assessed by Chalfont severity score were recorded

RESULTS: The study revealed significant reductions in both frequency and severity of seizures with acceptable progress in their anthropometric measurements. Two patients (10%) developed renal stones after 6 months on MAD. Gross hematuria was reported in one of the two patient of renal stones while microscopic hematuria was detected in both. The urine calcium after overnight fasting and the urine calcium/ creatinine ratio were elevated in stone forming patients after 6 months and both tests were normal in patients without renal stones.

CONCLUSIONS: MAD may increase the risk of incidence of renal stones, as a consequence of hypercalcuria which was clearly and significantly observed in the studied cases who developed renal stones.

E-Poster Viewing: Other

DIETARY COMPLIANCE OF CHILDREN WITH CELIAC DISEASE IN THE JULIANA CHILDREN'S HOSPITAL

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Introduction

Celiac disease is a chronic disease of the small intestine. The only treatment is a lifelong gluten free diet. Dietary compliance, is complex but essential for the mucosal healing, the resolutions of symptoms and the reduction of the risk of long term complications. The aim of this study was to present compliance rate of children with celiac disease in the Juliana Children's Hospital (JKZ).

Method

168 patients with celiac disease, without an IgA-deficiency, were included in the study. The degree of compliance has been assessed on IgA anti-tTG values (normal <10 U/ml). Data was also collected from patients for example about their HLA-typing, age, comorbidity, practitioners, growth and symptoms. The data has been collected by means of file research.

Results

75.6% of the patients is compliant within two years after the start of the gluten free diet. At the most recent visit at a practitioner of celiac disease it even appears 84.5% of patients is compliant. Young children (<12 years) and patients that have been diagnosed at a young age (0-6 years) have a better compliance rate than older patients. Amongst celiac patients with diabetes mellitus type 1 the compliance rate is low. Patients treated by a dietist and pediatrician specialized in celiac disease have a relative high compliance rate.

Conclusion

Patients with celiac disease treated in the JKZ have a high degree of compliance. Age and comorbidity diabetes mellitus type 1 have an influence on this degree.

E-Poster Viewing: Other

COGNITIVE DEVELOPMENT IN STUNTING AND MALNOURISHED CHILDREN

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Background

In Indonesia, prevalence of stunting is 30.8% while malnutrition is 17.7%. Stunting and malnutrition might be related to impaired cognitive development.

Aims

To determine cognitive development in stunted children, malnourished children without stunting and constitutional short stature.

Methods

Cross sectional study was done in Cipto Mangunkusumo Hospital Pediatric Clinic to children aged 6 month-3 years old. Anthropometry was calculated based on WHO growth chart. Cognitive development was assessed with Bayley Scales of Infant Development Third Editions (BAYLEY-III).

Results

Fifty-eight children aged less than 3 years were enrolled in this study (26 children with stunting, 25 children with malnutrition without stunting, and 7 children with constitutional short stature). Age of subjects were 11(2.0-34.0), 13.0(2.0-38.0), and 26.0(16.0-33.0) respectively. BAYLEY-III percentile in cognitive scale were 12.5(0.1-75), 16(0.1-99.9), 37.0(0.1-99) (p=0.274)

Discussion

Stunting children showed worst cognitive function compared to malnourished children and constitutional short stature, while malnourished children were worse compared to constitutional short children, although it was not significant. Difference in age and small number of subjects in constitutional short stature was related to difficulty in diagnosing constitutional short stature in children aged <3 years.

E-Poster Viewing: Other

MTOR IN STUNTING AND ITS EFFECT ON COGNITIVE DEVELOPMENT

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Background

Stunting, with prevalence of 30.8% in Indonesia, is related to cognitive deficit. Linear growth on the chondral growth plate is controlled through the mammalian target of rapamycin (mTOR). Hypothetically, mTOR is related to stunting, cognitive development and influenced by amino acid.

