THE DIET QUALITY OF PREGNANT WOMEN IN PUBLIC HEALTH CARE IN A MIDDLE-INCOME COUNTRY
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Background and Aims:
Poor dietary quality during pregnancy is linked to maternal complications and poor birth outcomes. This study aimed to determine the dietary quality of women with high-risk pregnancies who receive anti-natal care in the resource-strapped public healthcare system of a middle income country.

Methods:
A descriptive study design was used. Data were collected during structured interviews with pregnant women (N=681) at the high-risk antenatal clinic at Pelonomi Regional Hospital, Mangaung, South Africa through sociodemography and quantitative food frequency questionnaires (QFFQ). Diet quality was assessed with the Diet Quality Index Adapted for Pregnant Women (IQDAG), representing three food groups, five nutrients and a moderator component.

Results:
Participants had a median age of 31.9 years (IQR: 26.8-36.7) and median pregnancy stage of 32.0 weeks (IQR: 26.0-36.0). The median diet quality score (61/100; IQR:53-68) indicated that the majority of these women had a suboptimal prenatal diet. The median intakes for none of the nine components of the IQDAQ met the recommendations. Fruit, vegetables and legume, and dietary calcium and omega-3 intakes were particularly low, while the intake of ultra-processed foods was above optimal. The majority of participants consumed at least half of the recommended intake for iron and folate from their diets.
Conclusions:
In this South African public health setting, women with high-risk pregnancies had suboptimum diet quality. Improving the diet quality of pregnant women would reduce the high financial and human cost of poor birth outcomes and maternal complications, in low and middle-income countries. The results confirm the importance of prenatal micronutrient supplementation in this setting.
EP002 / #129

E-Poster Topic: AS01 Neonatal & Prematurity

THE BREASTFEEDING INFLUENCE ON THE DURATION OF RESPIRATORY SUPPORT IN PREMATURE INFANTS IN NICU
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Background and Aims:
The aim of our study was to access the effect of breastfeeding on the duration of various types of respiratory support in premature infants in NICU.

Methods:
It was retrospective cohort study, including 136 premature infants with gestational age ≤36 weeks and birth weight <2000 g admitted to the NICU. The infants receiving predominantly mother’s own milk were included in MOM group. The infants feeding with formula for premature babies were included in FF group. The DM group included infants fed with donor milk. The duration of invasive mechanical ventilation, non-invasive ventilation and oxygen therapy was analyzed.

Results:
The median weight was 1484±281,7 g in MOM group, 1418±326,0 g, in FF group, 1105±307,0 g in DM group.

In MOM group the time to reach full enteral nutrition was shorter than in FF group (12,4±6,92 d, 16,1±7,63 d, p=0,05). In DM group it was 19,2±8,01 d.

In MOM group the mechanical ventilation time was shorter compare with FF group: 154,1±133,0 h, 318,2±278,3 h, (p = 0,012). In DM group it was 275,0±205,1 h.

There were no statistical differences between the duration of non-invasive ventilation and oxygen support depending on the type of feeding.

Conclusions:
It is necessary to continue to study the benefits of breast milk in various aspects of the treatment the premature babies.
E-Poster Topic: AS01 Neonatal & Prematurity

DOES BREAST MILK HAVE A BENEFICIAL EFFECT ON EARLY BRAIN DAMAGE IN PREMATURE BABIES? RESULTS OF CASE CONTROL STUDY
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Background and Aims:
The beneficial effect of breast milk on brain growth and cognitive functions are well known on the term’s newborn brain a. However, this effect on the premature’s early brain damage has not been reported. This study aims to demonstrate if breast milk intervene in the improvement of early brain lesions in premature babies.

Methods:
The case control study realized from 01/12/2007 to 31/12/2012 included 801 prematures (24 to 36 weeks +6 days). A cranial ultrasonography was performed within the 72 hours of birth and weekly until the patients reached the term. The MRI at the acquired term was realized for babies born before 32 weeks, when the lesions persisted and the neurological exam was abnormal. The analysis focused on 24 risk factors, including breast milk and its effect on the early brain lesions. The statistical method consisted in bi-varied analysis and logistic regression. P inferior to 0.05 was considered significant.

Results:
83.4% babies were early breast milk fed. The frequency of the brain lesions was 27.3%. The lesions included hemorrhages, leukomalacia and the sequelae (post hemorrhagic hydrocephalus, abnormal corpus callusum, cortical atrophy). The breast milk was correlated : OR= 0,14 IC 95=(0,09-0,22) P<10-6. After logistic regression the breast milk with was independent with OR=0,47 IC95% (0,25-0,90) P= 0,022.

Conclusions:
Breast milk early introduced appears to be a protective factor against early brain damage of the premature. However, only a long-term follow-up and the use of a more sophisticated MRI could confirm this beneficial effect.
SURVIVAL OF INTACT HUMAN MILK PROTEINS ACROSS HEAT TREATMENTS AND HOMOGENIZATION

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Background and Aims:

Donor human milk (DHM) is a valuable alternative for feeding infants, particularly preterm infants, when mother’s own milk is unavailable or not sufficient. DHM is typically processed to ensure microbiological safety. However, bioactive proteins in DHM can be affected by different processing techniques, resulting in reduction of the beneficial biological properties from those proteins. In this study, we compare the intact proteins present in raw DHM and after vat pasteurization (VatPT), retort sterilization (RTR), and ultra-high-temperature (UHT)-processing via LC-MS/MS-based proteomics to determine the extent to which these processes alter bioactive protein survival.

Methods:

A pooled DHM sample was collected and treated by VatPT, RTR, UHT processing. Intact proteins in DHM were extracted via centrifuge and ethanol precipitation, and digested using trypsin. Tryptic peptides were enriched by C18-solid-phase extraction, analyzed by C18-nano LC/Orbitrap MS and identified by Proteome Discoverer searching.

Results:

Protein counts of Raw, VatPT and UHT were similar and RTR-processed samples were slightly lower than those samples. Total abundances of proteins identified from Raw and VatPT samples were higher than UHT and RTR samples. In particular, the abundances of lactoferrin, IgA, IgG, polymeric immunoglobulin receptor, alpha-lactalbumin, lysozyme C and bile salt-activated lipase were much lower in UHT and RTR samples than Raw and VatPT samples.

Conclusions:

This study showed that Raw and VatPT samples had similar protein profiles but that UHT and RTR processes greatly reduced presence of some bioactive milk proteins. These results will help to optimize DHM processing to better preserve bioactive proteins and improve infant outcomes.
HYPOCALCEMIA AS A POSSIBLE PREDICTOR OF DENTAL AND SKELETAL DISORDERS IN THE LATE PRETERM CHILDREN IN CRIMEA

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Background and Aims:

Late preterm Infants (LPIs 34-36weeks GA) account for approximately 84\% of preterm births. There is lack of information about LPIs’ long term outcomes and risk factors after dental and skeletal problems, which consist 40\%.

The aim of our study was to evaluate the correlation between the blood calcium levels and long term outcome of LPIs that suffer from dental and skeletal disorders.

Methods:

We measured the calcium level in arterial blood in late preterm newborn babies which sisters and brothers had dental and skeletal disorders. The study included 100 late preterm babies with Apgar score equal or more than 7 at 5 minutes. The calcium samples database was conducted on «G3000 Premier» (Instrumentation Laboratory) in ultradian rhythm 12 hours. The follow up for dental and skeletal spheres in observed children was conducted during 3 years. Spearman’s rank correlation coefficient was used for correlations.

Results:

The study population consist of 100 newborns, 63\% of them—males. All children had low level of blood calcium during first 72 hours of their life and their had breastfeeding. Different level of dental decay (36\%) and enamel hypoplasia (20\%) correlated with mean calcium level around 1.3±0.7 mmol/L in 56\% preterm children (r=0.7; p=0.001). Scoliosis (14\%), kyphosis (10\%), hip dysplasia (20\%) at the age of 3 years correlates with low calcium level of 0.8±0.7 mmol/L in 44\% preterm children (r=0.6; p=0.001).

Conclusions:
According to our study results continuous low level of blood calcium influence on dental and skeletal development in future. Therefore, the test of level of blood calcium have useful neurodevelopmental prognostic value for late preterm.
A LARGE-SCALE STUDY TO DESCRIBE THE NUTRITIONAL MANAGEMENT OF PREMATURE INFANTS IN 8 COUNTRIES IN AFRICA (THE LION STUDY)

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Background and Aims:
Premature birth rates are higher in Africa (15.4%-18.1%) than high-income countries (5-6%). This multicentre, observational study evaluated nutritional care practices for premature infants in Africa.

Methods:
Infants <37 weeks gestation (N=1507) were included from 54 neonatal units in 8 African countries (Cameroon [n=295], Ivory Coast [n=236], Ethiopia [n=246], Mauritius [n=106], Madagascar [n=121], Morocco [n=172], Nigeria [n=281], Senegal [n=50]). Characteristics of the infants, nutritional care practices during hospitalisation, and recommendations for nutritional care at home were evaluated by questionnaire at discharge from hospital.

Results:
Overall, 9.71% of births were premature with a high disparity between countries (inter-quartile range: 5.35-18.52%). Few centres (5%) followed a national management protocol, 62.5% implemented a dedicated service protocol. The Kangaroo Mother Care method was practiced for 60.3% of infants. Feeding was parenteral (42.5%), or enteral (83.5%). Minimal enteral was practiced in 59.9%. When oral nutrition was possible, 82.7% of infants received breastmilk (42.4% exclusively, 41.3% complemented with preterm formula). Of exclusively breastfed infants, 17.3% received breastmilk with specific fortifiers. Supplementation with iron and vitamin D was not systematic during hospitalization and upon discharge. Anthropometric data upon discharge showed growth retardation (27% and 35% of infants <10th percentile in terms of length and...
weight, respectively). There was no dedicated dietician support for nutritional management.

**Conclusions:**
Gaps in the nutritional management of prematurity in Africa include the lack of harmonized management protocols, availability of milk fortifier, lack of dedicated personnel to support breastfeeding and breastmilk fortification, and a training need for neonatal staff.
GROWTH ASSESSMENT OF CHILDREN WITH NEONATAL SHORT BOWEL SYNDROME: RELATIONSHIP WITH GESTATIONAL AGE
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Background and Aims:
Background: The impact of short bowel syndrome (SBS) on child growth has been described. Neonatal short bowel syndrome (SBS), as a result of congenital digestive malformations, neonatal small bowel volvulus or necrotizing enterocolitis, is the main cause of pediatric intestinal failure (IF). The incidence of SBS-IF is higher in preterm infants, whose growth is affected because different causes.

The aim of this study was to compare the growth of neonatal SBS infants-associated intestinal failure born at ≥ 36 and < 36 weeks gestational age (GA).

Methods:
Longitudinal retrospective study of infants (≥ 36 and < 36 weeks GA) followed-up at two years of age and during childhood. Z-scores for weight (zW), height (zH) and body mass index (zBMI) were determined at age 2 years and at the beginning and end of a one-year period during childhood.

Results:
Of 21 infants, 13 were ≥ 36 weeks GA and 8 were < 36 weeks GA. The greater impact of neonatal SBS was on zH at 2 years in < 36 weeks GA infants (P < 0.008). While zW and zBMI maintained steady values during childhood, zH/Age worsened in both GA groups.

Conclusions:
The greater impact of SBS on longitudinal growth was detected at 2 years of age in < 36-weeks GA infants and during childhood in both groups.
A RARE CASE OF ASSOCIATION OF CONGENITAL CHYLOTHORAX WITH CONGENITAL HEART DISEASE
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Background and Aims:

Congenital chylothorax in newborn is a rare disease but a common cause of pleural effusion in neonate, prevalence ranging between 1:10,000 to 1:24,000. There are only 753 cases reported from 157 studies published between 1990 to 2018. Causes of chylothorax are congenital lymphatic malformations, associated syndrome or birth trauma and Complicated with congenital heart disease is a very rare entity and incidence unknown. We report a case of congenital chylothorax associated with congenital heart disease in a term baby.

Methods:

Early term neonate presenting with moderate respiratory distress requiring non invasive ventilation. Antenatal scan revealed moderate pleural effusion and post birth USG thorax which was done showed right side moderate pleural effusion, which was drained and analysed. To rule out other association 2 D Echo was done which showed large patent ductus arteriosus.
Results:
Once feeding was started and increased drain changed to milky fluid with a lymphocytic pleocytosis and elevated triglyceride which was diagnostic of chylothorax. Oral feeding replaced by TPN and intralipid. Baby was started on octreotide infusion and titrated.
Conclusions:
Congenital chylothorax is a diagnostic challenge but association with congenital heart disease is even more challenging for the neonatologist as there is no case report for this condition. Despite modern intensive care mortality still ranges between 30 to 70%. Nonetheless, prompt diagnosis and adequate management is crucial.
SUCKING SKILLS IN INFANTS OF DIABETIC MOTHERS ADMITTED TO THE NEONATAL INTENSIVE CARE UNIT
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Background and Aims:
Infants of diabetic mother (IDM) are at increased risk of multiple Feeding difficulties in IDM can be associated with a dysregulation of pharyngeal-airway interactions, delay activation of esophageal peristalsis and/or prolonged inhibition at the gastroesophageal junction. Literature reports that up to 37% of IDM can have feeding difficulties that can prolong the length of stay in the Neonatal Intensive Care Unit (NICU). The objective of this study is to describe sucking skills in IDM admitted to NICU.

Methods:
Retrospective review of data recorded from Speech Pathologist evaluation of IDM admitted to the University Pediatric Hospital NICU in San Juan, Puerto Rico from 2018-2020. Infants were evaluated using the Neonatal Oral-Motor Assessment Scale. Statistix 8.0 was used for analysis. Approved by the Institutional Review Board.

Results:
The study included 27 infants (41% females, 59% males). Mean gestational age was 38 weeks (36-41) and mean birth weight 3526 grams (1850-5300). Low muscle tone was identified in 35%, retracted tongue in 19% and flaccid tongue in 12%. Sucking pattern was 63% disorganized, 12% dysfunctional and 25% mature.

Conclusions:
This group of infants born to mothers with diabetes showed concerning findings affecting the feeding and swallowing process. Despite most infants been born at term or near term, many infants showed immature sucking patterns. NOMAS is a good assessment tool to describe infant's sucking patterns, however a complete evaluation of feeding and swallowing is necessary for the diagnosis of swallowing dysfunction. This evaluation must include physiological assessment in order to establish adequate sucking patterns.
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E-Poster Topic: AS01 Neonatal & Prematurity

CONTEXT-TAILORED-FOOD-BASED NUTRITION EDUCATION AND COUNSELLING OFFERED DURING PREGNANCY IMPROVES DIETARY INTAKES: A CLUSTER RANDOMIZED CONTROLLED TRIAL IN RURAL MALAWI

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Background and Aims:
Maternal and child nutrition is a global public health challenge, contributing to over a quarter of untimely deaths of children in the first five years. We undertook a cluster Randomized Controlled Trial (cRCT) between December-2015 to April-2017 to test the hypothesis that tailored Nutrition Education and Counselling (NEC) during pregnancy could improve infant birth weight.

