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A study to assess the knowledge of vitamin d deficiency and the associated risk factors among adults attending OPD of selected hospital, Shillong, Meghalaya

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Abstract

Introduction: Vitamin D deficiency is a common nutritional deficiency disorder that has assumed epidemic proportion worldwide both in sunshine deficient and sunshine sufficient countries. However, Vitamin D deficiency remain as the most underdiagnosed and undertreated nutritional deficiency in the world. Its prevalence has been reported to be common in all age group irrespective of age, gender, race and geography.

Methodology: A cross-sectional study was conducted to assess the knowledge of Vitamin D deficiency and the associated risk factors and to determine association between knowledge and demographic variables on 150 adults attending OPD of NEIGRIHMS Hospital using purposive sampling technique. The data collection period was 1 week . A self-administered questionnaire was used to collect the data.

Results: The result of the study shows that out of 150 participants 17(11.33%) had good knowledge, 69(46%) had average knowledge and 64(42.67%) had poor knowledge. There was a significant association between knowledge with education and occupation ($p<0.05$). However, there was no association between knowledge and demographic variables (age, gender, religion and residence).

Conclusions: The present study concluded that majority of the adults have average knowledge regarding Vitamin D deficiency and the associated risk factors with a significant association between knowledge with demographic variables- education and occupation.

Keywords: Vitamin D deficiency, Adults, Risk factors.

Introduction

Vitamin D is a lipid-soluble vitamin which plays a vital role in human physiology. Vitamin D in general refers to Vitamin D3 which can be synthesized endogenously and also functions as a hormone. It is required for the maintenance of normal blood levels of calcium and phosphate for normal mineralization of bone, muscle contraction, nerve conduction and general cellular functions in all cells of the body. It is also important for immune functions, reduce cancer cell growth, help control infections and reduce inflammation.[14]. The major source of Vitamin D is the endogenous synthesis in skin on exposure to sunlight, namely, ultraviolet B (UVB) radiation. Vitamin D can also be obtained from natural sources. However, natural food sources of Vitamin D are limited and mainly comes from food of animal origin in the form of Vitamin D3 only. Main dietary sources are fish, fortified food and supplements. [2]

Vitamin D deficiency is the widespread nutritional deficiency in individuals irrespective of age, gender, race and geography with a prevalence of about 80%-90% in general Indian population [14]. Various studies have shown that Vitamin D deficiency is associated with increased risk of developing hypertension, diabetes mellitus, obesity and increased triglyceride level ultimately leading to increased risk of cardiovascular mortality. It also cause secondary hyperparathyroidism, rickets, osteomalacia, osteoporosis and even fragility fracture. [14]. Multiple factors such as season, duration and timing of sun exposure, latitude, clothing, skin pigmentation, use of sunscreen, outdoor activities and air pollution influence the production of Vitamin D in the skin thereby contributing to its deficiency. However, deficient awareness about the importance of Vitamin D, its benefits on health and prevention of deficiencies state across different population remains the major reason for the worldwide spread of this nutritional disorder. Vitamin D deficiency can also develop due to insufficient knowledge and practice towards Vitamin D as well as environmental, biological and socio- economic factors resulting in sun avoidance behaviour and sedentary indoor lifestyle. [12]

Need of the study

Vitamin D is an essential nutrient present in some foods naturally and also available in many nutritional supplements. Vitamin D is necessary for normal homeostasis and proper formation of bone, since it has the properties of both a hormone and a vitamin. The main function of Vitamin D is to maintain the normal calcium levels in the blood and phosphorus. Vitamin D is necessary in the absorption of calcium which helps to form and maintain strong bones. [2]

Vitamin D deficiency is a worldwide epidemic and yet, it is a problem largely unknown by majority of population. It is estimated that 1 billion worldwide have Vitamin D insufficiency or deficiency and hypovitaminosis D has been reported in both male, female and old age groups even found in the healthy individuals. Widespread prevalence in both rural and urban areas has also been documented. [12]

Vitamin D deficiency has been a neglected disorder and not much has been done on its demographic patterns, especially in the Indian context. Lack of awareness about the importance of Vitamin D, its health benefits, and

prevention of deficient states across population is one of the major reasons for the worldwide spread of the nutritional disorder. [15]

Objectives of the study

Primary objectives: To assess the knowledge of Vitamin D deficiency and the associated risk factors among adults attending OPD of selected hospital, Shillong, Meghalaya.

