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Editorial

Vitamin D Deficiency Body Mass Index and Waist Circumference in Children

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EDITORIAL

Recent studies have suggested a link between vitamin D deficiency and an increase in body mass index and waist circumference. The aim of this study was to evaluate the vitamin D status and its' correlation with body mass index and waist circumference in children aged 2-14 referred to the clinic of Imam Ali Hospital in Karaj in 2019-2020. Three Hundred seventy-nine (379) children aged 2-14 years referred to Clinic were enrolled in the study. Patients' height, weight (BMI calculated accordingly), waist circumference and serum vitamin D levels were measured. Chi-Square, Kruskal-Wallis and Fishers exact tests were used, and the Bivariate Correlation test was used to determine the relationship between two variables. The prevalence of vitamin D deficiency, insufficiency and adequate levels were reported 40.6%, 11.9%and 47.5%, respectively. Vitamin D deficiency was more common in girls. Vitamin D had a significant and weak relationship with BMI, but no association with waist circumference. The results of this study showed a high prevalence of vitamin D deficiency in patients. The prevalence of vitamin D deficiency and insufficiency were higher in girls. The highest levels of vitamin D were found in patients with normal weight. Vitamin D deficiency was most common in obese patients. Serum vitamin D were significantly associated with obesity, but had no significant association with waist circumference. A study with a larger sample size in this area, is recommended. Vitamin D plays an important role in bone growth, bone mineralization and other metabolic processes in the human body such as calcium and phosphorus homeostasis. Vitamin D deficiency has been a major health issue at all stages of life, but it is more common in childhood due to poor diet and poor skin synthesis. The main natural source of this vitamin is the synthesis of D3 from cholesterol through a chemical reaction associated with the sun's ultraviolet rays on the skin. Vitamin D Receptor (VDR) belongs to the family of steroid / thyroid hormone intranuclear receptors, which are expressed by cells of most organs, including the brain, heart, skin, glands, prostate, and breast. With the discovery of vitamin D receptors in most tissues and cells of the body, a new insight has been created towards vitamin D.

Recent studies have recently reported that, in addition to skeletal effects such as maintaining normal bone regeneration, mineralization during adulthood and prevention of rickets in children, vitamin D deficiency is involved in many chronic diseases such as obesity, hypertension, cardiovascular disease, diabetes. Mellitus, metabolic syndrome, autoimmune and inflammatory diseases and some cancers. In a meta-analysis conducted in Iran, the prevalence of vitamin D deficiency was reported 31% in children and adolescents. Inadequate vitamin D status can be a risk factor for obesity in children. Currently, obesity is the most common nutritional disease among Iranian children and adolescents. Vitamin D, through its role in regulating intracellular calcium concentration, affects lipolysis and adipogenesis in the adipocytes. Studies in different countries have examined the link between vitamin D status and obesity. In a study conducted by Neyestani and colleagues in Tehran on 1111 children aged 9-11 years old, serum vitamin D was inversely related to body mass index. A study by Cizmecioglu and colleagues in Turkey on 301 boys and girls aged 11-19 years old showed that serum vitamin D levels decreased with increasing BMI. Dong and colleagues examined the relationship between serum vitamin D status and obesity in American adolescents and found a significant association between serum vitamin D and abdominal obesity. However, the results of the studies are not entirely uniform. In Delvin and Muhairi's studies of 9-13 years old Canadian girls and boys and 15-18 years old boys and girls in the United Arab Emirates, respectively, no significant association was found between serum vitamin D and BMI. Considering the importance of identifying the prevalence of vitamin D deficiency in children and its relationship with obesity, for medical and preventive policies and lack of sufficient information in this field in Alborz province and Karaj city, this study examines the prevalence of vitamin D deficiency and its relationship with the body mass index and waist circumference in children aged 2 to 14 years, referred to Karaj's Imam Ali Hospital clinic in 2019-2020.

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