

case control study on 52 obese children (body mass index (BMI)>95th percentile) aged 4 to 16 years undertaken at the outpatient endocrine clinic of the Children Hospital at Tabriz University between 2009–2011. This study was conducted to compare the prevalence of vitamin D deficiency and secondary hyperparathyroidism in obese children compared with 57 non obese (BMI< 85th percentile). 109 children including 52 (50.5%) boys and 57 (49.5%) girls were studied. Most of case (76.9%) and control (42.1%) groups suffered from degrees of vitamin D deficiency. There was meaningful statistical difference between two groups considering to vitamin D deficiency and parathyroid hormone ($p = 0.001$). A negative relations was found between iPTH and vit D level ($p < 0.001$, $r = -0.2$), BMI and 25-OH vit D ($p < 0.001$, $r = -0.2$). A positive relation was observed between parathyroid hormone and BMI ($p = 0.009$, $r = 0.1$). Obese children are at high risk at vitamin D deficiency and secondary hyperparathyroidism. BMI appears to be an important risk factor for vitamin D deficiency.

1434 CLINICAL-LABORATORY PECULIARITIES IN CHILDREN WITH OBESITY AND METABOLIC SYNDROME

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O Zagrebaeva, A Solntsava, L Viazava. *Paediatrics, Belarussian State Medical University, Minsk, Belarus*

Aim To determine clinical-laboratory peculiarities in children with obesity (O) and metabolic syndrome (MS).

Methods 119 children with O and MS were examined in the endocrinological department of University hospital (Minsk) over 2011 year. Group1 patients with O 90(75.6%) (boys/girls=50/40), mean±SD age 12.2±3, group2 MS 29(24.4%) (boys/girls=16/13), mean±SD age 14.2±2.2 yrs ($\delta = 0.04$). Insulin(Ins); total cholesterol(TC); triglycerides(TG); high-density(HDLc), low-density(LDLc) lipoprotein cholesterol; atherogenic coefficient(AC); OGTT with HOMAIR index were defined to all patients. The results were processed using the Statistica 6.1.

Results BMI boys group1 28.1±5.4 kg/m², group2 33.8±4.4 ($\delta = 0.3$); group1 girls 31.8±5.6, group2 36±5.5 ($\delta = 0.6$). The average levels of TC were in normal limits, gender and intergroup differences weren't noted ($\delta = 0.1$). TG boys and girls with MS were 1.73±0.93 and 2.02±0.6 (0.45–1.7 mmol/L), the reliable difference weren't noted ($\delta = 0.8$ and $\delta = 0.3$ respectively). HDLc was norm in all groups regardless of gender ($\delta = 0.2$). LDLc was upgraded in girls group2 3.43±0.79 (< 3.3 mmol/L) ($\delta = 0.4$). AC in boys and girls group2 was 3.31±1.16 and 3.81±0.88 (2–3) ($\delta = 0.1$). Basal and postprandial plasma glucose levels by conducting OGTT didn't exceed normal limits in group1 and group2 regardless of gender ($\delta = 0.08$). Ins boys group1 24.2±18mU/ml (2.1–22), group2 40.1±23.2 ($\delta = 0.1$); girls group1 20.8±14, group2 37.8±16.1 ($\delta = 0.6$). HOMAIR boys group1 5.16±3 (< 2.77), group2 10.87±5.9 ($\delta = 0.1$); girls group1 4.3±3, group2 8.5±3.4 ($\delta = 0.8$).

Conclusions Dyslipidemia was typical to group with MS. Insulin resistance with maintaining the basal and postrandial normoglycemia was noted by conducting OGTT in all patients regardless of gender.

1435 BIOMARKERS OF OXIDATIVE/ANTIOXIDATIVE BALANCE IN MACROSOMIA

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M Aribi, M Haddouche. *Laboratory of Applied Molecular Biology and Immunology, Universite Abou-Bekr Belkaid Tlemcen, Tlemcen, Algeria*

Background To investigate whether the anomalies affecting the antioxidant defenses could start at birth and to check the decrease in antioxidant defenses in macrosomic newborns.

Material and Methods Thirty macrosomic and 30 sex-matched control newborns were recruited for a retrospective case-control study at the Maghnia Maternity Hospital of Tlemcen Department (Algeria).

Results The serum plasma ORAC, albumin, vitamin E, SOD, CAT and GSH-Px levels were significantly decreased in macrosomic than in control newborns, yet no difference was observed after adjustment for weight. Additionally, serum concentrations of malondialdehyde and xanthine oxidase were significantly higher in macrosomic than in controls before adjustment for weight. Moreover, macrosomia was significantly associated with low levels of ORAC (OR = 4.96, 95%CI 1.2–20.55), vitamin E (OR = 4.5, 95%CI 1.29–15.68), SOD (OR = 6.88, 95%CI 1.35–35.11) and CAT (OR = 5.67, 95%CI 1.37–23.46), and with high levels of MDA (OR = 10.29, 95%CI 2.02–52.36).