Methods:
We randomized 20 out 150 villages. Sample size was 218, yielding a difference in mean birth weight of 150g between the intervention and control group, with a power of 80%. Pregnant women recruited between 12–18 weeks of gestation were offered NEC (home visits, community-based cooking-demonstrations) i.e. those in the intervention group, and non-dietary standard antenatal-counselling in the control group.

Results:
Neonates in the intervention group had a higher but non-significant birth weight (3015.7g; SD=455.6), [n=94] than those in the control (2844.7g; SD 394.2)[n=66]; Adjusted mean difference, 47.1g (95%CI: -95.3;189.6). The neonates in the intervention group had undergone a longer gestation 39.1 weeks (SD=2.9)[n=97] than those in the control 38.9 weeks (SD=2.7)[n=94]. Food intake (unquantified intake past 24-hours) was significantly higher among pregnant women in the intervention than control group for dark-green-leafy-vegetables, (Adj.OR=1.6(0.5;5.0)); nuts (Adj.OR=2.2(0.8; 6.0)) and milk (Adj.OR=1.9(0.4; 9.9)).

Conclusions:
We found a positive though non-significant trend on the effectiveness of tailored NEC in improving birth weight and pregnancy dietary intakes, warranting a further investigation where NEC can be offered early on in pregnancy and at a large scale.
EXTRAUTERINE GROWTH RESTRICTION AT DISCHARGE FROM THE NEONATAL UNIT AND NEURODEVELOPMENT AT 5 YEARS OF AGE IN A EUROPEAN EXTREMELY PRETERM COHORT

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Background and Aims:

Extrauterine growth restriction (EUGR) at neonatal discharge has been associated with neurodevelopmental impairment among children born extremely preterm (EP, <28 weeks’ gestational age (GA)), with some studies finding higher risks for boys. This study aimed to assess associations between EUGR at discharge and cerebral palsy (CP) and cognitive and motor abilities at age five by sex among EP children.

Methods:

957 EP infants from 11 European countries were followed-up at five years using clinical assessments and parental questionnaires. EUGR was defined as: <-2 SD decrease in Z-scores between birth and discharge using Fenton’s charts (Fenton) and low weight-gain velocity <11.2 grams per kilogram per day (1st quartile) based on Patel’s model (Patel). Outcomes included CP diagnosis (yes/no), intelligence quotient (IQ) assessed with the Wechsler Preschool and Primary Scales of Intelligence tests and motor function using the Movement Assessment Battery for Children-2nd edition. Logistic and linear models were adjusted for covariables associated with growth and neurodevelopment.

Results:
severe EUGR prevalence was 33.9% by Fenton and 26.3% by Patel. Boys with EUGR by Patel had elevated odds of CP (OR: 2.1, 95% CI=0.9-4.7). EUGR was associated with lower IQ (-3.9 points (95% CI=-7.2; -0.6) by Fenton; -5.0 (95% CI=-8.2; -1.8) by Patel), with no sex interaction. No association was observed between EUGR and motor performance.

Conclusions:
EUGR at discharge was associated with a decrease in IQ at age five and higher CP risks among boys. Better in-hospital nutrition and growth could be a strategy for improving neurodevelopment after EP birth.
SPATIO-TEMPORAL IMPACT OF DIETARY POLAR LIPID SUPPLEMENTATION ON BRAIN LIPIDOME DURING DEVELOPMENT

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Background and Aims:

The lipid composition of the brain during development is essential for optimal neural functions. Human milk is the only source of dietary lipids for exclusively breast-fed infants and thus, contributes to changes in brain lipidome during development. Notably, it contains milk fat globule membrane (MFGM) enriched in polar lipids (PL), which serve as essential components of the lipid bilayer in all cell membranes and have been linked to cognitive and behavioral benefits. While early life nutrition is critical for brain development, the interplay between dietary intake of PL and spatiotemporal distribution of various lipid species during brain development is poorly understood. In this study, we explored the impact of PL, extracted from a uniquely processed whey protein concentrate enriched in alpha-lactalbumin and phospholipids, on brain lipidome during development.

Methods:
The effect of chronic PL supplementation from PND7 to PND50 on brain lipidome was assessed at PND 14, 21, and 50 in a preclinical model by using matrix-assisted laser desorption ionization as mass spectrometry imaging (MALDI-MSI). Unsupervised statistical methods were used to investigate the data structure and to perform similarity-based pattern recognition among the spatiotemporal profiles collected for lipid species that responded to PL supplementation during brain development.

Results:
Results showed that the brain lipidome changes heterogeneously during brain development. PL supplementation significantly increased different classes of lipids with highly specific spatiotemporal distributions.

Conclusions:
Dietary PL supplementation may provide relevant building blocks for the biosynthesis of different lipid classes, critical for development and maturation of brain functions such as learning and memory.
Background and Aims:

Little is known about bottle refusal by breastfed babies; however, an informal review of global online forums and social media suggested large numbers of mothers experiencing the scenario with potential negative consequences.

Aim: to explore the background and characteristics of bottle refusal and to investigate potential relationships between bottle refusal/eventual acceptance and independent variables.

Methods:

A 22-point online questionnaire was completed by 841 UK mothers experiencing bottle refusal or who had previously experienced it. Associations between independent variables and the key variables of 'refusal/eventual acceptance' were investigated using SPSS v.23.0.

Results:

Bottle refusal was permanent for some babies, 'cup refusal' was also reported. Babies refused both expressed breastmilk and formula in a bottle. Mothers used various methods to solve bottle refusal, 59% reported 'nothing worked'. 36% of mothers reported support to be 'unhelpful'. Mothers reported delaying emergency surgery and essential medication due to bottle refusal. 26% of mothers reported bottle refusal impacting negatively on their breastfeeding experience. No significant association was found between maternal demographics/sex of baby and refusal/eventual acceptance. Bottle refusal was associated with previous bottle refusal p = .014 and the younger a baby was at first attempt to introduce it to a bottle p = <.001. Eventual acceptance was associated with mothers intending to feed their baby with a bottle at every feed p = .01 or daily p = .05.

Conclusions:

Bottle refusal by breastfed babies is a complex scenario that has negative consequences. Recognition and support for mothers experiencing it is required to ensure breastfeeding experience is optimised.
HUMAN MILK OLIGOSACCHARIDES ATTENUATE ALLERGY SYMPTOMS IN A MOUSE MODEL OF ASTHMA
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Background and Aims:

The global prevalence of allergic asthma has been steadily increasing over the past several decades, and it is now the most common chronic disease in children. Several lines of evidences suggest that gut microbiota composition during early life determines future asthma susceptibility. Since diet is a key factor driving gut microbiome composition, infancy offers a critical time window in which modulation of microbiota composition through diet-microbe interactions could promote infant health. Human milk oligosaccharides (HMOs), the third largest solid component of the breast milk, are considered prebiotics as they are selectively metabolized by the gut microbiota. In this way, HMOs may facilitate changes in microbiome composition that could protect infants against various diseases such as asthma.

Methods:
The HMOs, 2'fucosyllactose (2'-FL) and 6'sialyllactose (6'-SL) were tested in a house dust mite (HDM) mouse model of allergic asthma.

Results:
We show that early life exposure to HMOs reduces allergy symptoms later in life in the mouse model. These protective effects were associated with: i) decreases in inflammatory cell infiltration in the lung, ii) reductions in levels of cytokines and circulating IgE, iii) shifts in gut microbiota composition, and iv) changes in the concentration of short chain fatty acids (SCFAs), which are microbiota-generated metabolites.

Conclusions:
Our results suggest a mechanism by which HMOs reduce the severity of asthma symptoms by promoting the growth of beneficial intestinal bacteria that generate SCFAs capable of further modulating the systemic immune response. This research was funded by Abbott Laboratories.
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E-Poster Topic: AS02 Infancy

EFFECT OF BREASTFEEDING ON FOLATE AND VITAMIN B-12 STATUS IN NORWEGIAN INFANTS
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Background and Aims:

Folate and vitamin B12 (B12) are essential for infant growth and development. Studies have suggested that breastfeeding can result in poor B12 status. This study aimed to investigate biomarkers of folate and B12 status in relation to age and breastfeeding in healthy Norwegian infants.

Methods:
We measured serum concentrations of folate, cobalamin (B12), total homocysteine (tHcy) and methylmalonic acid (MMA) in heel capillary blood samples from 125 infants. We investigated potential associations between infant age, breastfeeding and biomarker concentration in regression models.

Results:
At time of blood sampling, the mean (SD) age was 24 (16) weeks, 42% were exclusively breastfed, 38% partially breastfed, and 21% were weaned. Overall, median (IQR) folate and cobalamin concentrations were 47 (35, 66) nmol/l and 250 (178, 368) pmol/l, respectively. None of the infants were folate deficient but 19 (15.2%) had cobalamin concentration < 148 pmol/l. Elevated tHcy (> 6.5 μmol/L) and MMA (> 0.26 μmol/L) concentrations were identified in 77 (62%) and 86 (69%) of the infants, respectively. Compared to weaned infants, exclusively or partially breastfed infants had 47% and 39% lower cobalamin concentrations (p < 0.001), respectively. Mean tHcy and MMA concentrations were also substantially higher in the breastfed, compared to the weaned infants.

Conclusions:
15% of the infants were B12 deficient, while up to 70% of infants had a metabolic profile resembling poor B12 status. Poor B12 status was substantially more common in breastfed compared to weaned infants. Whether or not these poor indices have
consequences for infant health and development is an urgent research question.
A RANDOMIZED CROSSOVER STUDY TO EXAMINE THE EFFECTS OF MASSAGE VELOCITY ON HIGH FREQUENCY OF HEART RATE VARIABILITY IN HEALTHY INFANTS

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Background and Aims:

Infant massage can cause pleasantness as mothers stroke their infant’s skin slowly and gently. However, the massage velocity at which infants feel the most pleasant sensations remains unclear. We investigated that the effects of massage velocity on high frequency (HF) of heart rate variability (HRV) in healthy infants.

Methods:

We included 22 infant-mother dyads in two to seven-months-old. Mothers stroked their infant’s skin at three massage velocities (5.0, 7.5, and 10.0 cm/s) in a randomized order for 15 min. The rhythm of massage velocity was calculated according to the length of three body areas (arms, legs, and breast) based on the average of body length at the same age. HF of HRV was measured as the index of infants’ pleasantness and evaluated using percent change in median baseline value compared with median values for the three massage velocities. Statistical analysis was performed using analysis of variance mixed to exclude “period” and “carryover” effects during massage. This study was approved by the Institutional Review Board of Osaka University Hospital.

Results:

In the percent changes of HF, massage velocities of 5.0, 7.5, or 10.0 cm/s changed 29 %, 71 %, and 15 %, respectively. A massage velocity of 7.5 cm/s caused a significant increase in pleasantness compared with 10.0 cm/s (p = 0.04).

Conclusions:

The result of this study suggested that a massage velocity of 7.5 cm/s was the most pleasant for infants. In the future, it will need to investigate the relationship between an infant massage by velocity and infant development in longitudinal studies.
E-Poster Topic: *AS02 Infancy*

**ARE THERE CENTURY WIDE CHANGES IN MACRONUTRIENT LEVELS IN INDIAN MOTHERS' MILK? A SYSTEMATIC REVIEW.**

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**Background and Aims:**

Composition of human milk is highly variable and depends on various factors. India has undergone rapid economic & nutrition transition in past decades. Data on Indian mothers milk is limited. Objective was to conduct a comprehensive systematic review on macronutrient composition in Indian mothers' milk in the past 100 years.

**Methods:**

A systematic review in accordance with PRISMA 2020 guidelines was conducted. Multiple databases were searched till Nov 2021 using MeSH key words like ‘breast milk India’, ‘human milk India’, ‘human milk composition India’, ‘breast milk nutrient content India’, ‘Nutrients Indian mothers milk’, ‘Nutrition lactation India’ with Boolean operations ‘AND’ or ‘OR’ for including macronutrients, micronutrients, nutrient composition publications reported in the past 100 years (1921 – 2021). Total of 105 studies were identified of which 88 were assessed for eligibility with 34 publications reporting either 1 or more macronutrients (fat, protein, lactose) getting included. Studies were categorized for colostrum (≤5 days pp), transitional milk (6-15 days pp), mature milk (>16 days pp).

**Results:**

There seems to be a decline in fat & protein level in colostrum over 100 yrs. The composition of transitional & mature milk was similar with lactose being fairly constant across time.

**Conclusions:**

The highest variability was seen in the colostrum composition with a decline in fat and protein content in the last many decades. There is a lot of variation in sampling, methods of estimation, analysis, and results interpretation. There is need to conduct a well-designed multicentric study on nutrient composition of Indian mothers using standardized methods.
FACTORS AFFECTING WEIGHT GAIN IN INFANT FORMULA GROWTH STUDIES
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Background and Aims:
In 1988 the American Academy of Pediatrics established a benchmark of 3 g/d to indicate a clinically significant difference in weight gain from age 0.5-4 months in studies of formula-fed term infants. This analysis evaluated the 3 g/d benchmark using contemporary data from Nestlé infant formula clinical trials.

Methods:
Data from 9 growth studies of formula-fed infants followed from ≤14-112 days were pooled. Summary statistics for monthly weight gain were provided overall and by sex and study with stratification by formula type (intact cow’s milk (CMF) vs 100% whey partially hydrolyzed (PHF-W)), presence of prebiotic/probiotic, maternal race, and education. Regression models were used to evaluate the effects of these variables on growth.

Results:
Among 1491 infants included, 86.9% were white, and mean weight gain was 29.8±6.2 g/d. Neither formula type, presence of prebiotic/probiotic, nor maternal education resulted in a growth differential of more than 3 g/d. Among boys, growth in blacks was significantly greater than whites (mean difference 2.5 g/d, 95% CI: 0.1, 4.8). Formula intake varied by study; PHF-W intake was significantly higher than CMF.

Conclusions:
Weight gain in formula-fed infants was not affected by formula type, prebiotic/probiotic presence, or maternal education. Infants fed PHF-W had significantly greater formula intake compared to CMF, though their weight gain difference was within 3 g/d. Maternal race was a significant predictor among boys, with blacks growing at a faster rate. Infant formula growth studies in more diverse populations may be useful to ascertain whether race affects growth patterns in infancy.
E-Poster Topic: AS02 Infancy

STARTER AND FOLLOW-UP FORMULA WITH A SPECIFIC BLENDE OF FIVE HUMAN MILK OLIGOSACCHARIDES SUPPORT AGE-APPROPRIATE GROWTH, ARE SAFE AND SUITABLE: A DOUBLE-BLIND, RANDOMIZED CONTROLLED TRIAL


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**Background and Aims:**

This trial evaluated growth, safety and tolerance in infants fed starter infant formula (IF) and follow-up formula (FUF) containing a blend of five human milk oligosaccharides (HMOs) structurally identical to those in breastmilk (2'-fucosyllactose, 2',3-di-fucosyllactose, lacto-N-tetraose, 3'-sialyllactose, 6'-sialyllactose).

**Methods:**
Formula-fed infants (FFI; 7-21 days old) were randomized to standard cow's milk-based IF (Control; n=233); the same IF with 1.5g/L HMOs (Test1; n=230) or 2.5g/L HMOs (Test2; n=230) until 6-months age, followed by a Control FUF or a FUF with 0.5g/L HMOs for both test groups (TGs) until 12-months age. Ninety-six breastfed infants (BF) were enrolled. Primary endpoint was weight gain in FFI (enrolment to 4-months age). Secondary endpoints included additional anthropometric measures, stooling pattern, gastrointestinal (GI) tolerance, and adverse events (AEs) through 12-months age.

