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VITAMIN D STATUS AMONG EMIRATI CHILDREN AND ADOLESCENTS: RELATIONSHIP TO OBESITY, DIABETES AND METABOLIC PARAMETERS

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Introduction: Prevalence of diabetes and obesity in adults, and also children and adolescents, is high in the Middle East. Severe vitamin D deficiency has been linked to increased risk of diabetes. Reports on vitamin D status and its relationship to metabolic parameters in children and adolescents in the UAE are limited.

Objectives: This research seeks to determine the prevalence of vitamin D deficiency and its predictors in children and adolescents. It aims to explore relation of fat mass, fat percentage, muscle mass and muscle free mass with vitamin D levels.

Methods: This cross-sectional study was conducted in 736 children and adolescents with obesity and diabetes attending an outpaitent diabetes speciality clinic, Abu Dhabi. Anthropometric measures, blood glucose and other metabolic parameters were collected. Body composition was assessed by bioelectrical impedance analysis (Tanita, Tokyo, Japan) and provided measures on fat mass, fat percentage, fat free mass, muscle mass and total body water. Vitamin D deficiency was defined by US Endocrine Society guidelines; as sufficient (>72.5nmol/L), Insufficient (50-72.5nmol/L) and deficient (≤50nmol/L).

Results: The prevalence of vitamin D deficiency, insufficiency, and sufficiency was 73.9%, 18.7% and 7.3% respectively. An inverse correlation was observed between age ($r=-0.416$, $p<0.0001$) and vitamin D levels. Females had more than double the likelihood of vitamin D deficiency compared to males [Odds Ratio (OR): 2.60 (95% confidence interval (CI): 1.85, 3.67)]. A significant positive association was observed between the high density lipoprotein (HDL) cholesterol and vitamin D levels ($r=0.16$, $p=0.008$). No significant correlation was observed between low density lipoprotein (LDL), triglycerides (TG), and total cholesterol (TC). There was no significant association between fasting blood glucose with vitamin D levels or across vitamin D groups. Adiposity measures including fat mass, fat mass percentage, body mass index (BMI) correlated negatively with vitamin D levels ($p<0.0001$). Muscle mass and fat free mass also showed an inverse association with vitamin D levels ($p<0.0001$).

Conclusion: Vitamin D deficiency is highly prevalent in children and adolescents with diabetes and obesity in UAE. Our findings highlight imperative associations between vitamin D levels and metabolic parameters in children and adolescents with obesity and diabetes. Vitamin D replacement initiatives are being implemented at public health level and need further emphasis.

Disclosure of Interest: None Declared