Aims

To determine the association of mTOR with stunting and cognitive development of children

Methods

Cross-sectional study was conducted in Jakarta to children aged 6-24 months, from April to June 2018. Cognitive development was assessed with Bayley Scales of Infant Development 3rd Edition (Bayley-III). mTOR level was analyzed using ELISA. Amino acid was analyzed using Gas Chromatography–Mass Spectrometry (GC-MS). Food consumption data was gathered through parents interview and calculated using the Nutri-Survey Program.

Results

Subjects were 44 stunted children and 57 normal stature. There was a significant difference of mTORC levels between stunted children and control (10.5 ± 5.80 ng/mL vs 22.6 ± 11.53 ng/mL; $p=0.021$). However, no significant difference found on cognitive development between two groups ($p=0.53$). Amino acid failed to be detected using GC-MS method. Energy and protein intake were less in stunted children compared to control ($p<0.001$)

Conclusion

Stunting is related with low m-TOR. The association of m-TOR with cognitive development and amino acid intake should be determined further. Cognitive development is low in both subject and control.

E-Poster Viewing: Other

DECLINING HEIGHT CENTILES WITH INCREASING AGE IN CHILDREN LIVING IN GINNORUWA - AN ESTABLISHED CHRONIC KIDNEY DISEASE OF UNKNOWN ORIGIN (CKDU)-ENDEMIC REGION IN SRI LANKA

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Introduction: Chronic Kidney Disease of Unknown Origin (CKDU) is a leading cause of disease burden in the farming populations of the Central Province of Sri Lanka. This study was a part of a larger screening programme for CKDu aimed at children living in CKDu-endemic Ginnoruwa.

Objective: To evaluate variations in height in different age groups of children in CKDu-endemic Ginnoruwa, when compared to the national average.

Method: In a screening program held at the local primary school, children between 1-17 years of age were assessed for their heights. Children attended from Ginnoruwa – made up of a five-village cluster namely Ginnoruwa, Serupitiya, Sarabhoomiya, Badulupura and Viranagama. Each child's height centile was plotted on a standardised national growth chart. Data were analysed using descriptive statistics and mean comparisons.

Results: 369 children met the inclusion criteria. 191 (51.8%) were male and 178 (48.2%) were female. Median age was 8.0 years. Mean height was 121.9 cm. Mean height for age groups 1-5, 6-12 and 13-17 years of age was 94.97 cm, 125.00 cm and 152.18 cm respectively. The mean height centiles decreased with age. The mean percentile height in the 1-5 years age group was significantly higher than both older age groups ($p < 0.001$).

Conclusion: A decline in the height centiles was observed with increasing age. There may be several reasons for the poor final height achievement including nutritional practices, the burden of CKDu in the older population and the results of this on the younger population in these villages.

E-Poster Viewing: Other

GASTROINTESTINAL PRESENTATIONS OF COW MILK PROTEIN ALLERGY IN INFANTS AND CHILDREN

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Abstract:

Background: Manifestations of cow milk protein allergy include reactions occurring within minutes (e.g. anaphylaxis, angioedema, urticaria and vomiting), and syndromes with delayed reactions that occur within hours to days. Confirmation of the diagnosis relies on the resolution or significant improvement of symptoms following CMP elimination.

Aim of the study: to categorize the gastrointestinal presentation of CMP allergy in infants and children.

Patients and method: The study included 60 infants and young children (38 male and 22 female) who presented with gastrointestinal manifestations and diagnosed as cow milk allergy according to Diagnostic Approach and Management of Cow's Milk Protein Allergy in Infants and Children: ESPGHAN GI Committee Practical Guidelines 2012.

Results: exclusive gastrointestinal manifestations in thirty nine, while six patients presented with mixed gastrointestinal and dermatological, fifteen patients presented with gastrointestinal and respiratory manifestations.

Conclusion: Diarrhea and constipation are the most common gastrointestinal presentation while food protein induced enterocolitis (FPIEC) is the most severe

E-Poster Viewing: Other

DIFFERENCES OF EFFICIENCY OF TREATMENT OF ISOLATED GROWTH HORMONE DEFICIENCY AND PANHYPOPITUITARISM IN CHILDREN IN REAL CLINICAL PRACTICE

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Introduction

Frequency of occurrence of deficiency of growth hormone varies from 1:4000 to 1:10000 newborns.

