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 (<0.01, r=-0.2), BMI and 25-OH vit D (<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.

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

Results The serum plasma ORAC, albumin, vitamin E, SOD, CAT and GSH-Px levels were significantly decreased in macroscopic 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 macroscopic than in controls before adjustment for weight. Moreover, macroscopia 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 1.37–25.46), 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.

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

**Objective** 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 endocrinologic department of University hospital (Minsk) over 2011 year. Group1 patients with O 90(75.6%) (boys/girls = 50/40), mean±SD age 14.2±2 yrs, group2 MS 29(24.4%) (boys/girls =16/15), mean±SD age 14.2±2 yrs.(p=0.04). Insulin(Ins); total cholesterol(TC); triglycerides(TG); high-density(HDLc), low-density(LDLc) lipoprotein cholesterol; atherogenetic 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 (p=0.3); group1 girls 31.5±5.6, group2 36±5.5 (p=0.6). The average levels of TC were in normal limits, gender and intergroup differences weren’t noted (p=0.1). TG boys and girls with MS were 1.73±0.98 and 2.02±0.6 (0.45–1.7 mmol/L), the reliable difference weren’t noted (p=0.8 and p=0.3 respectively). HDLc was norm in all groups regardless of gender (p=0.2). LDLc was upgraded in girls group2 3.4±0.79 (<3.5 mmol/L). AC in boys and girls group2 was 3.3±1.6 and 3.8±1.08 (<2.5) (p=0.1). Basal and postprandial plasma glucose levels by conducting OGTT didn’t exceed normal limits in group1 and group2 regardless of gender (p=0.08).Ins boys group1 24.2±1.8mU/ml (2.1–22), group2 40.1±23.2 (p<0.1); girls group1 20.8±14, group2 37.8±16.1 (p=0.6). HOMAIR boys group1 5.16±3 (< 2.77), group2 10.87±5.9 (p=0.1); girls group1 4.2±3, group2 5.8±4.3 (p=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.

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

**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.

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

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**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 intervention and 357 control). A mixed effects regression model outcome measure was the difference in levels of fruit and vegetable =

**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.

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**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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**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. Soft ware of WHO for FL (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 13.5% 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.