

## Association of Phosphorus and Magnesium with Fat Indices in Children with Metabolic Syndrome

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**Abstract :** Metabolic syndrome (MetS) is a disease associated with obesity. It is a complicated clinical problem possibly affecting body composition as well as macrominerals. These parameters gain further attention, particularly in the pediatric population. The aim of this study is to investigate the amount of discrete body composition fractions in groups that differ in the severity of obesity. Also, the possible associations with calcium (Ca), phosphorus (P), magnesium (Mg) will be examined. The study population was divided into four groups. Twenty-eight, 29, 34, and 34 children were involved in Group 1 (healthy), 2 (obese), 3 (morbid obese), and 4 (MetS), respectively. Institutional Ethical Committee approved the study protocol. Informed consent forms were obtained from the participants. The classification of obese groups was performed based upon the recommendations of the World Health Organization. Metabolic syndrome components were defined. Serum Ca, P, Mg concentrations were measured. Within the scope of body composition, fat mass, fat-free mass, protein mass, mineral mass were determined by a body composition monitor using bioelectrical impedance analysis technology. Weight, height, waist circumference, hip circumference, head circumference, and neck circumference values were recorded. Body mass index, diagnostic obesity notation model assessment index, fat mass index, and fat-free mass index values were calculated. Data were statistically evaluated and interpreted. There was no statistically significant difference among the groups in terms of Ca and P concentrations. Magnesium concentrations differed between Group 1 and Group 4. Strong negative correlations were detected between P as well as Mg and fat mass index as well as diagnostic obesity notation model assessment index in Group 4, the group, which comprised morbid obese children with MetS. This study emphasized unique associations of P and Mg minerals with diagnostic obesity notation model assessment index and fat mass index during the evaluation of morbid obese children with MetS. It was also concluded that diagnostic obesity notation model assessment index and fat mass index were more proper indices in comparison with body mass index and fat-free mass index for the purpose of defining body composition in children.

**Keywords :** children, fat mass, fat-free mass, macrominerals, obesity

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