Objective

To assess the effectiveness of treatment by comparing the dynamics of growth of patients with isolated growth hormone deficiency (IGHD) and panhypopituitarism (PHP).

Methods

Medical histories have been analyzed in the Republican Center of Pediatric Endocrinology. Microsoft Excel, SPSS have been used for statistical data analysis.

Findings

Among 47 patients participating in the study 83% is with IGHD and 17% with PHP. Before treatment 36 patients had a significantly short stature (from -6 to -2.01 SDS); SDS of 11 patients (2 of them with PHP) was from -1.9 to -1. After completion of treatment SDS was -1,4 in group with IGHD and -0.8 in children with PHP. The IGF-1 level in the group with PHP was lower compared to the IGHD group ($p < 0.05$) and were observed in 87.5% of children. A *lagging* of the *bone age from the passport* in the IGHD group before treatment was 2 years 5 months $\pm$ 1 year 3 months, after treatment it was the same; in the group with PHP it was 2 years 11 months $\pm$ 1 year 4 months before and 3 year 7 months $\pm$ 4 year 7 months after treatment ($p < 0.05$). The average dynamics of growth in patients with IGHD is 6.9 ± 1.62 cm/year, 7.9 ± 4.3 cm/year in group with PHP ($p < 0.05$).

Conclusion

Comparative analysis of the effectiveness of GH treatment showed a significant dynamics of growth, more obvious in patients with PHP.

E-Poster Viewing: Other

ASSOCIATION BETWEEN ADIPOKINES AND GESTATIONAL AGE IN NEWBORNS

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The mechanisms through which intrauterine exposures affect the metabolic outcomes of the offspring are poorly understood. Adipokines; leptin and adiponectin correlate with adult and childhood adiposity, but it is unclear how exposure to these adipokines during gestation relates to offspring growth.

Objectives: to evaluate the relation between maternal and umbilical cord adipokines; leptin and adiponectin and the gestational weight in newborns

subjects and methods: 50 mother-infant pairs ($N = 100$). Maternal serum as well as Umbilical cord blood adipokines; leptin and adiponectin levels were determined. Anthropometrics measurements of these newborns and their mothers were obtained by trained examiners.

Results:

lower serum maternal and higher cord leptin, and higher maternal adiponectin are associated with increased newborn birth weight compared with infants with normal weight for age ($P < 0.05$).

Cord blood leptin concentrations were significantly higher in infants born to obese vs. normal weight women. On the other hand, cord blood adiponectin were similar comparing gestational obese to normal weight women.

conclusion :

There is a relation between High umbilical cord blood leptin levels birth weight of newborn. Moreover, maternal adiponectin level correlates with the newborn weight.

E-Poster Viewing: Other

STUDIES OF BIOCHEMICAL COMPOSITION IN LEAF PROTEIN EXTRACTED FROM POTATO LEAVES

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The wide spread prevalence of diet-related health problems, particularly in high industrialized nations, suggests that many humans are not eating in a manner compatible with their biology. Leaf Proteins are very recent novelty in human nutrition where the use of vegetable protein is very common.

An Effort has been made to explore the possibility of utilizing waste potato leaves as a source of leaf protein potential. Wet fractionation of leaf protein constituent is used for two purposes viz, to obtain fiber and to obtain structural lipoproteins. Biochemical studies were made to determine nutritional characteristics particularly the Fiber in the Leaf Protein Concentrate fractionated from Potato (*Solanum tuberosum* L.) Leaves selected for the analysis.

