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Awareness of Vitamin D and its Deficiency in Jeddah Population, Saudi Arabia

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Abstract

Introduction: Vitamin D deficiency considered to be the most common nutritional deficiency and one of the most common undiagnosed medical conditions in the world. It appears to be a widespread global problem prevalent in all age groups, with a reported prevalence of 30-80% in children and adults This significant decreased in vitamin D level worldwide in different age group shows lack of awareness about vitamin D importance and its resources.

The aim of our study: To assess awareness, perception and understanding of vitamin D deficiency among families living in Jeddah/Saudi Arabia. Determining the resources of information about vitamin D deficiency in our society.

Methods: A cross sectional retrospective study was conducted in ambulatory and pediatric clinic at KAUH and many malls in Jeddah - Saudi Arabia. Data were obtained from a questioner designed to collect information about vitamin D. The study population was formed of 1752 parents of children aged from 2 to 18, and dividing them to 746 highly educated, 491 low educated .

Results: It was found that the highly educated parents got the right answers in most of the questions, However both high and low education parents had the media as their source of information. However that the majority have heard about vitamin D, 82.9% fail to identify the best time for sun exposure and 65.5% recognize inability to go outside due to work or weather issues as common cause of vitamin D deficiency.

Recommendations: *Improving health education to exposing to sunlight and consume vitamin D medication may be an effective step toward preventing vitamin D inadequacy. Powered by Editorial Manager® and ProduXion Manager® from Aries Systems Corporation.

*Doctors should emphasize on the importance of vitamin D and the consequences of its deficiency.

*Teachers should emphasize on vitamin D importance.

*Further efforts from media to increase vitamin D awareness among population.

Keywords: Vitamin D; Awareness; Rickets; Deficiency; Media

Introduction

Vitamin D deficiency is an important public health problem in both developing and undeveloped countries, it is considered to be the most common nutritional deficiency and one of the most common undiagnosed medical conditions in the world [1]. It shows to be a worldwide problem in different age groups, with a reported prevalence of 30-80% in children and adults [2,3]. As well, with prevalence equal to 38.6% in Saudi Arabia [4].

The importance of vitamin D in body metabolism and many immune functions has been well established and proven through literatures [5]. With Previous studies demonstrate relation between vitamin D deficiency and various medical disorders like depression, type 1 diabetes, Syndrome X, as well as chronic widespread muscle and bone pain [6-10]. And even in infancy it causes rickets and hypocalcemic fits [11,12].

On the other hand, New evidence shows that concealing clothes is considerable risk factor to develop vitamin D deficiency/ insufficiency [13,14].

There are several factor has been linked to vitamin D deficiency in infancy like low dietary of vitamin D, and decreased sunlight exposure due to fear of cancer, pigmentation, or weather variation [15].

This significant decreased in vitamin D level worldwide in different age group shows lack of awareness about vitamin D importance and its resources.

So, awareness of the significance of vitamin D in the regulation of normal physiology as well as the consequences of its deficiency is needed to save our general population from widespread bone and other vitamin D deficiency disorders [16-18].

We aimed to assess the family awareness, perception and understanding of vitamin D deficiency among families living in

Jeddah /Saudi Arabia and to determine the most useful sources of information about vitamin D and its deficiency in our society.

Method

A cross sectional retrospective study was conducted in ambulatory and pediatric clinic at King Abdulaziz University Hospital and many malls in Jeddah - Saudi Arabia from 1st September 2015 to 1st December 2015, data were obtained from a questionnaire designed to collect information on self-reported and direct knowledge questions about vitamin D. The study population was formed of 1752 parents of children aged from 2 to 18, and dividing them to 746 highly educated (bachelor degree and more), 491 low educated (high school and less) and verbal consent was taken.

Ethical approval for this study was obtained from the Research Ethics Committee at King Abdulaziz University Hospital (KAUH).

Questionnaire

The survey was about eighteen vitamin D related questions. If they have been diagnosed with vitamin D deficiency or heard about it. If they have idea about food which is rich in vitamin D and if it is important for their health. The best time for sun exposure, duration, which body parts should be exposed, the amount of vitamin D we get from the sun for daily need, the reason for lack of exposure and which groups are at risk to get vitamin D deficiency. What are the sources of their information.

If they have a child with vitamin D deficiency, what was the symptoms that led to the diagnosis, was the diagnosis in the initial examination or due to sibling suffering from vitamin D deficiency, is the child have any sign of rickets on x-ray, and what are the risk factors for rickets.

Statistical Analysis

Data analysis was performed using SPSS Statistics version 16.0 software (IBM Corp., Armonk, NY, USA).