Secondary objectives**:** To determine association between the knowledge and demographic variables.

Methodology

After obtaining Institutional Ethical clearance and administrative permission, a cross sectional study was adopted to assess the level of knowledge of Vitamin D deficiency and the associated risk factors among adults attending OPD of selected Hospital, Shillong, Meghalaya. Pilot study was conducted in Civil Hospital, Shillong, Meghalaya. The final study was conducted in April 2021 over a period of 1 week. 7 Out Patients Department of NEIGRIHMS Hospital, Shillong, Meghalaya was chosen as the setting for the study. 150 adults who met the inclusion criteria were recruited for the study using purposive sampling technique. A structured knowledge-based questionnaire were distributed to the participants for collection of data.

Study procedure

Prior to data collections participants were informed about the purpose of the study and informed consent was taken from the participants who met the inclusion criteria. A structured knowledge-based questionnaire was distributed to the participants for collection of data.

Results

Frequency and percentage distribution of the participants according to the socio-demographic variables

Table 1: Frequency and percentage distribution of the participants according to the socio-demographic variables n=150.

Variables	Frequency (f)	Percentage (%)
AGE (in years)		
18 -34	119	79.33%
35 -50	31	20.66%
Gender		
Female	71	47.33%
Male	79	52.67%
Religion		
Christian	93	62.00%
Hindu	35	23.33%
Others	22	14.67%
Education		
Class XII and below	41	27.33%
Under Graduate	32	21.33%
Graduate and above	77	51.33%
Residence		
Rural	63	42.00 %
Urban	87	58.00%
Occupation		
Student	60	40.00%
Employed	62	41.33%
Unemployed	28	18.67%

Table 1 shows that majority of the participants 119(79.33%) belongs to the age group 18-34 years and most of the participants 79(52.67%) were male. 93(62.00%) of the participants were Christians. Majority of the participants 77(51.33%) were graduate and above, 87(58.00%) of the participants were from urban and majority of the participants 62(41.33%) were employed.

Figure 1: Frequency and percentage distribution of knowledge score of the participants regarding Vitamin D deficiency and its associated risk factors. n=150

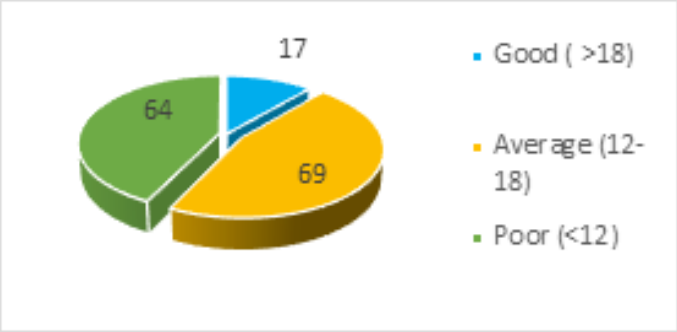

Figure 1 depicts that majority of the participants 69(46.00%) had average knowledge and 64(42.67%) had poor knowledge, 17(11.33%) participants had good knowledge.

Table 2: Frequency distribution of knowledge score of the participants regarding Vitamin D deficiency and its associated risk factors.

Demographic variables	Good knowledge	Average knowledge	Poor Knowledge
AGE (in years) 18-34 35-50	 15 02	 51 18	 53 11
Gender Female Male	 10 07	 37 32	 24 40
Religion Christian Hindu Others	 10 05 02	 42 18 09	 41 12 11
Education Class XII and below Under Graduate Graduate and above	 01 04 12	 15 18 36	 25 10 29
Residence Rural Urban	 05 12	 25 44	 33 31

Table 2 depicts that majority of the participants i.e. 53 belonging to the age group 18-34 years had poor knowledge. 40 male participants had poor knowledge. Most of the participants (42) belonging to Christian had average knowledge. 36 participants who are graduate and above had average knowledge. Majority of the participants (44) from urban area had average knowledge and 31 participants who are students had average knowledge.

Figure 2: Percentage distribution of level of knowledge of the participants on Vitamin D deficiency and its associated risk factors according to the domains.

