Journal of Pharmaceutical Research International

33(56B): 23-28, 2021; Article no.JPRI.78656
ISSN: 2456-9119
(Past name: British Journal of Pharmaceutical Research, Past ISSN: 2231-2919, NLM ID: 101631759)

Exploring Knowledge, Attitude and Practice (KAP) Towards Vitamin D among Arts and Commerce Students in Vistas Chennai

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Authors' contributions

This work was carried out in collaboration between both authors. Author MVR designed the study author MA wrote the protocol, performed the statistical analysis. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i56B33923

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/78656

Original Research Article

Received 05 September 2021
Accepted 10 December 2021
Published 13 December 2021

ABSTRACT

Introduction: Vitamin D is an essential nutrient and a group of fat-soluble pro-hormones with multiple functions in the body including bone health, regulation of serum calcium and phosphate levels, as well as roles in immune function, cell proliferation, differentiation, and apoptosis. The two major biologically inert precursors of vitamin D are vitamin D3 (cholecalciferol) and vitamin D2 (ergocalciferol). Vitamin D3 is also formed when the skin is exposed to solar ultraviolet B and then converted to pre-vitamin D3 (Sunshine Vitamin). The severe vitamin D deficiency in adults and children's causes softening of bones, muscle weakness and fractures.
Aim: The aim of the study is to explore knowledge, Attitude and Practice towards Vitamin D among Arts & Commerce students in Vels University Chennai.
Methods and Materials: The study was a prospective cross-sectional, carried out in the department of arts and commerce students in VISTAS Chennai. The questionnaire then underwent a series of validation process that included content, face validity and exploratory part. Item response theory (IRT) analysis was utilized for the validation of the knowledge domain. Exploratory factor Analysis (EFA) used for attitude and practice validation. Institutional Ethical Committee (VISTAS-SPS/IEC/VI/2020/05) approval was obtained before conducting the study. Self-online

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questionnaires link was sent via mail after registration. The questionnaire was divided based on Knowledge, Attitude and Practice with 5 questions each. Completed questionnaires were reviewed, entered into a database (SPSS) and analysed using descriptive and inferential statistics.

Results and Discussion: In our study, a total of 362 students were included where majority were males from first year commerce department around 18 to 19 years of age. Majority of the students had knowledge on vitamin D, attitude towards every day sun exposure and practice of using sun screens.

Conclusion: Our study concluded that the students' knowledge on vitamin D is good. There was an inconsistent practices towards managing its deficiency. Despite widespread, concern about vitamin D, still attitude and practice towards Vitamin D is yet to known for young generations.

Keywords: Vitamin D; ergocalciferol; cholecalciferol; solar ultraviolet B (UVB).

1. INTRODUCTION

Vitamin D is also known as Cholecalciferol, Ergocalciferol or Sunshine Vitamin. It is an essential nutrient and a group of fat-soluble pro-hormones with multiple functions in the body including bone health, regulation of serum calcium and phosphate levels, as well as roles in immune function, cell proliferation, differentiation, and apoptosis [1]. It was identified after the discovery of anti-rachitic effect of cod liver oil in the early 20th century. The vitamin found in cod liver oil was designated "D" [2]. The two major biologically inert precursors of vitamin D are ergocalciferol from plants (vitamin D2) and cholecalciferol from animal sources (vitamin D3) [3,4,5]. Vitamin D3 is formed when 7-dehydrocholesterol in the skin is exposed to solar ultraviolet B (UVB, 290-320 nm), and then converted to pre-vitamin D3 (Sunshine Vitamin). It also assists in supporting immune, brain, and nervous system health, regulating insulin levels and supporting diabetes management, supporting lung function and cardiovascular health influencing the expression of genes involved in cancer development [6,7].

There are few foods which naturally contain vitamin D like oily fish, such as sardines, herring, tuna, mackerel, salmon, and cod liver oil, egg yolks, shiitake mushrooms, liver or organ meats. About 90% of the vitamin D replenishment was mainly obtained by dermal synthesis after UVB radiation [8] with wavelength of 290-315 nm by cholesterol-like precursor (7-dehydrocholesterol) in skin (epidermal cells) into pre-vitamin D, which also isomerizes to vitamin D3.

