Vitamin D status among children and adolescents in an Egyptian cohort: can we predict vitamin D deficiency?

Mona Karem 1, Ebtehal Gamal Heiba2, Noha Kamel1, Suzan Samir Gad4
1Pediatrics Department, Faculty of Medicine, Suez Canal University, Ismailia, Egypt
2Pediatrics Department, Port-Said General Hospital, Port-Said, Egypt.
3Clinical Pathology Department, Suez Canal University, Ismailia, Egypt.

INTRODUCTION:
Vitamin D plays a crucial role in skeletal and extra-skeletal physiology (1). It is essential for growth, development and health. It works as a paracrine and autocrine signaling molecule that affects nearly all systems in the body (2). Vitamin D deficiency (VDD) is prevalent in many countries in all age groups, and may be overlooked due to the variable clinical presentations according to age (3).

OBJECTIVES:
1. to assess vitamin D status among children and adolescents
2. to find out predictors of vitamin D deficiency or insufficiency among studied group

METHODS:
Cross-sectional analytical study was conducted on 88 subjects (47 children and 41 adolescents), all participants were subjected to history, clinical examination, and estimation of serum vitamin D, alkaline phosphatase (ALP), calcium (Ca) and phosphorous levels. The subjects were divided into four groups according to serum vitamin D level; vitamin D severely deficient <10 ng/ml, vitamin D deficient 10-20 ng/ml, vitamin D insufficient 20-30 ng/ml and vitamin D sufficient >30 ng/ml

RESULTS:
VDD was prevalent in the studied group where 58% of them showed vitamin D deficiency (10% of them were severely deficient), 25% showed insufficiency and 17% had normal vitamin D levels. Children showed 46.8% deficiency, 8.6% severe deficiency and 31.9% insufficiencies while the adolescents showed 48.8% deficiency, 21.1% severe deficiency and 17.7% insufficiency respectively. The most evident predisposing factors for VDD were BMI and inadequate sun exposure. Muscle cramps were significant among children only. Multivariable linear regression analysis revealed that BMI (p=0.01) and fast food (p=0.016) were associated with increased risk of VDD

<table>
<thead>
<tr>
<th>Vitamin D level category</th>
<th>Total (n=88) N (%)</th>
<th>Children (n=47) N (%)</th>
<th>Adolescent (n=41) N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (&gt;30 ng/ml)</td>
<td>15 (17)</td>
<td>6 (12.8)</td>
<td>9 (22)</td>
</tr>
<tr>
<td>Insufficient (20–30 ng/ml)</td>
<td>22 (25)</td>
<td>15 (31.9)</td>
<td>7 (17.1)</td>
</tr>
<tr>
<td>Deficiency (10–20 ng/ml)</td>
<td>42 (47.7)</td>
<td>22 (46.8)</td>
<td>20 (48.8)</td>
</tr>
<tr>
<td>Severe deficiency (&lt;10 ng/ml)</td>
<td>9 (10.2)</td>
<td>4 (8.6)</td>
<td>5 (12.1)</td>
</tr>
</tbody>
</table>

* Values are based on Fisher’s Exact Test as appropriate.

CONCLUSION:
Vitamin D deficiency and insufficiency are prevalent among children and adolescents with gender independence.

Despite most of the cases were asymptomatic or presented with non-specific significant symptoms, obesity and fast food significantly affected vitamin D status among the studied group

REFERENCES:
2. Barja-Fernández S, Aguilar CM, Martínez-Silva J et al. 25-Hydroxyvitamin D levels of children are inversely related to adiposity assessed by body mass index. J Physiol Biochem 2017

Table 1

Table 2

CONCLUSION:

Figure 1

Distribution of Vitamin D level categories among the studied sample

*Corresponding Author: Mona Karem, MD
E-mail: Mona_karem@med.suez.edu.eg