Conclusions Excessive weight could be a potential factor for decreased anti-oxidative capacity and increased oxidative stress.

1436 MATERNAL WEIGHT GAIN DURING PREGNANCY AND NEONATAL BIRTH WEIGHT: MOROCCAN DATA

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¹A Barkat, ²L Machhoury. *Equipe de Recherche en Santé et Nutrition du Couple Mère Enfant, Faculté de Médecine et de Pharmacie de Rabat, Université Souissi; ²Faculté de Médecine et de Pharmacie de Rabat; Université Souissi, Rabat, Morocco*

Objective The objective of this study was to investigate the influence of maternal weight gain on birth weight of a population of newborns.

Patients and Methods Study including all patients who delivered in the service of the Maternity Hospital Provincial BENSLIMANE between 1 October 2010 and October 1, 2011. Three groups of patients were formed according to weight gain: less than 8kg, between 8 and 16kg and over 16kg normal. The epidemiological characteristics, obstetric complications and neonatal outcomes were analyzed. The survey is conducted on the basis of a questionnaire, for parturients and obstetric records analysis.

Results The mean birth weight was higher in the group “weight gain” ≥ 16 kg “(3782.9±595 g $p < 0.05$) and the rate of newborns weighing more than 3800g (45.5%, $p < 0.05$), unlike those weighing less than 2600g (hypotrophy) whose percentage was higher in the group “weight gain” < 8 kg (6.2% $p < 0.05$), weight gain greater than 16 kg represented a risk factor for dystocia (34.7%).

Conclusion An excessive weight gain during pregnancy has deleterious effects on neonatal trophicity. It promotes macrosomia. These data point out the interest to follow the recommendations of weight gain during pregnancy.

1437 MARKERS OF THE METABOLIC SYNDROME AND PHYSICAL ACTIVITY IN TEENAGE CHILDREN BORN PRETERM

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¹R Tinnion, ²K Hollingsworth, ¹L Basterfield, ³M Trenell, ⁴T Cheetham, ^{1,4}N Embleton. *Institute of Health and Society; ²Newcastle Magnetic Resonance Centre; ³Institute of Cellular Medicine, Newcastle University; ⁴Newcastle upon Tyne Hospitals NHS Foundation Trust; ⁵Newcastle University, Newcastle upon Tyne, UK*

Background and Aims The worldwide increase in the Metabolic Syndrome is associated with adverse health outcomes and significant healthcare costs. Early life exposures are key factors in determining later health. Children born preterm appear to be at higher risks of developing insulin resistance. We aimed to determine the prevalence of novel metabolic biomarkers in a cohort of teenage children who were born preterm (< =34 weeks gestation) and correlate these with physical activity.

Methods We studied 24 children using standard techniques including auxology, body composition (BODPOD™), insulin resistance

(fasting and post-glucose load) and daily activity (Actigraph™ and Actilife™ software). We measured 31-P and 1-H magnetic resonance spectroscopy (MRS) and assessed intra-hepatic lipid (IHL) content and phospho-creatine recovery after standardised exercise within the MR scanner.

Results IHL was associated with increases in body mass and fat mass index (% body fat/height²). There was a weak association between glucose levels and muscle recovery time with increased IHL. Recovery from exercise was correlated with % time spent in daily moderate-to-vigorous physical activity (MVPA) and sedentary activity. Only 5 children achieved an activity time within 10% of the recommended 60 minutes or more of MVPA per day (mean:39 minutes).

Conclusions Children born preterm have evidence of adverse metabolic outcomes in later life. IHL deposition is related to overall fatness, and may be significant in adverse metabolic processes. Measured physical activity correlates with the ability of muscle to recover from a defined exercise. Improving MVPA may result in health benefits.

1438 EVALUATION OF THE "FREGGIE FRIDAY" PROGRAM TO PROMOTE FRUIT AND VEGETABLE CONSUMPTION IN CANADIAN ELEMENTARY SCHOOL-AGED CHILDREN

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^{1,2}KB Adamo, ¹C Colapinto, ¹A Harvey, ¹KP Grattan, ³N Barrowman, ^{1,4,5}GS Goldfield. ¹Healthy Active Living and Obesity Research Group, Children's Hospital of Eastern Ontario (CHEO), Research Institute; ²Human Kinetics, University of Ottawa; ³Children's Hospital of Eastern Ontario (CHEO), Research Institute; ⁴Human Kinetics and Psychology, University of Ottawa; ⁵Psychology, Carleton University, Ottawa, ON, Canada

Background While Canada is one of the world's most prosperous nations, the health of our children is dismal, with obesity rates amongst the highest in the world. A healthy diet, including at least 5 to 6 daily servings of fruit and vegetables, is of profound importance to child health.