Fiber content was found to be maximum in unfractionated fraction followed by fractionated cytoplasmic then fractionated chloroplastic fraction of the Leaf Protein Concentrate. The presence of higher Fiber content is an indication of providing more skeletal strength and high degree of tensile strength to support the aerial part of the plant. It appears that due to low Fiber content in LPC obtained from fractionated fraction will have better digestibility and higher nutritive value. The quality of feeding stuff is adjudged by lower crude fiber content. Low in Crude Fiber and high in Carbohydrate feeds are valued as supplements to hay & fodder components of the animal ration. It promotes a number of positive physiological effects, helping to prevent constipation, lower blood cholesterol levels and control glucose levels. Key words: Fiber, Leaf Protein. Nutrition.

E-Poster Viewing: Other

IMMUNOELEMENTS AND DENTAL CARIES RISK IN CHILDREN

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Background and Aims

Dental caries is an infectious and transmissible post-eruptive disease of tooth hard tissue which develops slowly in most people. The aim of our study was to highlight abnormalities of immunoelements dietary intakes, namely vitamin D, vitamin E, zinc, copper and selenium in children with caries.

Method

A clinical examination of the oral cavity and a food survey using a 24 h recall were carried out at the level of 4 educational establishments, 2 nurseries and at the department of Conservative odontology of the university hospital center of Tlemcen (Algeria) in 232 children divided into two groups, decayed and uncarious.

Results

Gender, weight, height, and body mass index (BMI) were similar between the two groups studied. Neither brushing nor brushing frequency is different between decayed and uncarious children, regardless of score (for all comparisons, $p > 0.05$). In contrast, the Decayed, Missing, and Filled Teeth (DMFT) index was significantly elevated in decayed children compared to uncarious children ($p = 0.000$). In contrast to vitamin E and zinc dietary intakes, vitamin D, copper, and selenium were significantly reduced in carious children compared to uncarious children (for all comparisons, $p < 0.01$).

Conclusion

Dietary intakes of vitamin D, copper and selenium, micronutrients that play a key role in immune defenses against infection, are deficient in children with dental caries.

E-Poster Viewing: Other

ANTHROPOMETRIC MEASUREMENTS AND INTAKES OF MACRONUTRIENTS DURING LATE PREGNANCY TO PREDICT LOW BIRTH LENGTH: A COHORT STUDY IN SLEMAN, INDONESIA

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Background and aims: Evidence is extensively available to predict maternal outcomes from nutritional status and intake during late pregnancy but inconclusive to specifically conclude which anthropometric and dietary variables are linked to low birth length. This study explored which anthropometric measurements and macronutrient intakes during late pregnancy were correlated with low birth weight.

Methods: This cohort study followed a total of 139 pregnant women throughout their last trimester. Mothers' mid-upper arm circumference (MUAC) and height were measured once at the start of the study using a measuring tape and stature meter, respectively. Maternal weight and intakes of energy and macronutrients were recorded in early, mid, and late 3rd trimester using a digital weight scale and semi-quantitative food frequency questionnaire, respectively. Birth length data was collected from verified birth reports. Statistical analyses were done employing Spearman's Rank Correlation, Chi-Square, and ANOVA tests.

Results: ANOVA test demonstrated that during the 3rd trimester, maternal weight increased significantly each month ($p < 0.05$). Intake of energy but not single macronutrient were significantly different between months with the highest in early 3rd trimester (2483 ± 76 kcal, $p < 0.05$). Spearman's Rank Test indicated that mother's height ($R = 0.31$), MUAC ($R = 0.23$), maternal weights in early ($R = 0.34$), mid ($R = 0.31$), and late ($R = 0.37$) 3rd trimester were positively correlated with birth length ($p < 0.05$). However, Chi-Square test only supported the association between low mother's MUAC and low birth length (OR=4.11, 95% CI=1.37-12.34).

Conclusions: Low birth length might be predicted from low mother's MUAC but not from a single macronutrient intake.

E-Poster Viewing: Other

PSYCHOLOGICAL IMPACT OF PROCESS OF DIET PLANNING ON THE PERSONS WHO ARE UNDER GOING THE PROCESS OF WEIGHT LOSS

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Weight either Overweight or Underweight is a major reason for concern and a matter of tension for both either one is trying to lose some pounds or gain some pounds. It is one of the most psychological effects that leave a deep trauma on the individuals who started following a particular diet plan or diet procedure for weight loss.

