ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING VITAMIN D AMONG MEDICAL AND DENTAL STUDENTS OF A MEDICAL COLLEGE IN KATHMANDU

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ABSTRACT

Vitamin D deficiency is one of the very common nutritional deficiencies which usually go undiagnosed and untreated. The main objective of this study was to assess and compare the knowledge, attitude and practice of vitamin D among medical and dental students. The pre and post interventional study was conducted among first year students of Bachelor of Medicine and Bachelor of Surgery and Bachelor in Dental Surgery from July to September 2023. All the participants were asked to fill a form using a pre-validated questionnaire based on relevant literature for assessing vitamin D. We divided questions into three categories: knowledge, attitude, and practices towards vitamin D. Pre-test and post-test (after giving educational training) vitamin D knowledge, attitude and practice score of each participant were compared. Finally, the post-test total knowledge, attitude scores of each participant were calculated. Out of 140 students approached, 9 students from MBBS and 4 students from BDS did not respond (did not completed the questionnaire form). So, 127 (90.7%) participants were considered for comparison analysis in this study. Overall, there was a 38.6% increment in knowledge after educational training. In medical and dental students, there was a 39.6% and 36.1% gain in knowledge respectively. The proportion of knowledge increment was statistically significant ($p<0.001$). Also, overall, there was a 29.3% increment in their positive attitude. In Bachelor of Medicine and Bachelor of Surgery 22% positive attitude was developed after educational training and in Bachelor in Dental Surgery it was 47.2%. The proportion of attitude was statistically significant ($p<0.001$). In the MBBS category, 15 (15.0%) students were found to have good practice whereas 85 (85.0%) were found to have poor practice. In the BDS category, 12 (30.0%) students were found to have good practice whereas 28 (70.0%) were found to have poor practice. We found that after educational training there was improvement in knowledge and attitude of medical students on vitamin D but still, they need to implement it in their daily life. Though they have an average knowledge on vitamin D, there is a gap between knowledge and practice among medical students.

KEYWORDS

Vitamin D, medical student, dental student, knowledge, attitude, practice, pre-test, post-test

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INTRODUCTION

Vitamin D deficiency is becoming a global epidemic and it is a major public health problem worldwide in all age groups. It is not uncommon in areas of low latitude.[1] Although it can be obtained from natural dietary sources such as dairy products, oily fish, and in addition drugs and supplements of vitamin D are available, it still becomes insufficient for body needs. The main sources of vitamin D are obtained from cutaneous synthesis through sunlight exposure.[2,3] If there is inadequacy of sunlight exposure it leads to vitamin D deficiency.[4,5]

Vitamin D can be synthesized when skin is exposed to the ultraviolet B (UVB) radiation from the sun.[6] Although, there is plenty of sunlight throughout the day still South Asians stay as one of the weakest populations to experience the deleterious effects of low levels of vitamin D.[7,8] Despite of advancement in medical science still vitamin D deficiency is left undertreated and underdiagnosed.[9-11]

Vitamin D has an important role for mineral metabolism.[12] Studies reveal that low levels of vitamin D are related to various types of cancer, diabetes, cardiovascular diseases including hypertension, chronic kidney diseases, periodontal diseases and muscle metabolism.[13-16] Insufficiency of it causes rickets and is also associated with lower respiratory tract infection in infancy and childhood.[17,18] Vitamin D is very essential for bone health.[19]

A number of studies that have measured vitamin D levels among South Asian population groups have indicated a high prevalence of its deficiency among healthy young adults, women and infants.[20-23] According to a systematic review published in BMC public health journal (2021), the highest prevalence of vitamin D deficiency was found in Pakistan (73.0%) followed by Bangladesh (67.0%), India (67.0%), Nepal (57.0%) and Sri Lanka (48.0%), respectively. Furthermore, a gender wise analysis done in South Asia showed the prevalence of vitamin D deficiency was higher in females than males.[24]

The main objective of this study was to assess and compare the knowledge of vitamin D among MBBS and BDS students of Nepal Medical College (NMC), Attarkhel, Gokarneshwor-8, Kathmandu. As they are the future educators and health providers of the country, they would be responsible to create awareness regarding vitamin D to their students and community which will help to promote and disperse the knowledge on vitamin D deficiency.[25]

MATERIALS AND METHODS

A pre and post interventional study was conducted among the first-year students of MBBS of 26th batch and BDS students of 12th batch at Nepal Medical College, Attarkhel, Kathmandu Nepal. A convenient sampling technique was used for data collection. The study was conducted from July to September 2023.