**Results:**
Weight gain was non-inferior in both TGs vs. Control with the lower bound of the 95%CI above the -3g/day non-inferiority margin (mean difference (95%CI) Test1/Test2 vs. Control =0.80 (-0.49, 2.08)/=0.26 (-1.03, 1.55) g/day). Mean anthropometric z-scores were similar among FFI and tracked closely with the WHO growth standards (largely within ±0.5SD) through 12-months age. Soft stooling pattern was observed in FFI. Parent-reported GI symptoms (spit-up/gassiness) and associated behaviors (crying/fussiness/sleep) were largely comparable between FFI and BF. A validated GI Symptom index was <19 in FFI at 6- and 12-months age indicating sustained good GI tolerance. Parent-reported and physician-confirmed AEs were similar among FFI.

**Conclusions:**
IF and FUF with a specific blend of five HMOs support adequate growth, are safe, suitable and well-tolerated through the first year of life.
SAFETY EVALUATION OF INFAT®PLUS: ACUTE, GENETIC, TERATOGENIC, AND SUBCHRONIC (90-DAY) TOXICITY STUDIES
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Background and Aims:
INFAT®PLUS, is an sn2 palmitate enriched fat ingredient intended to be added to infant formula. The triglyceride structure in INFAT®PLUS was developed based on the regiospecificity of palmitic, oleic, and linoleic acids on C52 triglycerides species in human milk of Chinese lactating mothers. The objective of the present study was to determine safety of INFAT®PLUS in acute, genetic, teratogenic, and subchronic (90-day) toxicity studies.

Methods:
SD rats and ICR mice, both male and female, were used in the series of toxicity assessments. In the acute study, single dose of INFAT®PLUS was administered by oral gavage. For the subchronic toxicity study, INFAT®PLUS was administered by oral gavage to rats at a daily dose of 2.23, 4.45, and 8.90 g/kg body weight for a period of 90 days. The effects on clinical signs, body weight, food and water consumption, organs weight, hematology, blood biochemistry, and histology were studied. Assessment of genotoxicity included bacterial reverse mutation, mammalian erythrocyte micronucleus and chromosome aberration tests. Teratogenic test examined the influence of daily INFAT®PLUS administration by oral gavage (2.23, 4.45, and 8.90 g/kg body weight) on embryo-fetal development in pregnant rats.

Results:
INFAT®PLUS had LD₅₀ values greater than 53.4 and 26.7 g/kg body weight for mice and rats, respectively. No evidence of genotoxicity or teratogenic effect was noted. The no observed adverse effect level (NOAEL) determined from the 90-day study was 8.90 g/kg body weight/day.

Conclusions:
Based on the obtained results we concluded that INFAT®PLUS was found non-toxic under the experimental conditions.
A PERSPECTIVE ON SUBOPTIMAL COMPLEMENTARY FEEDING PRACTICES AMONG YOUNG CHILDREN IN CHINA, INDIA AND INDONESIA

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Background and Aims:
Poor complementary feeding (CF) is a significant determinant of malnutrition in children and a major cause of morbidity and mortality. Particularly in Asia, the double burden of malnutrition, i.e. the coexistence of both undernutrition and overnutrition throughout the lifespan, poses a threat to children's long-term health. We aimed to provide insights on the CF practices in three Asian countries currently affected by the double burden of malnutrition and representing a large proportion of Asian children under 5 years: China, India and Indonesia.

Methods:
To illustrate the gaps and opportunities related to CF practices, the most recent evidence regarding the timing, frequency and variety of CF was reviewed. Additionally, information on the specific food groups addressed by the most recent WHO feeding indicators was assessed.

Results:
Suboptimal CF practices, particularly untimely introduction, inadequate consumption or delayed introduction of protein-rich foods were reported in all countries studied. Diets of young children were characterized by a low variety and frequency of complementary foods, consisting mostly of rice and/or cereals. Consumption of high-energy/nutrient-poor snacks and sugary beverages is common.

Conclusions:
The current CF practices in China, India and Indonesia may pose a significant risk for developing energy- and/or nutrient gaps, magnifying the double burden of malnutrition present in these countries. Further research is warranted to understand the significance of the observed practices for the risk of stunting, as well as overweight and obesity.
STRATIFIED DAILY FORMULA MILK INTAKE RECOMMENDATIONS FOR INFANTS GROWING ACROSS DIFFERENT WEIGHT FOR AGE PERCENTILES.

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Background and Aims:

Current guidelines on daily formula milk requirements of infants are based on the needs of infants with a growth pattern following the 50th percentile of weight-for-age growth curve. Hence, current recommendations might not be sufficiently detailed to meet the needs of infants across the broad spectrum of body weight percentiles. This study aimed to provide gender-specific, stratified recommendations for daily formula milk intake of fully formula-fed infants across different weight-age categories from 0-4 months.

Methods:

Five weight categories were defined across percentiles of WHO growth standards: small (10th), small-medium (15th&25th), medium (50th), large-medium (75th&85th), and large (90th). Total daily energy requirements were calculated for each weight category using the Institute of Medicine equation and converted to daily formula milk needs. Subsequently, the validity of these stratified formula milk recommendations was assessed by comparing it with a pooled dataset of 13 intervention studies.

Results:

Pooled data analysis revealed that the median daily formula milk volume intake of infants markedly increased across weight-for-age categories each month, confirming our theoretical calculations (Figure 1). Interestingly, the relative volume intake (ml/kg/d) was relatively stable over time but was apparently higher in smaller infants compared to larger infants.
Conclusions:
Theoretical calculations, as well as clinical formula intake data across different weight category groups, showed that one formula milk volume intake recommendation may not fit the nutritional needs of growing infants at different percentiles of weight for age.
Background and Aims:

Providing the right amount of vitamins and minerals during lactation is critical for both the nursing woman and the infant's health. Therefore, the study aimed to evaluate nutrition habits, including using dietary supplements in a group exclusively breastfeeding mothers.

Methods:

In the diagnostic survey, the developed questionnaire was used. It was carried out using the Computer-Assisted Web Interview (CAWI) method from April 28 to May 7, 2021. After evaluating the collected data using the study inclusion criteria, the responses received from 99 women were used for statistical analyzes. We checked what factors influence the use of dietary supplements among breastfeeding mothers, the odds ratio was calculated. The assessment included the following variables: education, place of residence, material status, number of children, age, and additionally BMI before pregnancy.

Results:

The women who took part in the study ranged between 21 and 39 years of age. The mean age of the baby currently fed was 4,0±1,6 months. As many as 90,9% of the respondents give their child dietary supplements, of which most of them (87,6%) give a vitamin D. Respondents' most commonly used dietary supplements contained: vitamin D, vitamin B9, vitamin C, iodine, iron, magnesium, and DHA. The respondents indicated health benefits for the mother as the most common reason for using dietary supplements (40,4%). None of the analyzed variables in the odds ratio influenced the intake of nutritional supplements in the group of breastfeeding mothers.

Conclusions:

The studied group of women is highly aware of the importance of taking dietary supplements during breastfeeding.
E-Poster Topic: **AS02 Infancy**

**COLLAGEN X BIOMARKER, LINEAR GROWTH AND BONE DEVELOPMENT IN A VITAMIN D INTERVENTION STUDY IN INFANTS**

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**Background and Aims:**

Collagen X biomarker (CXM), released into circulation from active growth plates, is suggested as a biomarker of linear growth. However, data is limited in early childhood. Our objective was to examine the association between CXM and linear growth and bone development, and possible effect of vitamin D supplementation.

**Methods:**

Data comprised 276 term-born children participating in Vitamin D intervention in infants study. Infants received vitamin D₃ of 10 µg/d (group-10) or 30 µg/d (group-30) for their first two years of life. Data were collected at 12 and 24 months of age. We calculated linear growth as length velocity (cm/year) and growth rate in length according to national references (SD unit). Tibial bone mineral content, volumetric bone mineral density, cross-sectional area, polar-moment of inertia, and periosteal circumference were measured with peripheral quantitative computed tomography.

**Results:**

Based on overall test, CXM associated with linear growth during the two years’ follow-up (p=0.041) but not with bone parameters (p=0.53). Infants in group-30 in the highest tertile of CXM had accelerated mean growth rate in length compared with 2.tertile (mean difference (95% CI): -0.50 (-0.98, -0.01) SD unit, p=0.044) but not in group-10 (p=0.062). Linear association of CXM and growth rate at 12 months was weak but at 24 months, CXM associated with linear growth (B for 1 increment of √CXM (95% CI): 0.32 (0.12, 0.52) cm/year, p=0.002) in both intervention groups.

**Conclusions:**

CXM may not reliably reflect linear growth in infancy, but the correlation improves during the second year of life.
BACKGROUND AND AIMS:

Introduction

Pediatric nutrition could be defined by proper feeding practice combined with appropriate vitamin/minerals/nutrients intake. The imbalance between the elements prior described determines nutritional deficiencies leading to severe neuromuscular and cognitive consequences.

Aim:

Early detection of improper feeding practice helps preventing secondary neuromuscular and cognitive evolution of the child.

Methods:

Between March 2018- March 2021, 153 patients (1-12 months) admitted in the Pediatric Department of the Clinical County Hospital of Constanta were evaluated for improper weight gain. The main data were gathered using surveillance charts and the personal medical files. Chronic diseases and malformations were excluded as a cause of impaired growth. All infant involved were positioned on or under 3% growth percentile.

Results:

The problems were shared between family and child. Regarding the family the main concerns were breastfeeding difficulties (73.3%), mother’s depression (35.2%), lack of attachment (32.1% - no eye contact during meal, no maternal smile), sleep deprivation (18.9%). Choosing the correct type of bottle or the proper feeding position were not considered important educational steps in 23.6%. Incorrect diversification schedule (type of food, age of initiation ) was noticed as well in 14.8%. Abdominal discomfort and transit disorders (constipation, diarrhea) were registered in 52.7%, were followed by improper feeding program (63.4%), improper sleeping duration (28.2%), excessive crying (18.6%).
Conclusions:
Early detection of improper weight gain must be thoroughly evaluated. After excluding any type of pathologies, the pediatrician should support the family in understanding and drastically changing family’s behavior and attitude towards the child.
COW’S MILK ALLERGY IN CHILDREN: EFFECTIVENESS, TOLERANCE AND SAFETY OF A NEW PECTIN THICKENED HYDROLYSED RICE PROTEINS BASED FORMULA (PTHRF)

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Background and Aims:

In non-breastfed children, cow’s milk allergy (CMA) is commonly managed with hypoallergenic formulas. To evaluate the hypoallergenicity, the safety and the effect on body growth of a new Pectin Thickened Hydrolysed Rice-proteins based Formula (PTHRF) according to American Academy of Paediatrics’ criterias, in children with Immunoglobulin E(IgE)-mediated and non-IgE-mediated CMA.

Methods:

1 to 36 months old infants, with suspected or proven (by a Double-Blind Placebo-Controlled Food Challenge (DBPCFC)) CMA and asymptomatic for at least one week were recruited and underwent a double blind placebo controlled oral challenge (DBPCFC) with the PTHRF (Novarice®, United Pharmaceuticals, Paris) and milk (in case of suspected CMA) in 4 tertiary Centers for Pediatric Allergy (located in Italy, France and Belgium). Patients able to tolerate the PTHRF continued the formula for 6 months. Potential allergic symptoms, safety and anthropometric parameters were assessed monthly.

Results:

A total of 72 subjects (mean age 7.6±4.9 m) have been included, 67 having a challenge-proven CMA (IgE-mediated for 32). Neither immediate nor delayed allergic reactions occurred after the ingestion of up to 310 ml of PTHRHF (5 g of proteins). All patients started exclusive PTHRHF-feeding, except one patient whose parents changed their mind about their child’s participation. No CMA-related symptoms were observed during the follow up, and body growth was normal as demonstrated by mean weight- and length-for-age z-score values.
Conclusions: The new pectin thickened rice proteins-based formula is well tolerated and promote a normal body growth in CMA children.
MILK INTAKE IS ASSOCIATED WITH FAT FREE MASS BUT NOT FAT MASS IN FULLY BREASTFED DANISH INFANTS FROM THE MILQ COHORT

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Background and Aims:

Fat-free mass (FFM), and hence resting metabolic rate, drive appetite according to “drive-to-eat” theory. There is a lack of robust evidence to support this in breastfeeding infants. We investigate infant drivers of milk intake in breastfed infants belonging to the Mother and Infant Lactation Quality (MILQ) cohort.

Methods:

Infant fat mass (FM) and FFM was estimated with bioelectrical impedance analysis and milk intake measured with 24-hr test weighing at three visits between 1 and 6.5 months. Linear mixed-effects models were used to determine associations between infant size and 24-hr milk intake. Infants no longer fully breastfed, allowing one bottle of formula per week, were omitted from the analysis to minimise the influence of complementary foods.

Results:

Measurements were available for 224 infants, 112 of which had data from at least 2 visits. At a mean age of 2.9 (±1.3) months, average milk intake was 779 (±165) ml. A 1 kg increase in infant weight was associated with an increase of 53 ml milk intake (95% CI; 38, 68; p<0.001). When included in the same model, FFM was associated with milk intake (β (95% CI); p: 62 ml/kg (28,95); <0.001) while FM was not (38 ml/kg (-19,95); 0.418).

Conclusions:

In these breastfed infants, FFM but not FM is associated with milk intake. This is surprising given that human milk intake is considered a potent stimulator of fat deposition in early life. Our findings lend support for the drive-to-eat hypothesis but the possibility for reverse causality may preclude an interpretation that FFM directly “drives” milk intake.
A REAR CASE OF SUBCUTANEOUS FAT NECROSIS
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Background and Aims:

Subcutaneous fat necrosis is a very rare, temporary, self limited pathology affecting adipose tissue of full term and also postmature babies. It usually occurs in the first several weeks following complicated delivery. If not diagnosed early and baby not followed up, complications may arise and patients may be mismanaged. Even though spontaneous resolution without sequelae occurs, patients should be followed up for development of late complications of subcutaneous fat necrosis, especially hypercalcemia.

Methods:
We report a case of subcutaneous fat necrosis noted within eight week of birth and highlight the need for proper prompt diagnosis and need for follow up to assess possible complications. The child presented with fever, refusal to feeds and multiple nodules all over the body.
Results:
The baby was treated with IV fluids for hydration, promoted breast feeding.
Calcium sparing diuretics was given.