Weight loss have certain physical benefits as a person experiences the control of certain physical conditions as body changes, Diabetes cure, Reduction in the chance of heart diseases, any sort of physical discomfort. About 95 percent of people who are obese have a feeling of negative stigma attached to their life. That leads to the low self esteem of an individual leading to depressive symptoms. It is so very important duty on the dietitians or weight loss experts to have a close check on the psychological conditions also along with the physical condition.

Behavioral change can be both positive and negative. The study keep a check on the individuals that are following a particular weight loss diet and how that diet is affecting them as a individual. That they should be then the negative feeling has to be handled properly. Weight loss is proportionally related to the behavioral pattern. A person feels very positive after all the appreciations that he receive after the successful regime of weight loss.

E-Poster Viewing: Other

ANALYSIS OF FOOD ADVERTISEMENTS ON CABLE TELEVISION DIRECTED TO CHILDREN BASED ON THE FOOD GUIDE FOR THE BRAZILIAN POPULATION AND CURRENT LEGISLATION

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Background and Aims: This study examined food product advertisements directed to children and aired on closed television channels in Brazil, according to the types of foods and beverages advertised and the advertising content.

Methods: A descriptive study was conducted on the adequacy of food commercials directed to children and aired by six pay-television broadcasters according to two parameters: *The Food Guide for the Brazilian Population* (2014) and the National Council on Children's and Adolescents' Rights Resolution nº163 of 2014 about food advertising. The advertisements were recorded in July 2015, at different times and days of the week.

Results: One hundred and sixty-two hours were recorded, registering 3,468 commercials: 1,850 were related to internal programming and 1,618 advertised toys (22.15%), food and beverages (5.61%), applications for electronic devices (5.58%), and entertainment/events (5.56%). The Fisher exact test showed fewer number of food commercials compared to other types of commercials ($p < 0.001$). The main food items advertised by all television stations were ultraprocessed foods and no advertisements of fresh food were observed ($p < 0.001$). Most of the food commercials (64.3%) used children's language and characters; 43.0% used songs in children's voices, and 21.4% linked gift distribution to food.

Conclusions: The number of food commercials observed was lower than in previous national studies. However, the advertisements did not follow current legislation, indicating the abuse of marketing communication to children. More effective public policies and the respect and enforcement of legislation on child advertising could protect children from high consumption of ultraprocessed foods.

E-Poster Viewing: Other

CHILDREN AND CEREBRAL PALSY: THE POSITIVE CLINICAL IMPACTS OF JOINT THERAPY

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Objective our study was conducted to evaluate the neurotrophic response to B12 vitamin and omega-3 fatty acids in children diagnosed early with variable forms of cerebral palsy. The response was monitored both clinically and with C.T Scan as being a highly predictive tool for assessing cerebral palsy. Design The study was carried out on 40 cerebral palsy patients; 26 (65%) out of them were girls, and 14 of them were boys, aged from 0 to 5 years old; from outpatient clinic at Zakho/Duhok General Hospital in Kurdistan Region-Iraq. Brain C.T scans were done for every patient to assess the degree of brain atrophy before starting this combined therapy, and every month for six months to one year. 80% of children with delayed speech delay have very good response and improvement, 77% of children with delayed milestone and hypertonia, and 87% with delayed walking have positive clinical outcomes. 84% of treated children have great improvement in their neuroimaging results from moderate/severe forms of brain atrophy to A mild form of brain atrophy after being treated and followed up for 6 months- 1 year. Conclusions The damaged brain sites based on CT scan results, showed progressive improvement in response to combined therapy upon daily supplement throughout 6 months to one year. The greatest improvement in speech and motor development was significantly observed in about 32 patients (80%) of treated children with combined therapy. Others have less response to combine therapy as being presented and diagnosed beyond 1 year of age (16%)