Vitamin D questionnaires were provided to all the 1st year MBBS and BDS students. They were explained the importance of this study and were encouraged to participate. All the participants were asked to complete a pre-validated questionnaire that was constructed following a thorough literature review for assessing knowledge regarding vitamin D.[13] The questionnaire was categorized in three parts to assess: knowledge, attitude, and practices towards vitamin D. The students were allotted fifteen minutes to complete the pre-test questionnaires. The intervention was a 30 minutes interactive lecture class on vitamin D as an educational training. Immediately following the lecture, a 15 min post-test questionnaire containing the same questions was given to the students. Pre-test and post-test vitamin D knowledge, attitude and practice score of each participant were compared. Finally, the post-test total knowledge, attitude and practice score of each participant were calculated.

There were a total 24 questions, 10 questions regarding general knowledge, 8 questions regarding attitude and 6 questions regarding practice. For each right answer, score 1 was given and 0 score for each wrong or don't know answer. The level of knowledge was categorized on the basis of the mean calculated from the total score of each sample as:

- Total score <mean value: poor knowledge
- Total score> mean value: good knowledge

Attitude and practice were measured on the basis of 5-point Likert's scale. Attitude part was labelled with a positive and negative attitude. A score of 1 (strongly disagree) to 5 (strongly agree) was given for the Likert's scale. The total score ranged from a minimum of 1 to a maximum of 40. Attitude was categorized as positive (score 21-40) and negative (score 1-20). Similarly, practice was categorized as good (score 16-30) and poor (score 1-15).[2]

The collected data were entered and cleaned in Microsoft Excel. The cleaned data were transported to SPSS-16 for Windows where statistical analysis was conducted. Various responses were separated into different

subgroups. The mean and standard deviations (SD) for the continuous data like age, knowledge, attitude and practice score were calculated. The prevalence of good knowledge, positive attitude and good/poor practice were reported. To represent the categorical data like demographic location, percentages were used. For comparison of pre-post categorical variable, McNemar's test was used. For continuous normally distributed pre and post variables, paired t test was used. P value less than 0.05 was considered statistically significant.

An informed verbal consent was taken from all the participants before participating in the study. Their confidentiality and anonymity were maintained. Ethical approval was taken from Nepal Medical College Institutional Review Committee (Ref. No: 08-080/081).

RESULTS

Among 140 students, 100 (71.4%) were from MBBS and 40 (28.6%) were from BDS (Fig.1). Among the participants, 71 (50.7%) were male and 69 (49.3%) were female students. In the

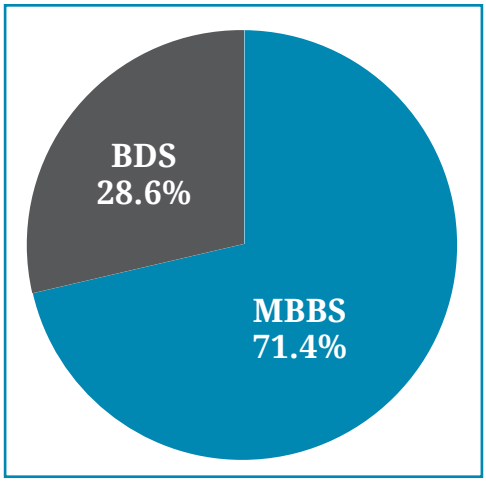

Fig 1: Distribution of participants (n=140)

MBBS category, there was a higher proportion of male students 59 (59.0%) compared to female students 41 (41.0%), whereas, in the BDS category, there was a higher proportion of female students 28 (70.0%) compared to male students 12 (30.0%). The gender distribution is statistically different in MBBS and BDS category (p= 0.002). The average (SD) age of the

Table 1: Gender distribution of the participants (n=140)

Variables	Total n (%)	MBBS n (%)	BDS n (%)	P value
Male	71 (50.7)	59 (59.0)	12 (30.0)	
Female	69 (49.3)	41 (41.0)	28 (70.0)	**0.002***
Age, Mean (SD)	19.5 (1.5)	19.4 (1.5)	19.8 (1.5)	.186#

**Chi square test, # Independent t test was used for P value calculation. P-values < 0.05 were considered statistically significant, and are expressed in bold typing.*

Table 2: Vitamin D mean pre-test and post-test knowledge and attitude score (n=127)

Groups	Category	Frequency (n)	Mean (SD)	P value
MBBS	Knowledge pre	91	6.84 (1.93)	**<0.001**
	Knowledge post	91	8.99 (0.69)	
	Attitude pre	91	18.27 (3.16)	**<0.001**
	Attitude post	91	13.24 (3.24)	
BDS	Knowledge pre	36	6.53 (1.8)	**<0.001**
	Knowledge post	36	9.06 (0.98)	
	Attitude pre	36	19.08 (3.54)	**<0.001**
	Attitude post	36	12.42 (3.43)	
Total	Knowledge pre	127	6.75 (1.89)	**<0.001**
	Knowledge post	127	9.01 (0.78)	
	Attitude pre	127	18.5 (3.28)	**<0.001**
	Attitude post	127	13.01 (3.31)	

Paired t test was used for P value calculation. P-values < 0.05 were considered statistically significant, and are expressed in bold typing.

students was 19.5 (±1.5) years. The mean age of MBBS and BDS students were 19.4 (±1.5) and 19.8 (±1.5) years, respectively. The average age of students in both MBBS and BDS category was similar (p=0.186) (Table 1).