The nodules resolved after 16 weeks and serum calcium levels normalised by 12 weeks.
Conclusions:
Subcutaneous fat necrosis is a rare finding and can present with complications such as hypercalcemia, acute renal failure and cardiac involvement. Presenting this case highlights the need for a high index of suspicion for medical personnel, to aid early diagnosis and appropriate intervention. If correct diagnosis is made and child is properly followed up, possible complications arising from hypercalcemia can be prevented. Follow up following resolution of skin lesions is also emphasized. This will help reducing mortality and morbidity from subcutaneous fat necrosis in the newborn.
A RARE CASE OF CONGENITAL PULMONARY AIRWAY MALFORMATION (CPAM)
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Background and Aims:

Congenital pulmonary airway malformation (CPAM) is a very rare congenital cystic lung disease in children. This congenital pulmonary disorder occurs in approximately 1-4 in 100,000 births. CPAM consists of hamartomatous or dysplastic lung tissue mixed with more normal lung. In CPAM, usually an entire lobe of lung is replaced by non-working cystic piece of abnormal lung tissue. Frequent respiratory tract infections (RTI) are major concerns in these patients. When a child having recurrent episodes of RTI, CPAM could be an underlying pathology. Surgical excision is recommended to make a definite diagnosis and is also the treatment of choice.

Methods:
A 2 months aged female child presented with an acute respiratory infection for the first time.

Chest X Ray showed multiple cystic lesions in the right lower lung. CT scan of chest also revealed similar lesions in same area.
Results:
After receiving treatment for pneumonia, surgical excision was performed and she was doing well after surgery.
Conclusions:
CPAM are rare developmental lung malformations mainly antenatally diagnosed. While the neonatal management of symptomatic CPAM is clear and includes prompt surgery, controversies remain for asymptomatic CPAM. Increased rate of infection over time renders the surgery more difficult after months or years of evolution and pushes for recommendation of early elective surgery. Sarcomatous and carcinomatous degeneration have been described in patients with CPAM, so surgical resection by 1 year of age is recommended to limit malignant potential. Therefore early diagnosis and intervention has a good outcome in this condition.
E-Poster Topic: AS02 Infancy

BREASTFEEDING AND NUTRITIONAL STATUS OF PORTUGUESE ADULTS
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Background and Aims:
Breastfeeding brings numerous benefits for the baby and mother in the short term, but it is known that there also seems to be good in adult health. The aim of this study was to evaluate the effect of breastfeeding on nutritional status in a sample of Portuguese adults.

Methods:
For this study, an online questionnaire was provided with current data, namely anthropometric and data on breastfeeding in childhood. To categorize the nutritional status, the classification of the World Health Organization was used, through the Body Mass Index.

Results:
124 adult Portuguese people aged between 18 and 68 years old participated, being 93.5% female. We found that adults with normal weight were breastfed longer (average 12 months) than adults with pre-obesity and obesity (average 9 months). The same was true for exclusive breastfeeding.

Conclusions:
It was possible to conclude that there seems to be a relationship between the duration of breastfeeding in the first months of life and the nutritional status in adults, and that may be protective for pre-obesity and obesity.
Background and Aims:

Baby-led-weaning (BLW) is an alternative to the traditional method of introducing food, which promotes the baby's self-feeding by offering whole pieces of food that the child ingests with his hands. In the last decade, there has been an increase in the number of families using this method. The aim of this study was to know the practice and myths associated with BLW, in a Portuguese sample.

Methods:
An online questionnaire was applied, with sociodemographic data, data on the practice of BLW and on the myths associated with this method.

Results:
Participants were 43 individuals aged between 21 and 48 years, all female, of which 39 were already mothers, with an average age of 35 (±4.8) years. We found that 33 of these mothers (84.6%) have already used the BLW method on their children, 5 have not used it yet, but intend to use it in the future and 1 has not used it, nor does it intend to use it. Of the other 4 participants who still did not have children, they had a mean age of 22.5 (±1.3) years, 3 of whom (75%) intended to use the BLW method. Among the reported myths, these were grouped into “choking” (n=33), “food insufficiency” (n=7), “food preparation and cutting” (n=6), “iron deficiency” (n=1) and “obesity” (n=1).

Conclusions:
We verified in this Portuguese sample that there is even a high practice of BLW, however there are many myths associated with this method, requiring further clarification and further studies to better understand this method of food introduction.
PREVALENCE OF GASTROINTESTINAL SYMPTOMS IN PRESUMED HEALTHY INFANTS: A CROSS-SECTIONAL WEB-BASED SURVEY IN RUSSIA

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Background and Aims:

Gastrointestinal (GI) symptoms affect approximately half of infants and can adversely impact infants’ and parents’ quality of life. Nutritional advice has shown to be effective in improving complaints. Our objective was to assess the prevalence of GI symptoms in presumed healthy Russian infants consuming a goat milk-based infant formula (GMF).

Methods:

An invitation to the web-based questionnaire for parents feeding their infant GMF was spread via social media. Eligible infants (<12 months) had been consuming GMF for at least 14 days. The questionnaire included questions on general characteristics, GI comfort before and after initiation of GMF and the cow milk symptom score (CoMiSS™). The well-known and validated CoMiSS™ is a tool to score the severity of GI complaints (0-33 points), where scores ≤6 are perceived as normal.

Results:

After 6 weeks, 221 presumed healthy infants were included. Prior to GMF consumption, 54% of parents reported GI-related complaints in their infant. Crying with no apparent reason was most often reported (46%), followed by stool complaints (36%), gassiness (30%) and rashes and/or eczema (14%). After switching to GMF, fewer problems were reported in 85% of the infants who had previously experienced GI complaints. The median (25\(^{th}\)-75\(^{th}\) percentile) total CoMiSS™ score was 1 (0-4).

Conclusions:

In presumed healthy Russian infants consuming GMF, prevalence of GI symptoms as assessed by CoMiSS™ was low and comparable to results previously found in Russian infants\(^1\). The majority of parents reported that GI complaints had decreased after switching to GMF.

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Background and Aims:

Optimal infant and young child feeding (IYCF) is the most important investment for good nutrition in the first 1000 days of life. This the first longitudinal study undertaken from birth to 2 years on IYCF practices in Sri Lanka. The aim of this study was to do describe adherence to IYCF guidelines in a group of healthy infants born at term gestation, from birth to 2 years of age, who were individually counselled at each visit.

Methods:

Descriptive longitudinal study from 2015-2019, in Colombo, Sri Lanka, on healthy babies born at term. All caregivers were counselled individually and followed up monthly and two-monthly in the first and second years respectively. Infants followed a growth trajectory parallel to the WHO growth curves. The Ethics Review Committee of the Faculty of Medicine, University of Colombo approved the study.

Results:

A total of 374 babies were recruited at birth. Exclusive breastfeeding was 100%, 96%, 92% and 72% at birth, 2, 4 and 6 months respectively. Formula feeding was 1-3%. Solid and semi solid food (SSSF) were initiated between 6-8 months in 82%. Growth faltering was the commonest reason for early initiation of SSSF at 4-6 months. Minimum meal frequency was 98-100% at all ages. Minimum dietary diversity, minimum acceptable diet and egg and flesh food consumption were seen in 95% from 9-24 months. Responsive feeding was seen in 93% at 18-24 months.

Conclusions:

Our study population demonstrated high adherence to IYCF guidelines most probably due to individualized counselling at each visit.
COMPARISON OF LONGITUDINAL ANTHROPOMETRIC DATA FROM BIRTH TO 2 YEARS IN HEALTHY CHILDREN FROM COLOMBO, SRI LANKA WITH WHO GROWTH STANDARDS (WHO-CGS).

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Background and Aims:

Sri Lanka uses WHO growth standards (WHO-CGS) for growth assessment. The aim of this study was to compare the anthropometry of healthy children from birth to two years, fed according to Infant and Young Child Feeding (IYCF) guidelines, with WHO-CGS.

Methods:

Longitudinal, cohort study, from birth to 2 years, from 2015–2019, conducted at a tertiary care maternity hospital, in Colombo, Sri Lanka on healthy babies born to nonsmoking ≥18 years old women, with a singleton pregnancy, term gestation, who agreed to follow IYCF guidelines, living in the Colombo and were recruited by purposive sampling on admission to the hospital for delivery. Ethics clearance was obtained from Faculty of Medicine, University of Colombo. Longitudinal growth curves and percentiles generated for males and females using LMS were compared with WHO-CGS.

Results:

We assessed 177, 35, 17 females and 182, 40, 20 males at birth, 12 and 24 months of age. Our study population weight, length, weight for length (WfL), BMI and head circumference (HC) was lower from 1st-99th percentiles compared to WHO. Our study population subscapular skinfold thickness (SSS) was higher than WHO between 50th-99th percentiles for both girls and boys while midarm-circumference (MUAC) was higher than WHO between 1st-15th percentile for boys and 1st-75th percentile for girls.

Conclusions:

Our study population had smaller babies with lower weight, length, WfL, BMI and HC with higher MUAC and SSS than WHO implicating higher adiposity despite smaller size warranting assessment of body composition instead of relying solely on anthropometry for growth assessment.
OVERVIEW OF NUTRITIONAL SUPPLEMENTATION IN CHILDREN AGED 0 TO 5 YEARS IN BRAZIL AND MEXICO – MOTIVATIONS AND BEHAVIOR OF HEALTHCARE PROFESSIONALS.
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Background and Aims:
Diet, physical activity, medication use and environmental exposures in childhood can influence growth and development. Nutritional supplementation during this period can contribute to maintaining their health.

Identify the main motivations and behaviors for the prescription of nutritional supplements by healthcare professionals (HCPs) to infants and children up to 5 years.

Methods:
Online survey with 93 Brazilian and 85 Mexican HCPs.

Results:
75% of Brazilian and 84% of Mexican HCPs prescribe nutritional supplements to children. One of the main motivations in both countries is to improve immunity. Other motivations include treating gastrointestinal problems (with prebiotics and probiotics); treating constipation (with fiber) and support mental and brain development (with DHA). Regarding the age of prescription, Mexican HCPs usually start prescribing supplements from 7 months of age onwards and Brazilian HCPs between 0 and 6 months of age. The preference among Mexican pediatricians is the use of chewable gums, followed by liquid supplements. As for Brazilian pediatricians, the most used supplements are liquid, followed by the powder format.

Conclusions:
Brazilian pediatricians start prescribing supplements earlier than Mexican HCPs, with the exception of DHA. In both countries, immunity is a common motivation for pediatricians. In Mexico, there is concern about gastrointestinal disorders and support for neurodevelopment, and in Brazil, there is a focus on complementing nutritional needs for adequate child’s growth and development.
SLEEP AND ENERGY DRINK CONSUMPTION AMONG NORWEGIAN ADOLESCENTS – A CROSS-SECTIONAL STUDY
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Background and Aims:
Adolescents are recommended to get 8-10 hours of sleep at night, yet more than 80 % fail to obtain this goal. Energy drink (ED) consumption has been linked to later bedtime in adolescents. Therefore, we aimed to investigate the potential association between ED consumption and sleep duration, and shuteye latency among adolescents in Norway.

Methods:
This study was based on data from 15- to 16-year-old adolescents living in Oppland County in 2017. In total, 1353 adolescents were included in the analysis. Multiple regression models were used to estimate the associations between the frequency of ED consumption with sleep duration, shuteye latency, and getting 8 hours of sleep.

Results:
46.5 % of the adolescents reported sleeping more than 8 hours at night. Those who reported ED consumption at any frequency had significantly shorter sleep duration than those who did not. On average, high consumers of ED (consuming ED ≥ 4 times a week) had 57.0 (95 % CI: 36.6, 76.8) minutes less sleep than those who never consumed ED. In addition, high consumers had more than 25.0 (95 % CI: 13.95, 36.92) minutes longer shuteye period than those who never consumed ED.

Conclusions:
Most ED consumers fail to obtain the recommended 8 hours of sleep at night, which could be a consequence of shorter sleep duration and longer shuteye latency. We found
a dose-response relationship between frequency of ED consumption and reduced sleep. Yet, the potential long-term effects of both ED consumption and insufficient sleep among adolescents remain unclear.
FACTORS INFLUENCING THE USE OF DIETARY SUPPLEMENTS IN THE GROUP OF SCHOOL CHILDREN FROM MAŁOPOLSKA REGION (POLAND)

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Background and Aims:

The recommendations regarding the use of supplements at the population level concern vitamin D. Many studies conclude the need of regular supplementation with the recommended doses and to develop an effective strategy to mitigate the effects of vitamin D deficiency in the Polish population. The aim of the study was to evaluate the factors influencing the administration of dietary supplements to school children and adolescents from the Małopolska region.

Methods:
The survey was conducted in the period March-June 2018. 331 healthy children (187 boys, 145 girls) from the commune of Niepołomice and the city of Krakow participated in it. In order to check what factors influence the use of supplements among children OR was calculated. These factors included: the child's sex and age, nutritional status, the intensity of exercise outside school, time spent on TV, diet and medications in the presence of a chronic disease. Additionally, the socio-demographic factors have been examined.

Results:
Among the studied group, 111 declare taking dietary supplements, which constitutes 33.8% of all respondents. The most frequently used preparations include: vitamin D (67.9%), vitamin C (46.4%), multivitamins (20.5%) and omega-3 acids (19.1%). The consumption of dietary supplements is significantly higher in rural residents (39.3%) and in boys (37.3%). It was observed that in multigenerational families, children more often eat dietary supplements (43.3%) and also in families where at least one parent does not work (50%).

Conclusions:
The scope of education of children and adolescents and their parents on the need to use and safety of dietary supplements should be increased.
THE RELATIONSHIP BETWEEN GENERAL SELF-EFFICACY (GSE) AND LIFESTYLE HABITS IN STUDENTS TRAINING TO BE PRESCHOOL TEACHERS
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Background and Aims:
This study focused on the relationship between lifestyle habits of students training to be preschool teachers and GSE and aimed to clarify the association between lifestyle habits (exercise, diet, sleep) and GSE using Sherer et al. (1982) and Narita et al.’s (1995) GSE scale.

Methods:
Participants were 294 freshmen and sophomores in the department of early childhood education at Y Women’s Junior College in Hiroshima City.

GSE and current lifestyle habits were studied using two questionnaires.

Results:
Mean GSE score was found to be higher in the group which exercised or played sports more frequently compared to the group which did so less frequently. The “1–2 times per week” group scored significantly higher than the “never” group (p<0.05).

Concerning the relationship between breakfast habits and GSE, mean score for the “eats breakfast every day” group was markedly higher than that of the “never eats breakfast” group (p<0.01).

Sleeping 6–8 hours had a favorable effect on GSE while both sleeping longer (more than 8 hours) or shorter (less than 6 hours) was suggested to reduce GSE.

Conclusions:
The results of a questionnaire survey revealed that mean GSE score is higher when exercise or sports are performed more frequently and that participants who eat breakfast every day had higher mean GSE scores than those who never eat breakfast. The amount of time spent on exercise or sports, sleeping, and watching television each day were also found to be associated with GSE.
Background and Aims:

Diet in preschool-aged children impacts short- and long-term health. Pattern analysis provides a more accurate reflection of food consumption and the association to health outcomes. Dietary patterns have been associated with preschool children’s health, however, little dietary pattern research in school-aged children has been performed in Canada. Therefore, the goal of this research was to use principal components analysis (PCA) to characterize and describe the stability of dietary patterns in preschool children, using data from semi-quantitative food frequency questionnaires (SQFFQ).

Methods:

SQFFQ were completed by the proxy caregiver for each child at age 3 (n= 2434), 4 (n= 1825), and 5 (n= 2300) years of age. PCA was performed separately at each timepoint to generate dietary patterns. Pattern stability over time was analyzed between the three time points.