Both inert precursors Vitamin D2 and D3 are biologically inactive and further require an enzymatic process to convert into its active forms. Although there was no census regarding the vitamin D optimal levels, most of the experts reported that a deficiency in vitamin D as level less than 20 ng/ml (50 mmol/l) [9,10,11,12]. A level of 21 to 29 ng/millilitre (52 to 72 nmol per litre) is considered as an insufficiency of vitamin D and sufficient vitamin D should reach a level of 30 ng/millilitre or greater [13]. The Endocrine Society states, for example, that to maintain serum 25(OH)D levels above 75 nmol/L (30 ng/mL), adults might need at least 37.5 to 50 mcg (1,500–2,000 IU)/day of supplemental vitamin D, and children and adolescents might need at least 25 mcg (1,000 IU)/day [14].

After inappropriate supplementation of vitamin D especially with serum above 100-150 ng/mL, Vitamin D intoxication occurs [15]. The FNB recommended avoiding serum 25(OH)D levels above approximately 125–150 nmol/L (50–60 ng/mL), and it found that even lower serum levels (approximately 75–120 nmol/L [30–48 ng/mL]) are associated with increases in rates of all-cause mortality, risk of cancer at some sites (e.g., pancreas), risk of cardiovascular events, and number of falls and fractures among older adults.Excessive vitamin D3 is not caused by prolonged sunlight exposure as photo conversion occurs for pre-vitamin D3 and vitamin D3 to its inactive metabolites [16]. Vitamin D deficiency is an epidemic worldwide and yet, it's a problem which is largely unknown by majority of the population [17]. In all age groups (neonates, toddlers, school children, men, women, elderly and pregnant women) in both rural and urban areas a widespread prevalence was documented [18]. The principal contributors to the deficiency can be the excessive use of sunscreen cream, lack of sunlight, geographic location, diets lacking in sufficient vitamin D, and air pollution. It is universally accepted that the circulating level of 25-hydroxyvitamin D should be used as an indicator of vitamin D status due to its ease of measurement, long half-life in circulation (approximately 2 or 3 weeks), and the correlation

of its level with clinical disease states [2,19,20]. 25OHD levels are not affected by the levels of PTH. In adults, the vitamin D deficiency causes muscle weakness and fractures whereas during childhood, it can cause growth retardation and skeletal deformities [21,22].

Due to lack of awareness on the importance of vitamin D, its health benefits, and prevention of deficiency, it is considered as one of the major reason for worldwide spread of this nutritional disorder [23,24,25]. Suggestive of awareness and educational campaigns about vitamin D among general and high-risk populations at community level could help to prevent long-term health consequences [26]. Targeting the younger populations for primary education on vitamin D could increase the likelihood of positive health behaviour which persists throughout and protect from disease development and progression later in life [27,28]. Hence, the aim of our study is to explore the knowledge, attitude and practice towards Vitamin D among arts and commerce students in VISTAS Chennai.

2. METHODS AND MATERIALS

The study was a prospective cross-sectional study carried out in the department of. This study was conducted among arts and commerce students in Vels Institute of Science, Technology & Advanced Sciences. The questionnaire then underwent a series of validation process that included content, face validity andexploratory part. Item response theory (IRT) analysis was utilized for the validation of the knowledge domain. Exploratory factor Analysis (EFA) used for attitude and practice validation.The study was carried out using online questionnaires which includes 15 questions under Knowledge, Attitude and Practice. These questions were divided into 3 sections with each 5 questions.

Institutional Ethical Committee (IEC)(VISTAS-SPS/IEC/VI/2020/05)approval was obtained before conducting the study. A total of 362 students who have registered and between the age group of 17 to 21 years were included in the study.Self-online questionnaires were sent as a link via mail after inform consent obtained from the students. The completed questionnaires were reviewed for accuracy, entered into a database in the SPSS and analysed using descriptive and inferential statistics. All the obtained results were expressed in the form of percentages in results.

3. RESULTS AND DISCUSSION

Our study is one of the very few which aim at understanding at knowledge, attitudes and practices towards vitamin D among arts and commerce students in VISTAS Chennai. Among 362 students, based on age group of 17 years were 16%, 18 years were 25%, 19 years were 25%, 20 years were 24% and 21 years were 10%. Out of 362 students, majority were males (66.85%) when compared to females (33.15%) which was similar to the study conducted by NazmaSaleem et al. [29].