Results

The percent of each answer in the questionnaire is shown in Table 1.

		Yes (%)	No (%)	Don't knew (%)
1-Heard about Vitamin D deficiency		89.6	9.4	1
2-Think it is important for your health		93.9	4	2.1
3-You were told that you have vitamin D deficiency		46.6	43.2	10.2
4-Idea about foods rich in vitamin D		69	22.8	8.2
5-source of information:	Media	64.2	35.8	
	Doctors	51.9	48.1	
	Family	29.4	70.6	
	Friends	24.2	75.8	
6-The most appropriate time of exposure to the sun	Early morning	82.1		
	Afternoon	12.6		
	Extremely hot times	2		
	Don't Know	3.3		
7-In your opinion which category is more prone to have vitamin D deficiency	Children under 5	61.7	38.3	
	Pregnant and lactating	66.9	33.1	
	Old age>65years	50.7	49.3	
	office workers	30.1	69.9	
	Covered all body parts	41.1	58.9	
8- The appropriate duration of sun exposure for adequate vitamin D status	Less than 30 min	47.2		
	30-60 min	40.2		
	More than 60 min	5.7		
	Not sure	6.9		
9-Best time for exposure	7 am-9am	83.9	16.1	
	10 am-3 pm	17.1	82.9	
	3 pm-5 pm	19.8	80.2	
	5 pm-7pm	21.9	78.1	
10-Body parts that must be exposed to the sun	Hand and face	18.4		
	Hands and arms and face	15.8		
	Hand, arms, face, and legs	62.1		
	others	3.7		
11-Reason for no exposure	No enough information about vitamin D deficiency	50.6	49.4	
	Fear of skin cancer and sun burns	26.3	73.7	
	not able to go outside due to work or weather issues	65.5	34.5	
	not able to go outside due to health or physical issues	18.6	81.4	
12-How much of vitamin D comes from the sun	10%	8.7		
	25%	25.5		
	50%	38.2		
	90%	27.7		
13-Have your children been diagnosed with vitamin D deficiency		38.2	61.8	

14-Signs and symptoms that led to diagnosis of vitamin D deficiency	Epilepsy	3.5	96.5	
	Cacomelia	9.8	90.2	
	Bone fracture	26.5	73.5	
	Delay movement	19.9	80.1	
	Respiratory disease	13.3	86.7	
	Weak growth	19.8	80.2	
	weak nerves	7	93	
	Bone pain	28.5	71.5	
15-Diagnosed due to initial examination		13.2	74.8	12
16-Signs of rickets on x-ray		4.3	86.6	9
17-Did your child take any medication		10.3	89.7	
18-What is the risk factor that increase rickets	Dark Skin	13.5	86.5	
	Insufficient dietary supplement	58.5	41.5	
	Insufficient vitamin D supplement	33.9	66.1	
	Insufficient sun exposure due to life style	66.5	33.5	

Table 1: show the percent of each answer in the questionnaire.

The knowledge

With the majority 89.6% have heard about vitamin D, 64.2% their source of information was media. Although 69.0% said that they have some idea about food rich in vitamin D, 46.6% were diagnosed with vitamin D deficiency.

Sun exposure

The highest percent 83.9% of population chose 7 am to 9 am as the best time for sun exposure, with 62.1% thought that hands, arms, face and legs should be exposed to be beneficial. 47.2% said that exposure to sun is enough for less than 30 minutes. 8.7% said 10% of the vitamin D gained from the sun while 38.2% chose 50%.

Reason for inadequate exposure

65.5% confirm that difficulty going outside due to work or weather issues is one of the main cause. Run in the second place the lack of information about vitamin D deficiency with 50.6%.

Risk groups

Most of population 66.9% identifies pregnancy as high risk for vitamin D deficiency, while only 41.1% recognize covering body as risk factor.

Vitamin D deficiency

38.2% were diagnosed with vitamin D deficiency only 13.2% were diagnosed due to initial examination, and 28.5% their main complaint was bone pain while 26.5% diagnosed due to bone fracture.

Rickets

At the time of diagnosis only 4.3% had signs of rickets on x-ray. 66.5% think that lifestyle is a major cause for rickets in Saudi Arabia, followed by 58.5% dietary supplement insufficiency and majority didn't think that dark skin is a risk for rickets 86.5%.

In regards to education level and awareness , we found that the highly educated parents got the right answers in most of the questions, However both high and low education parents had the media as their source of information (Table 2).