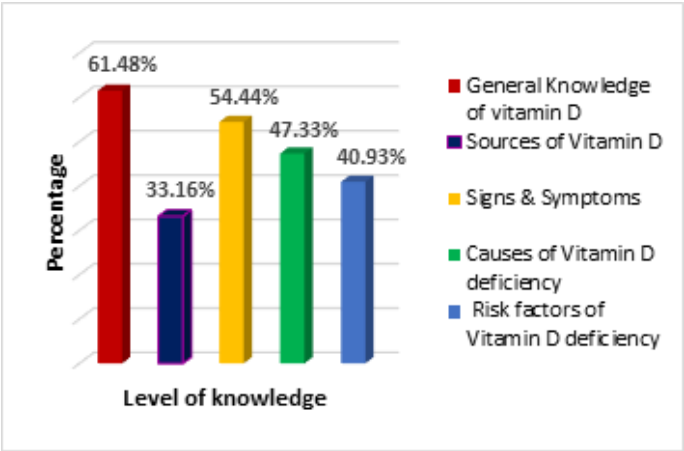

Figure 2 shows that the level of knowledge of the participants regarding general knowledge about Vitamin D is 61.48%, sources of Vitamin D is 33.16%, signs and symptoms of Vitamin D deficiency is 54.44%, causes of Vitamin D deficiency is 47.33% and risk factors of Vitamin D deficiency is 40.93%.

Table 3: Chi-Square value showing association between knowledge and selected demographic variables.

Demographic Variables	Good Knowledge	Average Knowledge	Poor Knowledge	Tabulated Value	Df	Chi-Square
Age (in years)						
18-34	15	51	53	5.99	2	2.53
35-50	2	18	11			
Gender						
Female	10	37	24	5.99	2	4.48
Male	7	32	40			
Religion						
Christian	10	42	41	9.49	4	1.65
Hindu	5	18	12			
Others	2	9	11			
Education						
Class XII and below	1	15	25	9.49	4	10.31*
Under Graduate	4	18	10			
Graduate	12	36	29			
and above						
Residence						
Rural	5	25	33	5.99	2	4.45
Urban	12	44	31			
Occupation						
Student	11	31	18	9.49	4	9.54*
Employed	5	27	30			
Unemployed	1	11	16			

*significant at $p \leq 0.05$ level

Table 3 depicts that the computed chi-square value of education (χ^2 10.31) and occupation (χ^2 9.54) were found to be statistically significant. However, the computed chi-square value of age (χ^2 2.53), gender (χ^2 4.48), religion (χ^2 1.65), and residence (χ^2 4.45) were found to be statistically not significant. Concluding that the knowledge of Vitamin D deficiency and the associated risk factors among adults is dependent on the education and occupation of the participants.

Discussion

Vitamin D deficiency is an epidemic public health problem worldwide, yet it is a problem that is largely unknown by majority of the population. In this section, the major findings of the present study have been discussed with reference to the results obtained by other investigators.

The result of the present study showed that among 150 adult participants, 11.33% had good knowledge, 42.67% had poor knowledge and 46% had average knowledge regarding Vitamin D deficiency and the associated risk factors. The present study also showed that there was a significant association between level of knowledge and education where participants who were Graduates and above showed higher level of knowledge. A similar study was conducted by Lujain H. Alamoudi, et.al, in 2019 on awareness of Vitamin D deficiency among the general population in Jeddah, Saudi Arabia. The result revealed that almost two-third of the participants had an adequate level of knowledge about the benefits of Vitamin D. The study also revealed that there was a significant association in knowledge scores for education level. Those who had a university degree showed a higher level of knowledge than others. [16]

According to the domain, the present study showed that out of 150 participants, only 33.16% had good knowledge regarding the sources of Vitamin D. Similar findings were reported in a study conducted by Blebil A.Q et.al, on awareness, knowledge, attitude and practice of Vitamin Damong general public in Malaysia on 400 participants of which only 37% of the respondents had good knowledge about the sources of Vitamin D. [17]

In present study findings revealed that 54.44% of the participants had knowledge on signs and symptoms and 40.93% had knowledge on risk factors of Vitamin D deficiency respectively. Similarly, a study conducted by Nowreen N, Hameed R, on awareness regarding the importance of Vitamin D and prevention of its deficiency among female undergraduate medical students in 2017 was found that the knowledge score of the participants on main effects of Vitamin D deficiency and its risk factors was 81.41% and 71.68% respectively [3]

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