Results:

Three dietary patterns were identified at 3, 4 and 5 years from 3098 preschool participants. These patterns were "mixed" (veggies, breads, meats, sweets), "junk" (processed meats, fried foods, sweet drinks), and "snack" (nuts, bread, dairy products). The patterns showed that most participants’ diet remained stable over the time points of measurement.
Conclusions:
This study describes preschool dietary patterns identified in the largest multi-center Canadian childhood cohort. Their identification contributes to the evidence needed for public health policies for the future, with the overall goal of improving the nutrition and health of preschool children. Future steps are to determine associations with anthropometrics and short- and long-term health outcomes. We thank the CHILD Cohort Study participant families for their involvement.
EXPLORATORY ANALYSIS TO IDENTIFY DIET-MEDIATED SALIVARY INFLAMMATORY PROTEIN MARKERS ASSOCIATED WITH COGNITIVE FUNCTION IN DUTCH HEALTHY CHILDREN AGED 8-10 YEARS.

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Background and Aims:

Poor diet quality is associated with decreased cognitive functioning. Moreover, unhealthy, Western-style diets have been shown to contribute to the development of low-grade systemic inflammation. Within this observational study, we investigated whether saliva was a suitable non-invasive biofluid to profile inflammatory markers in Dutch healthy children. Further, we aimed to determine whether salivary inflammatory proteins were associated with diet quality or cognitive function.

Methods:
Diet quality was evaluated by adherence to Dutch healthy diet guidelines assessed by food frequency questionnaire. Cognitive assessment of executive functioning was evaluated by the Eriksen Flanker task. Targeted proteomic analysis by multiplex proximity extension assay (Olink Proteomics) profiled 92 inflammatory proteins in the saliva of 30 healthy Dutch children, aged 8-10 years. Linear regression was calculated to predict diet quality, or the Flanker effect (incongruent-congruent reaction times) based on normalised protein expression for 68 markers. Models were adjusted for age and sex, and bootstrapped (n=5000) to account for non-normal variables.

Results:
From 92 markers measured, 68 were detected in saliva above limit of detection threshold. After multiple correction, there was no significant association between diet quality score and inflammatory markers detected in saliva. We found a significant, negative relationship between 14 inflammatory markers and the Flanker effect (FDR<0.1).

Conclusions:
This exploratory study identified novel candidate inflammatory markers associated with a cognitive outcome in children, using non-invasive saliva sampling. Future studies are required to confirm these findings and validate their biological relevance.
THE RELATION OF CHILDREN'S PHYSICAL ACTIVITY AND SCHOOL LUNCH—FOCUSING ON SCHOOL HOURS—
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Background and Aims:
Adequate physical activity is essential for the healthy development of children. However, many children don’t meet the recommended amount of physical activity. In addition, the food environment has changed dramatically in recent years, with the rise of Western diets. The purpose of this study was to clarify the relation between children's physical activity and their intake of school lunch.

Methods:
66 boys and 88 girls (8-12years) participated in the study. Physical activity was measured with a tri-accelerometer (Active style Pro HJA-750C, Omron. Healthcare Co., Ltd) attached to the waist during the school time. It was classified into sedentary behavior (≤1.5 METs), low-intensity (1.6-2.9 METs), medium-intensity (3.0-5.9 METs), and high-intensity (≥6.0 METs), and the cumulative duration of each activity during school life was calculated. School lunch consumption rates were calculated using a questionnaire for five dishes: “syusyoku”, “syusai”, “fukusai”, ”soup”, “milk and dairy products”.

Results:
Sedentary behavior was longer in girls than in boys (p<.05). The amount of physical activity tended to decrease as the grade level increased for both boys and girls. In terms of school lunch intake, boys left out all but milk and dairy products, while girls left out all types of food. In girls, there was a low relation between high-intensity physical activity and milk and dairy products (r=-.26, <.05).

Conclusions:
There was a low relation between high-intensity physical activity and milk and dairy products intake in girls, although no relation was found in boys.
COST-EFFECTIVENESS OF SUBSTITUTE FORMULAS FOR THE MANAGEMENT OF COW’S MILK PROTEIN ALLERGY IN THAILAND

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Background and Aims:

Cow’s milk protein allergy (CMPA) is the most common food allergy in children. Substitute formulas are used to treat the condition with potential benefit in reduction of the allergic march and early tolerance induction. This study assessed the cost-effectiveness of CMPA management with different substitute formulas in Thailand, which may reflect situation in Asian developing countries.

Methods:

A decision analytic model was developed to simulate the occurrence of eczema, urticaria, asthma, rhinoconjunctivitis, or being symptom-free in infants with CMPA in Thailand.Extensively hydrolyzed casein formula with probiotic L. rhamnosus strain GG (EHCF+LGG), extensively hydrolyzed whey formula (EHWF), soy protein-based formula (SPF) and amino acid formula (AAF) were compared from healthcare payer's perspective over a 3-year period. Results from a prospective cohort study were used for comparative effectiveness measures while local experts were consulted to estimate the healthcare resource used in the management of CMPA. The costs were obtained from standard, publicly available Thai sources.

Results:

The direct medical cost of CMPA management was lowest with EHCF+LGG (USD 1,360) followed by SPF (USD 1,575), EHWF (USD 2,424) and AAF (USD 4,139). Healthcare payer was expected to save as much as USD 168, USD 1,016 and USD 2,738 per life-year with cow’s milk tolerance and symptom-free with the use of EHCF+LGG compared to SPF, EHWF and AAF, respectively.

Conclusions:

EHCF+LGG was the most cost-effective strategy to manage non-breastfed infants with CMPA in Thailand. This strategy was associated with more children developing immune tolerance to cow’s milk and being symptom-free which contributes to its cost-saving potential.
Background and Aims:

Adolescence is marked by a period of rapid growth and development so nutritional requirements are higher than at other stages of the lifecycle. Nutrition during adolescence also has consequences in later life and affects the intergenerational health of offspring. Globally evidence on adolescent nutrition is lacking, especially for haemoglobin. This study aimed to identify dietary determinants of haemoglobin levels among unmarried, non-pregnant adolescent girls 10-19 years old (N=1610).

Methods:

Longitudinal data were collected by nationally representative Suahara II nutrition programme between June and September in 2017, 2018 and 2019. Capillary haemoglobin was measured using HemoCue® Hb-301 photometers. Dietary diversity in the last 24 hours (measured using minimum dietary diversity for women), iron-folic acid supplementation in the last 13 weeks and vegetarian diet were self-reported. Linear mixed models using adolescents’ age as random effects were examined. The model was adjusted for age, education, caste, occupation, food security, visits to adolescent and reproductive health clinics, wealth, and ecological zones.

Results:

Preliminary results showed vegetarian diet to be associated with decreased haemoglobin levels over time. Other covariates like caste and ecological zones were also associated with decreased haemoglobin levels. Dietary diversity and iron-folic acid supplementation were not associated with haemoglobin levels.

Conclusions:
Although, dietary pattern like vegetarianism appears to be a better predictor of haemoglobin levels than dietary diversity and iron supplementation, further analyses are needed. Observed associations need unpacking to understand the pathways of association with haemoglobin. Nonetheless, nutrition programmes for adolescent girls should contribute to reductions in national anaemia prevalence and improve adolescent's health.
IMPROVING KNOWLEDGE OF BODY IMAGE PERCEPTION IN ADOLESCENTS THROUGH THE USE OF EDUCATIONAL VIDEOS DURING THE COVID-19 PANDEMIC

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Background and Aims:

The results of a preliminary study showed that 0.8% of adolescents became overweight and obese during the one year of the COVID-19 pandemic in Malang City, Indonesia. The adolescent perception of body image has an important influence on how they respond to it. While education has also an important part of the good perception of adolescents. This study aimed to increase adolescent knowledge related to body image perception through the provision of education using video.

Methods:
This study is quasi-experimental with a one-group pre-posttest design. The educational intervention has been provided using a short educational video on 122 adolescents that contained the explanation of body image, its type, and the factors that might create a negative body image, and how to get the correct perception of body image. Then followed by data collection including body mass index, body image perception using the Body Shape Questionnaire (BSQ), and the level of adolescent’s knowledge related to body perception.

Results:
The results indicate that 13.5% of adolescents were overweight and obese based on BMI, 11% of adolescents have a negative body image perception, and there was an increased average score knowledge by 8% at the end of the study. Statistical analysis showed that there was a significant difference in knowledge before and after being given the educational video of body image perception (p = 0.000, Spearman).

Conclusions:
It can be concluded that the provision of education-related body image perception through videos could be effectively increasing the knowledge of adolescents in Malang City, Indonesia.
TIME-OF-DAY OF MACRONUTRIENT INTAKE MAY AFFECT CHILDREN’S WEIGHT STATUS
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Background and Aims:
A growing number of studies of chrono-nutrition in adolescents suggest that there is an association between time-of-day of energy and nutrient intake and obesity. Studies on this relationship in children are limited and inconclusive. The aim of this study was to determine the association between timing of energy and macronutrient intake and weight status in primary school children.

Methods:
Dietary records for three non-consecutive days were used to estimate dietary intake in children (n=171; 48.5% girls) aged 8-9 years from schools in the city of Zagreb. To determine the time-of-day of energy and macronutrient intake, total food consumption was divided into morning (<11 am), afternoon and evening (>6 pm). Anthropometric measurements were performed according to the standard protocol and z-scores for body mass index (BMI) were obtained using AnthroPlus software.

Results:
Children had the highest proportion of daily energy intake in the afternoon in all three categories by BMI-z-scores (47.1%, 47.0%, and 49.7%, respectively). However, the higher afternoon intake of total protein (β=1.87, 95%CI 0.31-3.43, p=0.019), animal protein (β=1.75, 95%CI 0.48-3.01, p=0.007) and total fat (β=1.40, 95%CI 0.01-2.87, p=0.049), and lower evening intake of total protein (β=-3.01, 95%CI -4.79 - -1.22, p=0.019), animal protein (β=-2.72, 95%CI -4.16 - -1.29, p=0.019) and total fat (β=-3.15, 95%CI -4.89-1.39, p=0.019) is associated with higher BMI in children.

Conclusions:
In this population, time-of-day of macronutrient intake appears to have a greater impact on weight status than energy intake. Further research in this area is needed to determine the relationship between time-of-day of dietary habits and weight status.
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E-Poster Topic: AS03 Childhood & Adolescence

SERUM LACTATE - A PREDICTIVE FACTOR IN SEPTIC SHOCK IN CHILDREN
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Background and Aims:

Septic shock is one of the leading causes of death in the hospital and usually leads to multiple organ dysfunction secondary to an infection with positive or negative cultures. Serum lactate levels and their tendency over time are reliable markers of disease severity and mortality.

Methods:
The content of this retrospective and descriptive study is based on the monitoring of inpatients in the Pediatrics Department, of the County Clinical Emergency Hospital in Constanța, between January 2020 and December 2021. The PRISM III score, which includes 14 parameters (clinical and laboratory), was recorded within 24 hours of admission. The study group included 25 patients with septic shock according to clinical and functional criteria.

Results:
When we analyzed the serum values of lactate, it was observed that its level remained high in people who did not survive. In order to obtain an average length of hospitalization/patient as accurate as possible, we eliminated the minimum number (one day) and the maximum number (129 days) of hospitalization, resulting in an average value of 16.7 days of hospitalization/patient. 28% of patients required mechanical ventilation, while the difference of 72% did not require mechanical ventilation. A single organ dysfunction is present in 9 children (36%), whereas multiple dysfunctions are present in 16 children (64%).

Conclusions:
Blood lactate appears to be a reliable marker that reflects not only the severity of the shock but also the prediction of survival. The higher the lactate, the more likely a patient is to develop more organ dysfunction and die.
DIFFERENCES IN ATTAINED STATURE BY SCHOOL-AGE AND ADOLESCENCE ACCORDING TO IN-UTERO OR PERIPARTUM ANTIRETROVIRAL THERAPY EXPOSURE OF UGANDAN CHILDREN

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Background and Aims:

In-utero/peripartum antiretroviral (IPA) drug exposure in HIV-exposed children has established benefit for prevention of HIV mother-to-child-transmission but its impact attained stature by adolescence is unknown. Hence, we evaluate IPA-associated growth differences at 6-18 years old children with perinatally acquired HIV (CPHIV) and children HIV exposed but uninfected (CHEU) relative to children HIV unexposed and infected (CHUU).

Methods:

759 children born between 2000 and 2011 were enrolled at 6 to 18 years of age. Height-for-age (HAZ) determined at enrolment, 6 and 12 months after enrollment using the WHO reference. IPA exposure from medical records was categorized as: no IPA, single-dose nevirapine with/without zidovudine (sdNVP±AZT), sdNVP+AZT+Lamivudine (3TC), or combination ART (cART). Mean differences with 95% confidence intervals (95%CI) in HAZ over 12 months were evaluated according to IPA exposure for CPHIV and CHEU and relative to CHUU using longitudinal linear mixed effects models.

Results:

Regardless of IPA type, CPHIV grew worse than CHUU by school-age/adolescence (β = -0.36, 95%CI: -0.54, -0.18). Relative to CHUU, attained stature was similar for CHEU exposed to sdNVP±AZT (β = -0.21, 95%CI: -0.54, 0.09) and CHEU exposed to sdNVP+AZT+3TC (β = 0.06, 95%CI: -0.21, 0.32). However, relative to CHUU, CHEU without any IPA exposure had lower stature (β = -0.27, 95% CI: -0.52, -0.01) whereas CHEU with cART exposure had greater stature (β = 0.40, 95%CI: 0.08, 0.71) by 6-18 years.
Conclusions:
Data suggests that CHEU achieve stature parity by school-age and adolescent years if provided cART in early life. However, CPHIV regardless of IPA exposure type and CHEU without IPA exposure remain at a disadvantage and will benefit from intervention to support their growth.
E-Poster Topic: AS03 Childhood & Adolescence

NOVEL ALMOND AND BUCKWHEAT PLANT-BASED PEDIATRIC NUTRITION DRINKS SUPPORT WEIGHT GAIN AND IMPROVE GASTROINTESTINAL SYMPTOMS: RETROSPECTIVE ANALYSIS OF A PARENT SURVEY.
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Background and Aims:
The purpose of this study was to assess weight gain, child’s acceptance, and parent perception of nutrition-related symptoms before and after consuming a novel plant-based toddler and/or kids drink [Else Nutrition].

Methods:
Data collected from two waves of a cross-sectional consumer survey, administered by a 3rd party vendor, were analyzed retrospectively. Repeat consumers who ordered product via company’s website received an invitation to participate in an online survey. Questions were adapted from a validated pediatric questionnaire (ROME IV) and modified to also address usage, intake volume, demographics, and anthropometrics. Results are presented as relative frequencies and percentages.

Results:
Most subjects (n=648, mean age 2.1±1.3 years) consumed between 1-3 servings per day (mean intake 2.9± 3.5 servings per day) for an average of 5.3±3.2 months. The most common reasons for choosing the products were a plant-based lifestyle or preferred ingredients (~70%) and clinical reasons (~30%). Poor weight gain was reported by 17% of respondents, with 81% reporting resolution of issue and normal weight gain following use. Stool consistency was evaluated using Bristol Stool Form Scale with trend toward more normal shape stools following use. Over 90% were satisfied with their child’s acceptance of the product and intended to continue use.