Table 1. Baseline characteristics of sample population

Characteristics	Number of samples (n=362)	Percentage (%)
Age (years)		
17 years	56	**16**
18 years	92	25
19 years	90	25
20 years	88	24
21 years	36	10
Gender		
Male	242	66.85
Female	120	**33.15**
Year of education		
first year	**168**	**46.41**
second year	**96**	**26.52**
third year	**98**	**27.07**
Department		
Arts Students	172	47.51
Commerce Students	190	**52.49**

Among 362 arts and commerce students, arts students were 47.51% and commerce students were 52.49%. Based on year of education, first year students were 46.41%, second year students were 26.52% and third year students 27.07%.

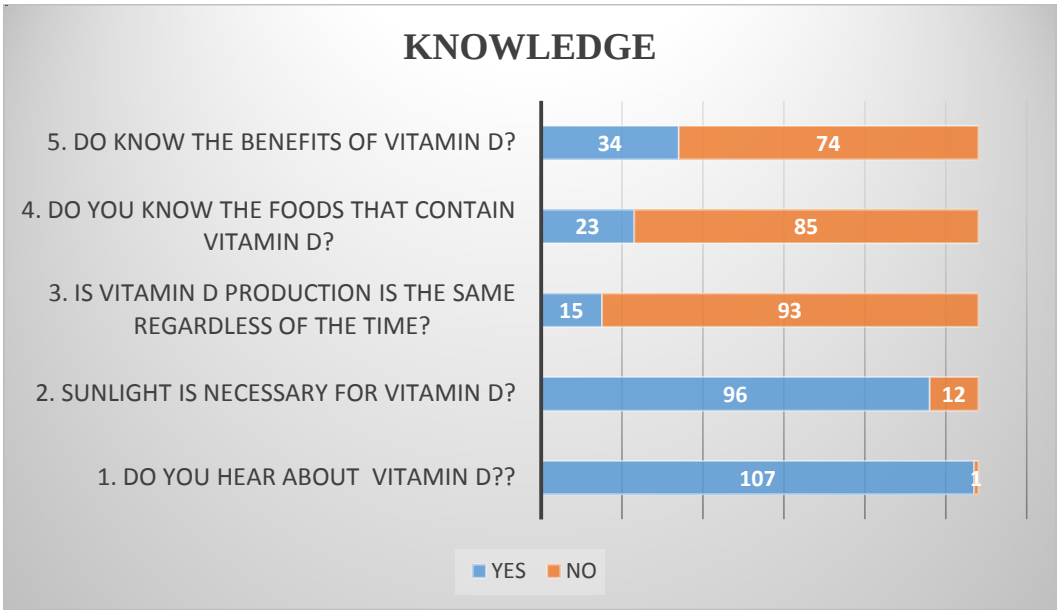

Fig. 1. Based on the knowledge, majority were unaware of the benefits of vitamin D, foods containing vitamin D and vitamin D production is the same regardless of the sunlight exposure time. Students were aware of vitamin D and also sunlight is necessary for vitamin D production