			Yes (%)	No (%)
1-Heard about Vitamin D deficiency		High education	61.1	53.3
		Low education	38.8	46.7
2-Think it is important for your health		High education	60.8	53.1
		Low education	39.2	46.9
3-You were told that you have vitamin D deficiency		High education	63.4	58.6
		Low education	36.6	41.5
4-Idea about foods rich in vitamin D		High education	62.5	55.3
		Low education	37.5	44.7
5-source of information:	High education	Media	63.1	
		Doctors	62.9	
		Family	58.2	
		Friends	60	
	Low education	Media	36.9	
		Doctors	37.1	
		Family	41.8	
		Friends	40	
6-The most appropriate time of exposure to the sun	High education	Early morning	60.9	
		Afternoon	56.2	
		Extremely hot times	72	
		Don't Know	42.5	
	Low education	Early morning	39.1	
		Afternoon	43.7	
		Extremely hot times	28	
		Don't Know	57.5	

8-The appropriate duration of sun exposure for adequate	High education	Less than 30 min	60.7	
		30-60 min	60.4	
		More than 60 min	52.9	
		Not sure	51.4	
	Low education	Less than 30 min	39.3	
		30-60 min	39.6	
		More than 60 min	47.1	
		Not sure	48.7	
9-Best time for exposure	High education	7 am-9am	61.2	
		10 am-3 pm	68.1	
		3 pm-5 pm	64.2	
		5 pm-7pm	66.1	
	Low education	7 am-9am	38.8	
		10 am-3 pm	31.9	
		3 pm-5 pm	35.8	
		5 pm-7pm	33.9	
11-Reason for no exposure	High education	No enough information about vitamin D deficiency	59.2	
		Fear of skin cancer and sun burns	62.8	
		work or weather issues	63.8	
		health or physical issues	66	
	Low education	No enough information about vitamin D deficiency	40.8	
		Fear of skin cancer and sun burns	37.2	
		work or weather issues	36.1	
		health or physical issues	34	
13-Have your children been diagnosed with vitamin D deficiency		High education	58.6	63.5
		Low education	41.3	36.6
17-Did your child take any medication		High education	71.7	60.7
		Low education	28.3	39.3

Table 2: Show the relation between the answers and parent's educational level.

Discussion

In this study, it was found that majority of the families have heard about vitamin D and the main source is media. One of the common causes of vitamin D deficiency is inability to go outside due to work or weather issues whilst lake of knowledge about best time of sun exposure is playing a significant role regardless of the parent's educational level.

Various studies around the world have been conducted to evaluate the awareness among people regarding vitamin D. Our present study supported by Al-Saleh et al. which stat that: in most parts of the Middle East, including Saudi Arabia, one of the main causes of vitamin D deficiency is the lack of sun exposure due to indoor lifestyle in both children and adults. In addition a recent study done by Kensarah and Azzeh of school children from Makkah (KSA), found higher incidence of vitamin D deficiency in females which mainly caused by restriction of sunlight exposure. While study conducted by Kung et al. showed that 62.3% did not like being exposed to sun [19].

Out of 1752 of those who had participated in this study, about 1145 had some idea about food rich in vitamin D and most of participants knew the duration to get sufficient daily vitamin D from the sun which indicates good knowledge. Regardless what was found in Rajaretnam study that people often thought they required more time in the sun to produce adequate vitamin D.

It found that media play an important role as source of the information in vitamin D awareness in many researches with a percent (64.2%) in our research, and (40%) in study done by Vu et al. ,while Al-Saleh et al. research the majority of the children got their information from their parents and media.

It is clear now that awareness about vitamin D worldwide is not sufficient and culture and gender play important role, as reported in Pirrone et al. study.

Recommendation

Ultimately, improving knowledge and public health education to tackle modifiable preconceptions and behavior (exposure to sunlight and/or consumption of a multivitamin tablet that contains 10 micrograms (400 IU) vitamin D) may be an effective first step toward increasing individual responsibility for preventing vitamin D inadequacy [19,20].

Doctors should emphasize and explain to the patients and their families the importance of vitamin D and the consequences of its deficiency, whether by adding extra time in the clinic to educate them more, sharing simple complete medical information in media since it got the highest percent as a source of the families information or by arranging regular awareness campaigns to the community.

Teachers should emphasize on vitamin D and its importance because students are in the period of growing ages. As shown in study done by Rajaretnam et al. That most students had a good knowledge from their teachers, lecturers or even some professors.

Media is major player in awareness about general health issue, so it will be good if they increase the time and effort for programs aimed for health promotion.

Design open area for women to allow greater exposure to sunlight where women can uncover freely. In girls, increasing incidental sun

exposure through routine, daily, outdoor activities will help increase sun exposure for vitamin D activation.

Limitation

As regards this study, as data was collected with a questionnaire (closed questions), the information gathered is limited.

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