Aim To evaluate the efficacy of a fruit and vegetable program 'Freggie Fridays' developed to encourage Canadian elementary school children (grades 1 to 6) to eat the recommended number of fruit and vegetable servings each day.

Methods A prospective quasi-experimental trial compared schools receiving the "Freggie Friday" curriculum as the intervention (n= 8) to those not receiving the curriculum as control (n=6). The primary outcome measure was the difference in levels of fruit and vegetable consumption as measured by a food frequency questionnaire. Information on attitudes and knowledge of fruit and vegetable consumption was attained using an adapted version of the validated Pro-Children study questionnaire.

Results A total of 807 of the 942 children who completed the baseline questionnaires completed the follow-up questionnaires (450 intervention and 357 control). A mixed effects regression model indicated no significant intervention effects on fruit or vegetable consumption, snack food consumption, or knowledge or attitudes relating to fruit and vegetable consumption.

Conclusions Despite clear messaging and a sound program, it appears that adding a nutritional program, which expects busy teachers to add this to their educational curriculum, may not be the most efficacious method of eliciting healthy dietary behaviour change in Canadian elementary school-aged children.

1439 OBESITY STRUCTURAL LINK: PARENTING STRESS, FEEDING AND EATING IMPACT ON CHINESE YOUNG CHILDREN WEIGHT OUTCOMES IN HONG KONG

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CMS Chan, JHM Lam. Department of Psychological Studies, The Hong Kong Institute of Education, Hong Kong, Hong Kong S.A.R.

Aims The aims of this study were to explore the interrelationship between parenting stress, parental feeding and children eating behaviour and weight outcomes in order to tackle the rapid increased childhood obesity in Hong Kong.

Methods 336 Chinese parents of young children aged 2–7 years from 27 kindergartens were recruited for a cross sectional study. The Parental Feeding Style Questionnaire (PFSQ), Child Eating Behaviour Questionnaire (CEBQ) and Parenting Stress Index (PSI-SF) were employed. Young children's BMI were classified by the IOTF. Path analyses were used for data analysis.

Results Several path models were attempted. The first model indicated that higher parenting stress significantly predicted higher children food responsiveness (Standardized β -coefficient = 0.195, $p < 0.001$) which predicted higher weight status (Standardized β -coefficient = 0.249, $p < 0.001$). Higher parenting stress also predicted higher instrumental feeding (Standardized β -coefficient = 0.294, $p < 0.001$) which predicted lower weight status (Standardized β -coefficient = -0.204, $p < 0.001$). Food responsiveness and instrumental feeding were weakly correlated ($r = 0.288$, $p < 0.001$). The standardized indirect effects of parenting stress on children's weight status via food responsiveness (Standardized Sobel's $Z = 2.799$, $p < 0.01$) and instrumental feeding (Standardized Sobel's $Z = -3.015$, $p < 0.01$) were significant. The second model showed higher parenting stress predicted higher emotional feeding (Standardized β -coefficient = 0.242, $p < 0.001$) which predicted higher weight status (Standardized β -coefficient = 0.249, $p < 0.001$).

Conclusions These findings could suggest directions to childhood obesity interventions.

1440 USING NEW CHILD GROWTH STANDARDS OF WORLD HEALTH ORGANIZATION FOR ESTIMATION OVERWEIGHT AND OBESITY IN PRE-SCHOOL CHILDREN, AHWAZ, IRAN

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¹S Noughjah, ²M Karandish, ³R Malih. ¹Social Determinants of Health Research Center, Department of Public Health, Ahwaz Jundishapur Medical Sciences University; ²Diabetes Research Center, Department of Nutrition; ³Department of Nutrition, Jundishapur Medical Sciences University, Ahwaz, Iran

Background and Aims Childhood obesity as a global health problem is associated with increased risk of mortality and morbidity. A few studies are focused on prevalence of children obesity based on new WHO growth standards in Iran. The aim of this study was to determine prevalence of overweight and obesity in children attending health centers based on new world health organization growth standards.

Methods In a descriptive study 1035 children aged 24–60 months, attending urban public health centers for receiving routine children health care were surveyed in 2009. Interview with mothers, filling a questionnaire by trained questioner were used for data collection. Software of WHO for PL (WHO Anthro beta version, 17 February 2006) used for data analysis after entrancing data in SPSS software. Overweight and obesity was defined based on Body Mass Index/age above +2SD and +3SD of median Z score.

Results Overall, 15% of the children were overweight. Highest prevalence of overweight was observed in the 24–35 month age group (19.4%). In different age groups of boys and girls, the prevalence of overweight and obesity was calculated 16.7% and 13.3% respectively. Overall prevalence of obesity was 7.3%. Highest prevalence of obesity in the 24–35 month age group (10.4%) was observed. Prevalence of obesity in boys and girls was 9% and 5.6% respectively.

Conclusion Overweight and obesity in 2–5 years children has reached alarming proportion in Ahwaz. Urgent interventional health programs are needed to prevent childhood obesity.