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Abstracts

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HOMA index, CC / CV ratio have been obtained. Spearman's correlation coefficient was calculated between NC, WC, BMI and laboratory values.

Results: Alla obese children had a NC > 95th percentiles for sex and age (cut off: 30.5 - 46.5 cm), mean value 35.97 ± 4.2 cm. NC correlated significantly with BMI (R = 0.66832, P = 0.0001), WC (R = 0.69944 P = 0.00005) and blood uric acid (UA) values (R = 0.53685, P = 0.04777). UA was > 6.5 mg/dL in 30% of our studied sample. No correlation (p > 0.05) between NC and inflammatory indexes, transaminases, HOMA index, lipid profile, SBP/DBP, hepatic steatosis was found.

Conclusions: This study of our series shows that NC could be used as an alternative to BMI and WC, to identify PO and related HMC risk factors.

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The prevalence of elevated blood pressure and hypertension in Korean adolescents, based on the guidelines of Endocrine Society and American Academy of Pediatrics

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Purpose: Childhood obesity epidemic leads an interest of pre-stage of hypertension; higher/elevated blood pressure (BP) status which BP numbers are lower than the criteria for diagnosing hypertension. In 2017, the clinical practice guidelines for pediatric BP management were published separately by Endocrine Society (ES) and American Academy of Pediatrics (AAP). The aims of this study are to evaluate the prevalence of elevated blood pressure (EBP) including hypertension (HTN) and the difference of those according to the guidelines in Korean adolescents.

Methods: We analyzed data of 1166 adolescents aged 13-17 years (male/female 611/555) from the Korea National Health and Nutrition Examination Survey (2014-2016). BP group were categorized as normal, EBP and HTN according to each guideline and prevalence of EBP and HTN were analyzed and compared. In ES guideline BP of >90th percentile to <95th percentile or >120/80 is prehypertension, BP ≥95th percentile to <99th percentile + 5 mm Hg is stage 1 HTN and BP ≥99th percentile + 5 mm Hg is stage 2 HTN. In AAP guideline, elevated BP is defined as >120/80 to 129/80 mm Hg, Stage 1 HTN is 130/80 to 139/89 mm Hg and Stage 2 HTN is BP ≥140/90 mm Hg

Results: The average age was 14.97 years and body mass index (BMI) z-score was 0.06 and 0.08 in boys and girls, respectively. 23% of boys and 22% of girls were overweight including obesity. 11.8% of boys and 31.5% of girls were central obesity defined by waist circumference (WC) above 90th percentile for gender and age. Systolic BP was 111.99 and 106.13 mmHg, and diastolic BP was 67.39 and 66.63mmHg in boys and girls, respectively. BP was positively correlated with BMI z-score and WC percentile.

The prevalence of EBP was 36.5% vs. 25.2% according to ES and AAP, respectively in boys and 25.1% vs. 10.1% in girls. HTN prevalence was 23.7% vs. 12.3% in boys and 18.9% vs. 5.4% in girls. The prevalence of EBP and HTN were different by the guideline, in each gender. Prior to diagnosis of hypertension, 5% to 13% of adolescents could initiate life style intervention by EBP criteria.

Conclusion: One in three or four of Korean adolescents has increased blood pressure and the prevalence of EBP and HTN were different according to ES and AAP guideline. Early therapeutic interventions such as life style modification including diet and physical activity should be started in adolescents with EBP.

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PEDOBESITY: Development of Intelligent Multi-level Information Systems and Specialized Artificial Intelligence Algorithms for Personalized Management of Obesity in Childhood and Adolescence

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Background: Obesity in childhood and adolescence represents a major health problem of our century. In Greece, more than 30-35% of children and adolescents are currently overweight or obese.

Objective: To evaluate and further develop the 'National Registry for the Prevention and Management of Overweight and Obesity in Childhood and Adolescence' in order to provide personalized intervention programs for overweight and obese children and adolescents using intelligent information systems and support systems.