Conclusions:
This novel nutritional drink is well accepted and fulfills an important gap for parents desiring plant-based nutrition for their children. It appears to support normal growth in children and toddlers; however, prospective clinical trials are needed.
OSTEOPENIA IN A HISPANIC WHITE GIRL: A CASE REPORT
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Background and Aims:
Poor lifestyle habits, vitamin D deficiency, and inadequate calcium intake, particularly during the COVID-19 pandemic, may contribute to severe osteopenia in childhood, increasing future fractures and osteoporosis. We here present a case of osteopenia in a 13-year-old white, Hispanic, premenarchal girl who completed the baseline visit of the MetA-Bone Trial during the COVID-19 pandemic. MetA-Bone is an NIH-funded trial conducted in Miami to determine the effect of one-year Soluble Corn Fiber supplementation on bone mass in 240 children with poor calcium intake.

Methods:
Baseline evaluation included bone health and other serum biomarkers (25OHD, calcium, phosphate, glucose, lipids), bone mass by dual-energy x-ray absorptiometry (Hologic DXA), anthropometric measurements, and questionnaires on health, physical activity, sleep, and diet.

Results:
The girl has a family history of osteoporosis (maternal grandfather) but no previous fractures; moderate outdoor activity was <1 hour/day 3 times/week with 8 hours/day of sleep. Consumption of dairy products and vegetables was <1 serving/day. Lab blood tests confirmed vitamin D deficiency (serum 25OHD: 9 ng/L) and hyperphosphatemia (5.2 mg/dL); other tests were normal. DXA scan Z-score was -2.2 SD (indicative of osteopenia by age and sex). The participant was referred to a pediatrician, who confirmed the results, and prescribed a daily supplement with 2000 IU of vitamin D and 1000 mg of calcium.

Conclusions:
Seclusion during the COVID pandemic may have contributed to the severity of the findings. Therefore, we recommend screening children undergoing growth spurts for vitamin D, calcium, and poor lifestyle habits during the pandemic.
SELECTED COMPONENTS OF THE LIFESTYLE OF A GROUP OF CHILDREN AND YOUTH FROM THE LESSER POLAND VOIVODESHIP

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¹Human Nutrition Student Interest Group, Institute Of Public Health, Faculty Of Health Sciences, Jagiellonian University Medical College, Cracow, Poland, ²Jagiellonian University, Institute Of Public Health, Kraków, Poland

Background and Aims:

It is important to develop pro-health attitudes and behaviours among children and teenagers. The aim of the study is to present selected components of lifestyle in a group of children and teenagers from Lesser Poland Voivodeship.

Methods:
The study was conducted between 2016-2019 in the group of 468 people aged 10-17. Diagnostic survey method was used with nutritional behaviour questionnaire and lifestyle elements included. Two age groups were distinguished: the younger group (10-13 years old) - 221 people and the older group (14-17 years old) - 247 people. The average age was 11.8±1.07 and 15.38±0.94 years appropriately in groups.

Results:
Most of the younger age group never followed any diet (81.9%), while in the older age group only 67.2%. Girls significantly more often declared dieting than boys. Only 5.4% of the younger respondents used a cigarette and consumed alcohol, while among older group 19.8% and 32.8% appropriately. In the assessment of sleep hygiene, 13.6% of the younger age group declared 6 hours or less of sleep on weekdays, compared to 26.7% of the older group. Low level of physical activity at school was indicated by 12.2% of people aged 10-13 and 22.7% of people aged 14-17 and we observed a significant difference between gender groups. More than half of the respondents exceeded 2 hours a day spent in front of screen.

Conclusions:
Due to the intensification of sedentary behavior of adolescents there is an urgent need to conduct educational activities in each of the presented lifestyle factors.
HEALTHCARE PROFESSIONAL RATED PALATABILITY OF AMINO ACID FORMULA INDICATED FOR CHILDREN OVER 1 YEAR OF AGE WITH COW’S MILK ALLERGY

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Background and Aims:

Amino acid formula (AAF) may be needed to meet nutritional requirements of formula-fed infants with cow’s milk protein allergy (CMA) ≥1 year of age. Palatability of infant AAFs (iAAF) and AAFs specifically formulated for children aged ≥1 year (Junior AAF) can affect compliance and nutritional intakes. This study investigated the palatability of Junior AAFs and iAAFs available on prescription in UK (October 2021) and suitable for CMA children aged ≥1 year.

Methods:
Healthcare professionals (HCPs; n=83; 52% dietitians, 48% GPs) tasted blinded unflavoured samples of 4 AAFs (1 Junior AAF, 3 iAAFs) in a balanced, randomised order, ranking them for overall liking (1=most liked; 4=least liked). Friedman Analysis of Ranks and Tukey’s multiple comparisons were applied using XLSTAT software to determine significance (p<0.05).

Results:
Junior AAF was liked significantly more than the iAAFs (p<0.0001) and most HCPs (77%) ranked Junior AAF 1st (Figure, Table). iAAFs 1 and 2 were significantly less liked and iAAF 3 was the least liked AAF, mostly ranked fourth.
Table. AAF ranking for ‘overall liking’ results

<table>
<thead>
<tr>
<th>Samples*</th>
<th>Mean rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior AAF</td>
<td>1.3</td>
</tr>
<tr>
<td>iAAF 1</td>
<td>2.3</td>
</tr>
<tr>
<td>iAAF 2</td>
<td>2.6</td>
</tr>
<tr>
<td>iAAF 3</td>
<td>3.7</td>
</tr>
</tbody>
</table>

*If both iAFF and Junior AAF available from a manufacture, only Junior AAF included.
**A=most favoured group; C=least favoured group, p<0.0001

**Conclusions:**
Significantly more HCPs found unflavoured Junior AAF best tasting compared to other AAFs prescribed in the UK for use in children aged ≥1 year. Junior AAF is specifically formulated for this age group and may support optimal nutritional intakes.
Background and Aims:

Pituitary stalk interruption syndrome (PSIS) is an extremely rare congenital entity with an estimated incidence of 0.5 per one million births. Also known as pituitary stalk transection syndrome, it is characterized by the triad of an absent or hypoplastic anterior pituitary gland, thin or absent infundibulum, and posterior pituitary location. MRI brain revealing the characteristic triad is diagnostic of the condition. The challenge in diagnosis is due to its varied clinical manifestations. The age at diagnosis differs based on the severity of the pituitary hormone deficiency. When PSIS presents at birth, hypoglycemia and failure to thrive are amongst the most common symptoms. Whereas in childhood, it's likely to present as growth retardation and may manifest as delayed puberty in adolescence.

Methods:
In this case report, a 6years 10months old boy presented with unprovoked seizures. Further investigation revealed hypoglycaemia at time of presentation, proportionate short stature, micropenis with bilateral cryptorchidism, delayed bone age and the classic triad of PSIS on MRI brain confirming the diagnosis.

Results:
MRI brain showing triad of hypoplastic anterior pituitary, absent pituitary stalk and ectopic posterior pituitary.

Conclusions:
It is important to make an early diagnosis in children with PSIS before they present with pubertal delay because it offers the opportunity to initiate prompt and appropriate hormone replacement therapy at the normal age of pubertal onset. This could optimize bone mineralization, growth and psychological well-being and eventually help to anticipate the management of future fertility in the patient.
EFFECTS OF RESTRICTED FODMAP DIET IN CHILDREN AND ADOLESCENTS WITH IRRITABLE BOWEL SYNDROME

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Background and Aims:

Background: Irritable bowel syndrome (IBS) is a clinical condition that leads to abdominal pain and distension, flatus, and altered bowel habits, thus affecting the quality of life of affected children and adolescents. Although not the cause of the condition, food is a significant factor in triggering symptoms. Therefore, a therapeutic management option for IBS is a diet low in FODMAP (an acronym for fermentable oligosaccharides, disaccharides, monosaccharides, and polyols). Aims: To analyze the effectiveness of a diet low in FODMAP in pediatric patients with IBS, both in relieving symptoms and managing the complications generated by the syndrome.

Methods:

Methods: Systematic review using the descriptors "(Irritable bowel syndrome) AND (FODMAP)", age 0-18 years, over 10 years.

Results:

Results: Among 445 studies found, 11 were selected among the eligibility criteria. Most studies compare the FODMAP diet group with a typical American infant diet. The low FODMAP diet reduces the symptoms of IBS but presents factors that make it challenging to implement, such as difficulty in being taught and understood, high cost, impact on the intestinal microbiota, presence of side effects such as constipation, in addition to the effects of these restrictions for this age group.

Conclusions:

Conclusion: A diet low in FODMAP is a therapy that has positive effects in alleviating the clinical conditions manifested in IBS, but its applicability is limited. More clinical and experimental studies are needed to establish whether the benefits of inserting this restrictive diet outweigh the possible harms.
A RARE CASE OF LISSENCEPHALY PACHYGYRIA SPECTRUM
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Background and Aims:

Lissencephaly or agyria is a rare disorder that is characterized by absence of cerebral convolutions and a poorly formed sylvian fissure giving the appearance of 3 to 4 month old fetal brain. Incidence of lissencephaly is very rare, 1 to 4 in 1,00,000 live birth. The condition is probably a result of faulty neuroblast migration during early embryonic life and is usually associated with enlarged lateral ventricles and heterotopias in the white matter.

Methods:

CLINICAL FEATURES Infants present with failure to thrive, microcephaly with marked developmental delay and often seizure disorder. Lissencephaly with characteristic facies, including prominent forehead, bitemporal hallowing anteverted nostrils and prominent upper lip and micrognathia, are diagnosed as miller dieker syndrome.

Results:

CASE REPORT - A 4 year 2 month old male child came with complains of delayed developmental milestones since 9 months. On examination child had microcephaly with micrognathia with global developmental delay with CNS examination showed hypotonia involving both upper and lower limbs and also involving the truncal muscles. Neuroimaging- MRI done which showed lack of sulci with thickening of the cortex in bilateral cerebral hemispheres – lissencephaly pachygyria spectrum. pontocerebellar hypoplasia with dilated fourth ventricle with mega cisterna magna. Child is presently on physiotherapy with sessions from special educators and child is on regular followup in neurodevelopmental clinic at department of pediatrics.

Conclusions:

Imaging is the main modality for diagnosis and MRI of classic lissencephaly shows smooth cortical surface, a thick band of deep grey matter that is sharply demarcated from the underlying white matter,a large ventricles.
A RARE CASE OF GAUCHERS DISEASE
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Background and Aims:

Gaucher’s disease is a rare multisystemic lipidosis belonging to the group of Lysosomal storage disease characterized by hematological abnormalities, organomegaly and skeletal involvement.

Gaucher’s disease results from the deficient activity of the liposomal hydrolase, acid beta glucosidase which is encoded by the gene located on the chromosome 1 Q21-Q31 which results in accumulation of glucocerebroside.

Methods:
A 3-year old female child A known case of right sided hemiparesis presented with progressive abdominal distension since 3 months and bony pain since one month. The child was been born to a second degree consanguineously married couple, full term baby cried immediately after birth and developmental milestones were normal.

Results:
Investigations sent showed microcytic hypochromic anemia with poikilocytosis and thrombocytopenia. USG showed massive splenomegaly and mild enlargement of liver with normal echo texture. X ray of lower limbs showed characteristic Erlenmeyer flask deformity of the distal femur.

Bone marrow biopsy that was done showed classical presentation of Gaucher's cells that is wrinkled paper appearance. Enzyme analysis showed low enzyme activity of Beta glucosidase (<14.8%).

Genetic sequencing revealed a homozygous mutation L44P in exon 10 of the GBA gene which was consistent with Gaucher’s disease

Conclusions:
In conclusion Gauchers disease should though a rare disease should be considered in patients who present with an unexplained organomegaly, easy bruising, bony pain or having a combination of these conditions. The condition can be treated with enzyme replacement therapy with beta glucosidase enzyme administered intravenously every alternate week.
INFLUENCE OF SOCIAL NETWORKS ON ADOLESCENT FOOD CHOICES
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Background and Aims:
Nowadays, it is increasingly common to use the media and social networks as sources of information in the area of food and nutrition. The aim of this study was to evaluate the influence of social networks on the food choices of adolescents aged between 15 and 19 years.

Methods:
An online questionnaire was then applied through social networks between December 10 and 26, 2021. This questionnaire covered sociodemographic data, food choices and data on the influence of social networks on food choices.

Results:
A total of 51 adolescents participated, of which 54.9% were female.

We found that 54.9% of adolescents bought food products due to social networks and that 64.7% introduced food/recipes in their diet due to social networks.

It was also be noted that 90.2% of adolescents said that social networks had an influence on their food choices. Of these adolescents, 51% reported that they increased their consumption of protein foods due to social networks, and the foods that did not increase their consumption are fast food, nuts, and cereals (p<0.05), in addition to other foods such as soft drinks, vegetables, pastries, fried foods, diet products and fruit.

Conclusions:
It was verified that social networks influence the food choices of adolescents.
ADHERENCE TO THE MEDITERRANEAN DIET IN PORTUGUESE ADOLESCENTS – URBAN VERSUS RURAL AREAS
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Background and Aims:

The adherence of the Mediterranean Diet is positively associated with greater longevity and quality of life, and the decline in its adherence in Mediterranean countries has deleterious effects on health. This study aims to identify differences in adherence to the Mediterranean Diet in Portuguese adolescents who study in schools in rural areas compared to schools in urban areas.

Methods:
The present study was carried out using the validated questionnaire for adherence to the Mediterranean Diet (KIDMED), with this adherence classified as low, intermediate or high, depending on the score obtained.

Results:
The study consisted of 126 secondary school students between 13 and 19 years of age, 52.4% of whom were female. It should also be noted that 73% of these adolescents belonged to urban schools, and that the majority practice physical activity (87.3%).

We found that 50% of adolescents from rural areas showed a high adherence to the Mediterranean Diet compared to those from urban areas, with 25% (p<0.05), and that there is a greater adherence to this dietary pattern in individuals with a regular practice of physical activity.

Conclusions:
It is concluded in this study that adolescents from rural areas show greater adherence to the Mediterranean dietary pattern.
Background and Aims:

The prevalence of obesity and related co-morbidities among children are increasing at an alarming rate. Diet is a key modifiable risk factor, but effective interventions to change dietary behavior are lacking. There is need for more personalized coaching instead of one-size-fits-all’ approaches. A first step towards more personalized dietary coaching includes developing valid and user-appropriate food intake registration tools. This is particularly challenging in young children, i.e., related to their limited cognitive abilities and the alternating daily supervision by e.g., parent, teacher and pedagogic employee.

Methods:

This pilot study aimed to evaluate the usability and liking of three concept dietary behavior assessment tools using a mixed methods study design, combining quantitative and qualitative measurements. Participants completed two rounds of usability and product liking testing for all three prototypes whereafter user experience was addressed using a modified This or That method. Additionally, the interviewer administered a demographic questionnaire. Video recordings and field-notes of the test sessions were reviewed by extracting and coding feedback by the users.

Results:

14 Dutch children (8 boys and 6 girls) aged 5-6 years old and a caregiver were recruited. The study is about to be finalized. Insights from user-testing will ultimately be used to determine key criteria a novel dietary behavior assessment tool should meet. First results are expected in February-March 2022.