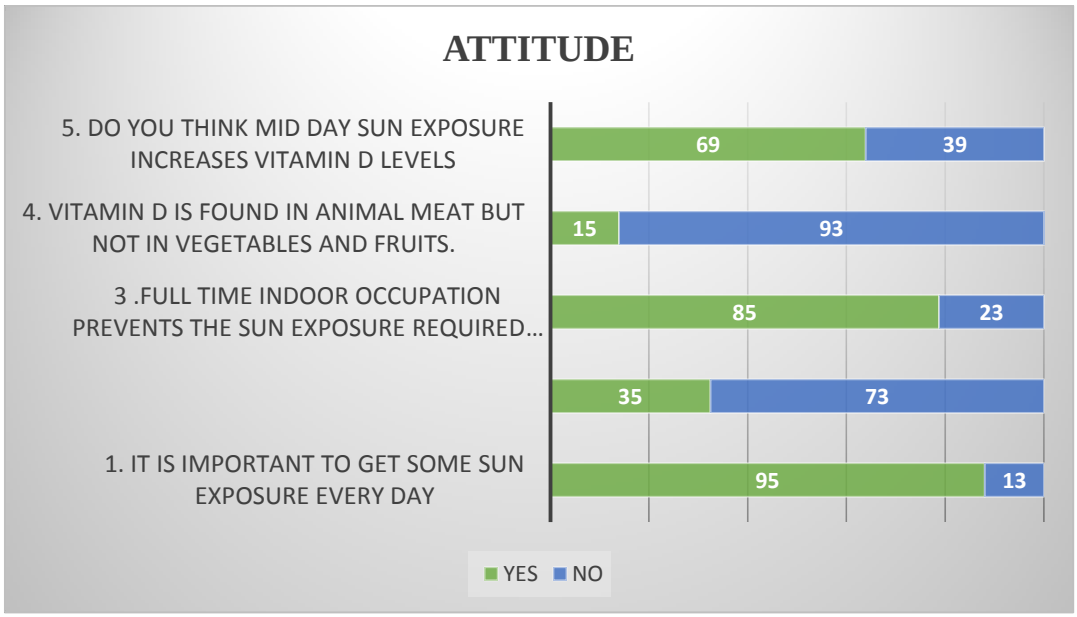

Fig. 2. Based on the Attitude towards Vitamin D, majority of the students know that it is important to get some sun exposure every day, mid-day sun exposure increases vitamin D levels and full time indoor occupation prevents the sun exposure required for production of vitamin D. Students were unaware that people living in city are having less vitamin D levels due to less sun exposure and vitamin D is found in animal meat but not in vegetables and fruits

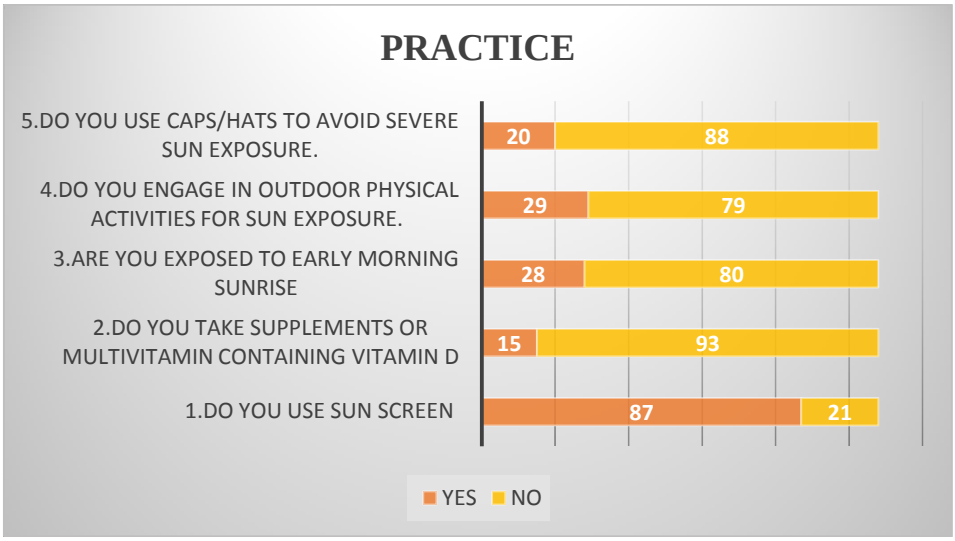

Fig. 3. Based on the Practice, majority of the students use sunscreens and very few students take supplements containing vitamin D or multivitamin, get exposed to early morning sun rise, use caps/hats to avoid severe sun exposure and engage in outdoor physical activities for sun exposure

4. CONCLUSION

Our study concluded that the students' knowledge on vitamin D is good. There was an inconsistent practices towards managing its deficiency. Despite widespread concern about vitamin D, still Attitude and Practice towards Vitamin D is yet to known for our young generation. Further research, on a larger scale, is needed in this area to enable a better understanding on the knowledge and attitudes about vitamin D, and its high risk in University Students populations (how interventions like fortified foods or sun exposure advices should be implemented for their long-term effectiveness).

ETHICAL APPROVAL AND CONSENT

Institutional Ethical Committee (IEC)(VISTAS-SPS/IEC/VI/2020/05)approval was obtained before conducting the study.

The study.Self-online questionnaires were sent as a link via mail after inform consent obtained from the students.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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