Methodology: The project is part of the Operational Program "Competitiveness, Entrepreneurship & Innovation, EPAnEK 2014-2020" (project code: T1EDK-01386, MIS: 5030543, Acronym: PEDOBESITY), which is co-funded by Greece and the European Union, and represents continuation of the Program "Development of a National System for the Prevention and Management of Overweight and Obesity in Childhood and Adolescence in Greece". The main innovative actions include: (1) Collection and analysis of clinical, hematological, biochemical, endocrinological and genetic data of overweight and obese children and adolescents; (2) Detection of polymorphisms associated with obesity, diabetes

type 2, antioxidant ability and body mass index; (3) Development of a specific obesity-risk algorithm by linking each genotype to the patient's data, as well as published information on how it affects body weight at clinical or genetic level; (4) Development of interconnected online and mobile applications to integrate the ecosystem of applications for childhood obesity. Applications will include development and expansion of the Electronic Health File (EHR) of the "National Registry for the Prevention and Management of Overweight and Obesity in Childhood and Adolescence", Patient Access Subsystem and Online Support, as well as mobile application for children, adolescents and their parents; (5) The development of an intelligent data management platform (in full interoperability with the "National Registry for the Prevention and Management of Overweight and Obesity in Childhood and Adolescence") using the innovative methodology of Fuzzy Cognitive Maps and modeling techniques from medical data analysis in order to provide personalized treatment guidelines.

Results: Our goal is to reduce overweight and obesity rates in Greece by at least 20% within 5 years following implementation of the project.

Conclusions: These research actions are expected to play an important role in the effective management of childhood obesity.

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Metabolic syndrome risk assessment in Indian children and adolescents

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Objective: To assess the risk of metabolic syndrome (MS) in children and adolescents as per the recommendation based on the age and sex-specific reference curves for Waist Circumference (WC) for Indian children by Khadilkar et al.

Study design: A total of 370 children (200 girls, 170 boys) aged 6 to 18years coming for regular checkups to our center from January 2016 to March 2019 with WC >70th percentile were enrolled. All children were assessed for metabolic syndrome risk factors with respect to BMI, BP measurements, and levels of fasting triglycerides, high- density lipoprotein (HDL) cholesterol, low density lipoprotein (LDL), and fasting plasma glucose were recorded for all patients.

Prevalence rates of MS in the pediatric age group vary depending on the criteria used. **The International Diabetes Federation**'s (IDF) definition of MS in children has been divided according to the following age groups (6-10 years, 10-16 years, and 16+ years). For those aged 6 to <10yr, though MS cannot be diagnosed but further measurements were made in children with a family history of metabolic syndrome (MS), type 2 diabetes mellitus (T2DM), dyslipidemia, cardiovascular disease, hypertension and/or obesity.

Results: As per IDF definition, 64 out of 240 (26.66%) children in the 10 to 18 year age group met the criteria for pediatric metabolic syndrome.

Age group	10 to <16yr (n=217)	16-18yr (n=23)
Percentage meeting the IDF criteria	23.5%	56.52%

Those aged 6 to <10years with a family history of MS, T2DM, dyslipidemia, cardiovascular disease, hypertension and/or obesity were also evaluated for metabolic syndrome. Eighteen out of 130 children (13.84%) met the criteria for metabolic syndrome as per IDF definition in this age group.

Children were also evaluated for MS as per the modified definition proposed by **NCEP/ATPIII**. As per this definition, 63 out of 158 (39.8%) children in the age group of 12-18yr met the criteria for pediatric metabolic syndrome.

Gender	Males (n=78)	Females (n=80)
Percentage meeting the NECP criteria	34.61%	45%

Conclusion: Overall, 39.8% and 26.66% children met the NCEP/ATPIII & IDF criteria respectively. The low incidence of MS with IDF definition may be due to the cut-off value used for blood pressure as systolic BP ≥130 or diastolic BP≥85mmHg for all age groups.

The WC percentiles proposed for Indian children are useful in identifying children with metabolic syndrome. Early detection and management is vital in halting the progression of this syndrome pathway in children.

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Vitamin D status in obese children and its relationship with leptin and adiponectin

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Introduction: obesity is a major health problem worldwide and its incidence is increasing annually. Adipose tissue produces and regulates many hormones and cytokines which have relationship with obesity comorbidity. Serum level of vitamin D has been previously reported to have a negative relationship with obesity.

Objective: To evaluate the relationship between vitamin D status and leptin, adiponectin, lipid profile and Insulin resistance in obese children.

Material & Method: A total of 61 children including 32 obese (BMI> 95th percentile according to CDC curves for sex and age) and 29 normal weight subjects, aged 4-17 year, were randomly enrolled in this study. After clinical evaluation and anthropometric measurements, fasting serum level of vitamin D, leptin and adiponectin were assessed using ELISA method. Fasting plasma level of total cholesterol, HDL cholesterol (HDL-C), LDL cholesterol (LDL-C), Triglyceride (TG), glucose and insulin were measured with colorimetric kits and homeostasis model assessment of insulin resistance (HOMA-IR) was calculated.

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