

ASSOCIATION OF VITAMIN D3 LEVELS WITH LIFESTYLE FACTORS IN A SAMPLE OF IRAQI HIGH SCHOOL STUDENTS IN BAGHDAD CITY

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ABSTRACT : Deficiency of vitamin D3 is a global problem and threatens overall health. Our study aims to determine the frequency of vitamin D3 deficiency among high school students (adolescents) and the effects of lifestyle factors. 300 of high school students, both genders within age group 12 to 17 year, from different areas of Baghdad city including western side (Al-Karkh) and eastern side (Al-Rusafa) were involved in the present cross-sectional study. All subjects were free of chronic diseases. Lifestyle data were collected from parents through a self-administered questionnaire and a face-to-face meeting with students. Vitamin D3 was measured by using an ELISA kit designed to determine vitamin D3 in human serum. Body Mass Index (BMI) determined by means of measured the weight in kilograms divided by height in meters square ($BMI = Kg/m^2$). The results of the current study showed highly significant ($p=0.00$) between the level of vitamin D3 and both genders, in addition, the percent of vitamin D3 deficiency (≤ 10 ng/ml) was 50% in both genders, and more frequent in females 65.3% than in males 34.7%. On the other hand non-significant correlation between age ($p=0.444$) and BMI ($p=0.841$) with vitamin D3 level (ng/ml) in Iraqi high school students. Regarding of the association of vitamin D3 levels with students lifestyle factors, our study showed highly significant difference at ($p \leq 0.05$) between serum vitamin D3 level and daily sunlight exposure ($p=0.000$), daily physical activities ($p=0.036$), and intake diet rich with vitamin D3 ($p=0.001$).

Key words : Vitamin D3 deficiency, high school students, lifestyle factors.

INTRODUCTION

Compared with other health-related vitamins, vitamin D3 is unique, due to its function as a prohormone (Tripkovic *et al*, 2012). In addition, vitamin D3 is from family members of vitamins soluble in fat, and it is exclusive vitamin created by our bodies (Tian *et al*, 2017). This vitamin is usually called sunshine vitamin, because sunlight exposure is the main sources of vitamin D3 in the body, in addition to food and dietary supplement (Nettore *et al*, 2017). This vitamin has two chief forms, vitamin D3 or called cholecalciferol, and vitamin D2 often called ergocalciferol, Both forms of vitamin D can be found in food, but vitamin D3 is present in a few animal foods such as egg yolks, oily fish, and beef liver, moreover vitamin D3 is approximately absent in vegetables, while some vegetables contain ergocalciferol (Tian *et al*, 2017). Conversion of vitamin D2 and D3 into active compounds (regardless of the source) requires two enzymatic hydroxylation steps to happen. The first step, The vitamins D2 and D3 of the liver were converted to 25-hydroxy-vitamin D via action of 25-hydroxylase enzyme, The second site of activity is the kidney, where 1α -dihydroxylase enzyme convert 25(OH)D3 to 1,25-

dihydroxy-vitamin D2 or D3 (Tripkovic *et al*, 2012). Additionally vitamin D3 is the most excellently indicator of the level of vitamin D in the serum (Tian *et al*, 2017).

Vitamin D3 is so essential, its play an important role in general health. Vitamin D3 is best known for bone health promotion, and this vitamin is important to maintain skeletal integrity and function, and it have a major role in absorption of calcium and phosphate in the intestine (Parva *et al*, 2018). This vitamin also working as immune system modulator targeting many immune cells including macrophage, dendritic cells, monocyte, as well as, B and T lymphocytes, epidemiological study showed a relationship between low vitamin D3 concentration and susceptibility to immune disorders such as autoimmune diseases and chronic infections (Baeke *et al*, 2010). And has appeared, as a key host defense regulator against infections, as viral, bacterial, and fungal pathogens, Clinically, deficiency of vitamin D3 has been related with an increased risk for different infectious diseases (Kroner *et al*, 2015). Moreover, vitamin D3 showed protection against cancer and have anti-cancer properties (Vaughan *et al*, 2017). The risk of many types of cancer has also increase with low levels of vitamin D3 such as colorectal,