Conclusions:

There are no conclusions yet.
EP059 / #318

E-Poster Topic: AS03 Childhood & Adolescence

GENDER-SPECIFIC DIFFERENCES IN WEIGHT STATUS IN TRANSGENDER YOUTH
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Background and Aims:

Given the role of sex hormones in metabolic regulation, dynamics in weight status and cardiometabolic alterations may occur in transgender persons receiving gender-affirming hormone therapy (estrogen and testosterone). Inadequate nutritional intake and sedentary lifestyle may lead to increased health risks in transgender youth receiving hormone therapy.

The aim of this study is to explore anthropometrics and lifestyle characteristics of transgender youth.

Methods:

A cross-sectional study of 71 transgender female (birth-assigned male) and 149 transgender male (birth-assigned female) adolescents (age 15.9±2.5 years) attending the multidisciplinary Pediatric Gender Dysphoria Clinic between 1/2018-12/2020. Medical nutrition counseling is part of the routine care. Data on anthropometric measurements and lifestyle characteristics were retrieved from medical records.

Results:

Median BMI z-score of the cohort was 0.36 [IQR:-1.56, 2.28]. Weight status differed in a gender-specific manner, below average for transfemales (P=0.004) and above average for transmales (P<0.001). The distribution of weight categories revealed that 11.8% were underweight, 14.1% overweight, 11.8% obese and 5.5% severe obese. Weight distribution categories differed between genders with a greater proportion of underweight in transfemales and a greater proportion of overweight/obese/severe obese in transmales (P<0.001, Figure 1). Most of the cohort consumed an unfavorable
diet (63.2%), were not engaged in physical activity (76.4%) and 48.6% had inadequate sleep; gender differences were not found in lifestyle habits (Figure 2).

Conclusions:
Our observations support the importance of targeted medical nutrition intervention in this group of youngsters in attempts to dampen potential detrimental outcomes of gender-affirming hormone therapy.
TEMPORAL TREND OF THE BODY MASS INDEX OF BRAZILIAN CHILDREN IN THE PERIOD FROM 2010 TO 2021

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Background and Aims:

Introduction: The Body Mass Index (BMI) is an essential indicator for the nutritional assessment of children, and the exposure to health conditions that are harmful to the development of this population. Objective: To analyze BMI variation in Brazilian children from 2010 to 2021.

Methods:
Descriptive ecological study. Data obtained from e-SUS Primary Care. The prevalence rate of the categories was obtained, and the trend was calculated by segmented linear regression, annual percentage changes (APCs)

Results:
In Brazil, in the analyzed period, for children aged 0 to<5 years, there was a decreasing character in “marked thinness” and “obesity” (APC:-3.9; p<0.001 and APC:-1.6; p=0.026, respectively), while the “eutrophy” category showed an increasing trend (APC:0.4; p=0.007). When analyzing children aged 5-10 years, there was a decreasing trend for “marked thinness” and “eutrophy” (APC:-5.0; p<0.001 and APC:-0.6; p=0.001, respectively). The categories “overweight”, “obesity” and “severe obesity” showed an increasing trend.

Conclusions:
Up to 4 years of age, there was a reduction in marked thinness and obesity. At the same time, there was a subtle improvement in nutritional quality, with an increase in eutrophy. It is evident that, although modest, there was an improvement in children's nutritional habits up to 4 years of age. When analyzing data from children aged from 5-10 years in this period, there is a more significant reduction in thinness than in the children mentioned above. However, this reduction is accompanied by a decrease in eutrophy and a tendency to increase overweight, obesity, and severe obesity, indicating a possible nutritional imbalance.
TEMPORAL TREND OF THE BODY MASS INDEX OF BRAZILIAN ADOLESCENTS BETWEEN 2010 AND 2021

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Federal University of Goiás, Pediatrics, Goiânia, Brazil

Background and Aims:

Excess weight has a multifactorial character and impacts the development of adolescents. The Body Mass Index (BMI) is an essential indicator of nutritional status that guides effective policies.

Objective: To analyze the temporal trends of Brazilian adolescents' BMI between 2010-2021.

Methods:

Descriptive ecological study. Data obtained from e-SUS Primary Care. The prevalence rate of the categories was obtained, and the trend was calculated by segmented linear regression, annual percentage changes (APCs), and their 95% confidence intervals (95%CI). Time series analysis performed in joinpoint version 4.9.0.0.

Results:

In the analyzed period, the BMI of adolescents in Brazil had a decreasing character in the categories "marked thinness" (APC: -2.7; p=0.029) and "eutrophy" (Joinpoint in 2019, APC: -1.5; p<0.001 and APC: -3.8; p=0.008). There was an increasing trend in the "overweight" categories (APC: 3.0; p<0.031), obesity (APC: 9.1; p<0.001) and severe obesity (Joinpoint in 2019, APC: 9.1; p <0.001 and APC: 29.6; p=0.012. The highest annual percentage reduction of eutrophy occurred between 2019 and 2020 (APC 67.78% -> 64.17%). Overweight and severe obesity APC+ occurred between 2019 and 2020 (overweight: 18.25% -> 19.97%; severe obesity: 1.8% -> 2.41%). The highest APC+ also occurred between 2019 and 2020 (7.91% -> 10.46%).

Conclusions:

The increase in overweight, obesity and severe obesity in Brazilian adolescents is possibly associated with increased intake of ultra-processed foods and a sedentary lifestyle. In addition, the rise in obesity in the period 2019 and 2020 highlights the
Background and Aims:

Background: From the early 1990s, David Barker, late of Southampton University, UK, developed a theory based on the epidemiology of non-communicable disease, which, although it became known as the Fetal Origins Hypothesis, nevertheless included infants:


Aims: To update Barker’s hypothesis in the light of the modern understanding of the microbiome.

Methods:
This is a hypothesis article and therefore relies only on literature review

Results:
An explanation for the increasing prevalence of obesity in both children and adults has been developed and will be presented. The key feature is the significance of biogenic amines in the context of the maturing microbiota-gut-brain axis. See work by Sudo and co-workers:


This explanation also relies on the observations of Denis Burkitt and his contrast between traditional African and Modern Westernised Societies in the mid-20th century. Key publication:


Conclusions:
This "infant" version of Barker’s Fetal and Infant Origin Hypothesis fits very well with his epidemiological observations, although he could not have anticipated the extent of microbial involvement that we now know to be true. Interestingly, Barker himself
mentioned schizophrenia in the above article, strengthening the case for considering a degraded microbiota-gut-brain axis as a cause of the widespread diseases of both children and adults.
**E-Poster Topic: AS04 Obesity**

**EFFICACY OF CINNAMON TO IMPROVE APPETITE HORMONES AND BODY FAT IN ADOLESCENTS WITH OBESITY: A RANDOMIZED CLINICAL TRIAL**

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**Background and Aims:**

Childhood obesity is one of the most serious public health problems. Cinnamon is an alternative therapy because high concentrations of polyphenols and decreasing the proinflammatory environment. Objective: To determine the efficacy of a cinnamon on serum leptin, ghrelin, HOMA-RI levels and body adiposity among adolescents with obesity (BMI percentile >95)

**Methods:**

Randomized controlled study. (Clinical Trials: NCT04476160).

We included patients from 10 to 18 years-old with obesity, and without any medical condition such as diabetes or medication use (hormonal supplements that could affect weight loss or insulin resistance).

Participants randomized to cinnamon 3000mg/day or placebo. Both groups received diet and physical activity recommendations. They will be followed for 16 weeks. Blood sample and anthropometric measurement was taken before and 16 weeks later. Statistical analyses: Intention-to-treat analyses were conducted. Delta serum leptin, ghrelin concentrations were compared between groups using the Mann Whitney U test

**Results:**

From September 2019 to March 2020, 100 met eligibility criteria and were enrolled. Participants were randomized to the treatment or placebo group. Baseline characteristics of both groups were similar. After 16 weeks, in the cinnamon group, there was significant reduction in leptin levels (-1.99 ng/ml vs 0.14 ng/ml, p = 0.02), body fat (-2.0% vs -0.35% p=0.01) and increase in ghrelin levels (21.9 pg/ml vs -7.2 pg/ml, p = 0.02), compared to placebo group. No significant difference in HOMA-RI (-0.21 vs 0.64 p=0.13).

**Conclusions:**
In adolescents with obesity, cinnamon is effective to decrease serum leptin levels and body fat percentage and increased serum ghrelin levels after 16 weeks compared to placebo group.
Influence of the consumption of three sources of fatty acids on chicken adipose tissue formation and size at an early age

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Background and Aims:
Research has shown that formation of adipose tissue occurs in first years of life and that the diet, particularly, the type fatty acid consumed influences adipocytes formation. Therefore, it is important to evaluate consumption of different sources of fatty acids such as quinoa oil (QO), fish oil (FO) and vegetable shortening (VS) on the adipose tissue in early age in animal models.

Methods:
A total of 76 Cobb 500 male chicks, distributed into four treatments, were used. They received, during seven days, one of the following diets: T1, basal; T2, basal+1% QO; T3, basal+1% FO and T4, basal+1% VS. At the end, animals were sacrificed to extract subcutaneous and visceral adipose tissue for histological analysis and size classification, using Leica Application Suite software. Data were analyzed under a Complete Randomized Design and Tukey Test for means comparison using software R-Studio.

Results:
In both adipose tissues, animals fed diets containing either quinoa or fish oils showed a higher presence of very small adipocytes followed by small and normal ones; also, there was an absence of large or very large adipocytes. However, the animals fed T4 diet showed less formation of very small to normal type of adipocytes, but they did promote the formation of large and very large adipocytes as compared to the other treatments.
Conclusions:
Consumption of quinoa or fish oils promotes an adequate establishment of visceral and subcutaneous adipose tissue in early age, suggesting that the consumption either oils constitute an alternative to prevent obesity.

Figure 1. Subcutaneous adipose tissue of chicks: T1, basal; T2, basal+1% QO; T3, basal+1% FO and T4, basal+1% VS. 1 pixel = 0.38 Microns, 20X
E-Poster Topic: AS04 Obesity

TECHNOLOGY FOR DIETARY BEHAVIOR ASSESSMENT IN CHILDREN – A QUALITATIVE STUDY EXPLORING THE PERSPECTIVE OF PEDIATRIC DIETICIANS
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Background and Aims:

Accurately assessing dietary intake and eating behavior in pediatric dietetics is challenging. The limited cognitive abilities of children give difficulties in conventional assessment methods when asked to recall or report consumed foods and drinks, especially when caregivers are not able to provide surrogate information. Technological innovations have the potential to overcome these shortcomings. However, the availability of validated dietary assessment methods for children is very limited. The perspective of pediatric dieticians (PDs) on these technologies can be of valuable input for further development. This study aimed to explore the opinions of PDs about traditional dietary behavior assessment methods for children and protentional technological innovations to replace or support traditional methods.

Methods:
Semi-structured interviews were conducted with 10 PDs in the Netherlands. After the tenth interview, data saturation emerged. The interviews were inductively coded in an iterative process and overarching themes were identified. Additionally, an online survey was completed by 31 PDs to support the findings from the interviews.

Results:
PDs discussed their perspective on dietary behavior assessments in four domains: current methods, technological methods, future methods, and external influences on these methods. Generally, PDs describe traditional methods as sufficient in supporting them reaching their desired goals. However, the duration and reliability of these methods are mentioned as limitations. For future technologies, PDs mention ease of use and engaging to children as opportunities.

Conclusions:
These findings contribute to the understanding of dietary behaviour assessments in pediatric dietetics and can give guidance in further development of new assessment technologies.
E-Poster Topic: AS04 Obesity

PREVALENCE OF OBESITY IN THE PEDIATRIC POPULATION
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Background and Aims:
The aim of the study is obesity and related problems developed as a result of malnutrition in children.

Methods:
The study was conducted with 829 children (489 boys, 340 girls) aged 6 to 17 years in 2019-2021, with patients self-administered at the clinic. All of them underwent clinical laboratory examination, developed an extended, specialized questionnaire for special epidemiological research, unified diagnostic criteria for nosology, primary questionnaire-screening. Epidemiological and clinical-laboratory data were processed through the computer program SPSS / V12 specially compiled software statistical program package.

Results:
Genetic predisposition is also important, high-calorie food intake was observed in 65.8% of the child population, eating in fast food outlets increased in 8.9%, the rate of obesity in children, Baking 35.7% is the risk of obesity, sweets were consumed by almost 89.2% of the child population, and 78.4% were consumed in excess of soft drinks. All this was caused by spending a lot of time with the computer, as well as using the TV and tablet, very little physical activity P <0.01, Psychological factor was observed in 35.9%, socio-economic factor in 23.5%, boys were overweight 85-95 51.4%, girls 32.5% 85-95, and 75-85 16.1% weight gain as boys also in girls. 24.2% were predisposed to cardiovascular pathology, 31.3% were found to have respiratory failure while walking.

Conclusions:
One of the best ways to reduce childhood obesity is to adjust your family diet and exercise. Treatment and prevention of obesity allows us to protect the health of the child now and in the future.
ANEMIA IN PREGNANT WOMEN AND CHILDREN AGED SIX TO 59 MONTHS LIVING IN MOZAMBIQUE AND PORTUGAL, DURING 2003-2018: AN OVERVIEW THROUGH A SYSTEMATIC REVIEW

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Background and Aims:

Globally, anemia is still a public health issue faced by people in both low and high-income countries, being a concern for adolescent girls, women of reproductive age, and children in the first years of life. This study gives an overview of published scientific articles related to the prevalence, nutritional indicators, and social determinants of anemia in pregnant women and children aged six to 59 months living in Mozambique and Portugal.

Methods:

We performed a systematic review of scientific literature in April 2021, searching for published indexed articles on anemia in pregnant women and children aged six to 59 months living in Mozambique or Portugal in PubMed, GoogleScholar, ScienceDirect, Cochrane, Scielo, and Lilacs databases. We used STROBE and CARE checklist to evaluate the methodological quality of the articles. Subsequently, a content analysis was performed.

Results:

We have identified 22 publications on anemia in pregnant women and children aged six to 59 months living in Mozambique and Portugal. Independent of the country, iron deficiency anemia (54.5%; 12/22) and prevalence of anemia (32.8%; 7/22) were the most mentioned, while maternal and infant anemia was the least mentioned (9%; 2/22). Few articles mentioned maternal nutritional indicators related to supplementation with folic acid during pregnancy (9.1%;2/22) and the use of micronutrients for home fortification (4.5%;1/22). Age and gender were the social determinants more commonly studied.
Conclusions:
Unsurprisingly, anemia plays a relevant role in disability and life imbalances for these subgroups in Mozambique compared to Portugal. Specific anemia studies in relation to social determinants are still scarce.
ESSENTIALITY OF FATTY ACIDS IN THE DIET OF LACTATING WOMEN IN LATVIA
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Background and Aims:
The composition of fatty acids in human milk varies due to regional aspects and dietary
traditions (Hale & Hartmann, 2017). The aim of this study was to evaluate the fatty acid
intake among lactating women in Latvia in accordance with the nutritional guidelines.

Methods:
Participants (n=70, year 2020) had to complete a 72-hour food diary. The Fineli food
composition database was used to analyse food data. Ethical approval from Riga
Stradiņš University Ethic Committee (No. 6-1/01/6). Grant: Conducting Fundamental
Research in the Latvia University of Life Sciences and Technologies. Project No. G1.
Contract No. 3.2-10/2019/LLU.

Results:
Fatty acid intake among the participants (n=70)

<table>
<thead>
<tr>
<th>Fatty acids, unit</th>
<th>Median [interquartile range] (minimal–maximal values)</th>
<th>Guidelines for fatty acid intake during lactation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monounsaturated fatty acids, E%</td>
<td>15.61 [4.29] (9.32–27.79)</td>
<td>10 to 20 E % (NNR, 2014)</td>
</tr>
<tr>
<td>Linoleic acid, E%</td>
<td>5.40 [2.95] (2.37–17.46)</td>
<td>4 E% (EFSA, 2019; NNR, 2014)</td>
</tr>
<tr>
<td></td>
<td>Median [IQR]</td>
<td>Reference</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------</td>
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</tr>
<tr>
<td><strong>α-linolenic acid, E%</strong></td>
<td>1.07 [0.71]</td>
<td>0.5 E% (EFSA, 2019; NNR, 2014)</td>
</tr>
<tr>
<td></td>
<td>(0.33–3.31)</td>
<td></td>
</tr>
<tr>
<td><strong>Docosahexaenoic acid, mg</strong></td>
<td>117.87 [234.39]</td>
<td>200 mg (NNR, 2014)</td>
</tr>
<tr>
<td></td>
<td>(0.00–3369.78)</td>
<td></td>
</tr>
<tr>
<td><strong>Polyunsaturated fatty acids, E%</strong></td>
<td>7.00 [3.53]</td>
<td>5 to 10 E % (NNR, 2014)</td>
</tr>
<tr>
<td></td>
<td>(3.73–17.92)</td>
<td></td>
</tr>
<tr>
<td><strong>trans fatty acids, mg</strong></td>
<td>0.54 [0.79]</td>
<td>As low as possible</td>
</tr>
<tr>
<td></td>
<td>(0.00–1.82)</td>
<td>(EFSA, 2019; NNR, 2014)</td>
</tr>
</tbody>
</table>

**Conclusions:**
Median α-linolenic acid, monounsaturated and polyunsaturated fatty acid intake among the participants was within recommendations. Linoleic acid, saturated fatty acid intake was higher, but median intake of docosahexaenoic acid lower than recommended. Median trans fatty acid intake among the participants was low (<1 g per day).
DIETARY INTAKE IN NEUROLOGICALLY IMPAIRED CHILDREN IN NORTHEASTERN BULGARIA
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Background and Aims:

Background: Neurologically impaired children (NIC) have special nutritional issues that affect their overall health and quality of life.

Aim: The aim of this study is to evaluate and compare dietary intake of NIC living in residential care (RC) and in family environment (FE).

Methods:
Methods: The cross-sectional study was conducted in Varna region, Bulgaria for a period of 2 years [2017-2019]. A total of 109 neurologically impaired children, 51.4% boys, 48.6% girls, average age 5.67 ±4.33 years were recruited-living in RC (n=64) and living in FE (n=45). Information on demography, diagnosis, gestational age at birth motor function was gathered. Food intake was assessed with a 24-hour dietary recall. Energy, macronutrients, vit. B12 and iron were calculated with a web based dietary assessment tool.

Results:
Results: Patients frequently consumed a diet low in Energy - prevalence of 55.8% total - 65.5% RC vs. 40.5% FE ($\chi^2$=6.51; p=0.038) with a mostly normal percentage of Proteins - prevalence 84.9% total (89.3% RC vs. 78.4% FE), high Fats - 44.1% total (37.5% RC vs. 54.1% FE) and normal Carbohydrates - 45.7% total (42.1% RC vs. 51.4% FE). Regarding micronutrients - frequently consumption of low Iron - prevalence of 57.0% total (51.8% RC vs. 64.9% FE) and normal in vit. B12 - prevalence of 59.1% total (44.6% RC vs. 81.1% FE) ($\chi^2$=15.4; p<0.001).

Conclusions:
Conclusion: Dietary intake among neurologically impaired children does not, for many nutrients and energy, meet the needs and recommendations. Effective interventions are needed to improve diet and health outcomes.
SCALING UP DISTRIBUTION OF FORTIFIED RICE UNDER SOCIAL SAFETY NET PROGRAMS IN BANGLADESH

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Background and Aims:

Since 2017, Nutrition International (NI) and World Food Program (WFP) have been working with the Government of Bangladesh in scaling up distribution of fortified rice through the two largest social safety net programs (SSNPs): Vulnerable Group Development (VGD) program and Food Friendly Program (FFP).

Methods:

Technical assistance (TA), i.e., on-the-job training, monitoring, supportive supervision, and quality control support was provided to rice millers and rice blending units to produce and deliver rice fortified with vitamins A, B1, B9, B12, and zinc & iron in 1:100 ratio. During the pandemic, support was continued to the rice blending units’ personnel via video calls. Training was provided to government laboratory personnel in testing fortified rice kernel (FRK) to ensure quality of the fortified rice distributed through SSNPs.

Results:

Despite the pandemic, >50 blending units were established in 2020-21 increasing the total number of blending units to >100. Factories producing FRK increased from 03 in 2019 to 07 in 2021. Distribution of fortified rice increased from 255,776 households in 94 upazillas in 2019 to 431,249 households in 189 upazillas in 2021 under VGD program; and from 237,440 households in 24 upazillas in 2019 to 1,078,994 households in 163 upazillas in 2021 under FFP.

Conclusions:

NI has contributed significantly to scaling up distribution of fortified rice to >1.5 million households collectively under VGD program and FFP in 2021. The coverage of upazillas has increased several folds since 2019. This is likely to contribute to reducing the burden of micronutrient deficiencies among ultra-poor families receiving fortified rice through SSNPs.
THE KNOWLEDGE OF POLISH WOMEN DURING LACTATION ABOUT THE FACTORS INFLUENCING THE LOW BIRTH WEIGHT OF A CHILD AND THE HEALTH CONSEQUENCES OF NUTRIENT DEFICIENCIES
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Background and Aims:
Low body weight in women before and during pregnancy can result in low body weight in the newborn and the development of metabolic diseases later in life.

The aim was to assess the knowledge of women about the factors influencing low birth weight of a child and the health effects of nutrient deficiencies.

Methods:
The study was conducted in 2021 among 132 lactating women. An original questionnaire was used to carry out the study. In order to obtain the results, Microsoft Excel and the statistical program StatSoft Statistica were used.

Results:
Over 51% of women agreed with the statement that too low body weight during pregnancy may contribute to low birth weight and health of the baby. Smoking and drug use were reported by the majority of women as factors contributing to low birth weight. Over 95% of respondents indicated that iron deficiency in pregnancy contributes to anemia. About 72% of women indicated that folic acid deficiency in pregnancy contributes to the development of a neural tube defect in the child. Over 31% of women were unaware of the health effects of zinc deficiency. Half of the respondents did not know the effects of choline deficiency. Vitamin B12 deficiencies included anemia as well as abnormal development of the brain and nervous system.

Conclusions:
Women have a basic understanding of the factors influencing low birth weight in a child. This study proves the importance of nutritional education of women on the negative consequences of nutritional deficiencies and too low body weight in pregnancy.
AUXOLOGICAL DYNAMICS OF BODY MASS INDEX IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS: A STUDY FROM CHANDIGARH, NORTH INDIA

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Background and Aims:

Growth impairment is well-known complication amongst patients with Juvenile Idiopathic Arthritis (JIA). Information available on growth pattern of Indian children with JIA followed till adulthood is scarce. Therefore, we attempted to study growth pattern of Body Mass Index (BMI) in male and female children with JIA representing north-western parts of India.

Methods:

A total of 348 patients (boys: 182, girls: 166) aged 1 to 18 years, diagnosed as cases of JIA and categorized into Oligoarthritis, Polyarthritis and Systemic arthritis were enrolled in this mixed-longitudinal study from Pediatric Rheumatology Clinic of Advanced Pediatrics Centre, PGIMER, Chandigarh, India. Weight and length/height measurements were recorded at approximately 6 monthly intervals in Growth Laboratory/Growth Clinic of the department over a period of 13 years. BMI was calculated by dividing weight (kg) by square of crown-heel length (m²).

Results:

BMI depicted a regular decrease till 6-7 years of life, whereafter it increased consistently in all children representing three types of JIA. Maximum growth impairment was seen in patients with systemic JIA. Children with oligoarthritis were least affected.

Conclusions:

As compared to normal Indian and western counterparts, impaired BMI attainments were recorded in oligoarthritis, polyarthritis and systemic JIA patients throughout the study span. However, the magnitude of this impairment appears to be related to the subtype of JIA.
PHYSICAL GROWTH OF GIRLS WITH HIV ON ANTIRETROVIRAL THERAPY
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Background and Aims:
Growth impairment is major manifestation of HIV and poor growth is reported in 50% of HIV-infected children. In view of non-availability of published auxological evidence on Indian children with HIV, we attempted to study pattern of physical growth of girls with HIV hailing from north-western region of India.

Methods:
A total of 59 girls, aged 8 to 15 years, diagnosed as cases of HIV and receiving ART, comprised sample for this study. These children enrolled from 'Pediatric Immunology Clinic', were cross-sectionally measured for body weight and height in Growth Laboratory/Clinic of Department of Pediatrics, PGIMER, Chandigarh using standardized techniques and instruments. BMI was calculated by dividing weight(kg) by square of height(m\textsuperscript{2}).

Results:
A regular increase in weight, height of the study girls was noticed from 8 to 15 years while, an inconsistent trend was recorded for BMI. The study girls measured lighter, shorter and possessed lower BMI values as compared to their normal Indian and Western counterparts. 15.3% girls with HIV were found to be stunted and wasted; interestingly, only 4 girls (6.8%) fell into thinness category (BMI<3rd centile) as per IAP reference. None of them was found to be overweight or obese.

Conclusions:
The compromised auxological attainments of HIV girls when contrasted with their normal peers may be due to influence of disease on physical growth of these HIV patients. This calls for an early detection of disease and timely institution of need based therapeutic and nutritional interventions to improve health status of girls with HIV.
MATERNAL SECRETOR STATUS AND HUMAN MILK OLIGOSACCHARIDES (HMO) COMPOSITION IN ASIAN MOTHERS: A SYSTEMATIC REVIEW

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Background and Aims:
This study aims to understand the prevalence of maternal secretor status and its association with HMO composition in Asian population.

Methods:
A literature search focusing on the prevalence of secretor status and HMO composition in human milk (HM) from Asian populations was conducted using Medline, Embase, and Cochrane databases. The pooled results were categorized according to lactation stages, with colostrum, transition milk and mature milk. The high-secretor status is defined as ≥0.1 g/L of 2'-FL detected in HM.

Results:
17 studies with a total of 2502 HM samples were included. The high-secretor status ranged between 46-88% in 7 reported Asian populations. 2'-FL, LNT and 3-FL were the three most abundant HMOs found in Asian HM. The pooled data of 6 HMOs showed a decrease in HMO concentration over time, with the highest level in colostrum (4.96 g/L), followed by transition milk (4.10 g/L), mature milk at 1-3 months (3.48 g/L) and at 3-8 months (3.23 g/L). The level of 2'-FL, LNT, LNnT, 3'-SL and 6'-SL decreased from transition milk to mature milk, except for 3-FL which tended to increase. In more mature milk, the level of 3-FL was higher than 2'-FL (1.31 vs. 1.01 g/L), making 3-FL the most abundant HMO in mature milk at 3-8 months.

Conclusions:
2'-FL and 3-FL are the most abundant HMOs in high- and low-secretors, respectively. 3-FL was the most abundant HMO found in mature milk (3-8 months) in both low and high secretor groups, suggesting that it may play an important role in infant’s growth and development.
MATERNAL SECRETOR STATUS AND HUMAN MILK OLIGOSACCHARIDES COMPOSITION IN VIETNAMESE MOTHERS
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Background and Aims:
Despite an increase in research efforts to investigate the variation of HMO composition in breastmilk, data on Asian mothers remain scarce, particularly in Southeast Asia. This study aims to determine the levels of 5 HMOs in breastmilk and secretor status in the Vietnamese mothers.

Methods:
A total of 228 singleton Vietnamese pregnant women aged 20-35 years were recruited. Breastmilk samples were collected at 1, 2 and 3 months postpartum, and analysed for its HMOs content, including 2’-FL, 3-FL, LNT, 3’-SL and 6’-SL using LC-MS/MS. The high-secretor status is defined as ≥0.1 g/L of 2’-FL detected in breastmilk.

Results:
In total, 348 milk samples from 188 Vietnamese mothers were analysed. The total HMOs over the first 3 months postpartum ranges from 1.11-8.01g/L (mean±SD: 3.38±1.08g/L). The three most abundant HMOs were 2’-FL (1.19 g/L), 3-FL (1.03g/L) and LNT (0.94g/L). The total HMOs at 1, 2 and 3 months postpartum were 3.41±0.60g/L, 2.95±1.08g/L and 3.64±1.72g/L, respectively. 2’-FL was the most abundant HMO at 1st month (1.22±0.99g/L) while 3-FL was the most abundant HMO at 3rd months (1.34±1.50g/L). The prevalence of high-secretor in this study population was 64.9%. 2’-FL was consistently higher in high-secretor milk over the first 3 months postpartum, whereas in low-secretor milk, LNT and 3-FL were found to be the most abundant HMO at 1 and 2-3 months postpartum respectively.

Conclusions:
2’-FL, 3-FL and LNT were the three most abundant HMOs in Vietnamese breastmilk. 2’-FL and 3-FL were the most abundant fucosylated HMO in high- and low-secretors, respectively over the 3-month postpartum period.
Background and Aims:

Introduction: During pregnancy and lactation, the maternal organism undergoes many physiological modifications to adapt to the development of the baby. Adequate nutritional support is essential to prevent deficiencies and supplementation is an important strategy. Also, recent studies have shown that supplementation should start before pregnancy, at the preconception period.

Objective: Identify the main motivations of healthcare professionals (HCPs) for prescribing nutritional supplements during preconception, pregnancy and lactation.

Methods:
Online survey with 71 Brazilian and 76 Mexican pediatricians.

Results:
In Mexico, the most prescribed supplement is folic acid: 91% of HCPs recommend it during pregnancy, 88% during lactation and 81% during preconception. In Brazil, the main prescription is multivitamins: 85% in preconception, 75% in pregnancy and 78% in lactation. Overall, Mexican HCPs presented a lower tendency of prescribing supplements during preconception. The main reasons cited for the prescription of supplements is to prevent pregnancy complications and improve women’s nutrition during lactation. In Brazil, maternal immunity, prevention of gestational complications, support of the baby’s growth and adequate supply of vitamins and minerals during lactation were the main reasons reported.

Conclusions:
The prescription of nutritional supplements by Brazilian and Mexican HCPs is very common during pregnancy and lactation and has similar reasons: prevent gestational complications and support women’s and baby’s health during lactation. Regarding the main differences between both countries, supplementation during preconception is
more common in Brazil and HCPs have a greater concern of maternal immunity.