In MBBS category, the majority of students were non-vegetarians with 81.9%, followed by vegetarians with 16.0% and a small percentage of eggetarians with 2.1%. Similarly, in the BDS group, the majority of students were non-vegetarians with 91.2%, followed by vegetarians with 8.8%. There were no any eggetarian students in the BDS group. The food preference between MBBS and BDS students were statistically similar (p=0.502) (Fig. 2).

Out of 140 students approached, 9 students from MBBS and 4 students from BDS did not respond (did not completed the questionnaire form). So, 127 (90.7%) participants were considered for comparison analysis in this study. Pre-test and post-test mean knowledge of each student of MBBS and BDS were compared. In the MBBS category, mean knowledge on vitamin D in pre-test was 6.84 and post-test was 8.99 (p <0.001), whereas in the BDS category, mean knowledge was 6.53 and 9.06 respectively (p <0.001). Pre-test and post-test attitudes of each student of MBBS and BDS were also compared. In the MBBS category, mean attitude level on vitamin D in pre-test was 18.27 and post-test 13.24 (p <0.001) whereas in the BDS category, mean attitude level was 19.08 and 12.42, respectively (p <0.001) (Table 2).

Table 3: Vitamin D knowledge comparison before and after educational training

Knowledge	Pre-test n (%)	Post-test n (%)	P value
	MBBS		
Good	54(59.3)	90 (98.9)	**<0.001**
Poor	37 (40.7)	1 (1.1)	
Total	91(100.0)	91 (100.0)	
	BDS		
Good	22 (61.1)	35 (97.2)	**<0.001**
Poor	14 (38.9)	1 (2.8)	
Total	36 (100.0)	36 (100.0)	
	Total		
Good	76 (59.8)	125 (98.4)	**<0.001**
Poor	51 (40.2)	2 (1.6)	
Total	127 (100.0)	127 (100.0)	

McNemar's test was used using binomial distribution. P-values < 0.05 were considered statistically significant, and are expressed in bold typing.

Table 4: Vitamin D attitude comparison before and after educational training

Attitude	Pre-test n (%)	Post-test n (%)	P value
MBBS			
Positive	66 (72.5)	86 (94.5)	**<0.001**
Negative	25 (27.5)	5 (5.5)	
Total	91 (100.0)	91 (100.0)	
BDS			
Positive	19 (52.8)	36 (100.0)	**<0.001**
Negative	17 (47.2)	0 (0.0)	
Total	36 (100.0)	36 (100.0)	
Total			
Positive	85 (66.9)	122 (96.1)	**<0.001**
Negative	42 (33.1)	5 (3.9)	
Total	**127 (100.0)**	**127 (100.0)**	

McNemar's test was used using binomial distribution. P-values < 0.05 were considered statistically significant, and are expressed in bold typing.

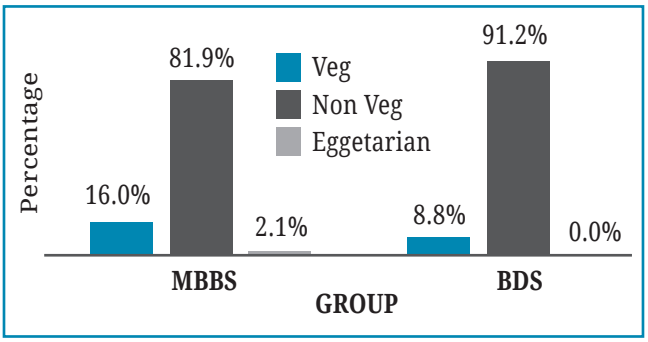

Fig 2: Food preference among both groups (n=140)

In total 85 (66.9%) students had shown a positive attitude which improved to 122 (96.1%) after educational training and 42 (33.1%) had a negative attitude which improved to 5 (3.9%) in post-test assessment and p < 0.001 (Table 4).

In the MBBS category, 15 (15.0%) students were found to have good practice whereas 85 (85.0%) were found to have poor practice. In the BDS category, 12 (30.0%) students were found to have good practice whereas 28 (70.0%) were found to have poor practice (Table 5).

Table 5: Vitamin D pretest practice assessment

Category	Total n (%)	MBBS n (%)	BDS n (%)	P value
Good	27 (19.2)	15 (15.0)	12 (30.0)	
Poor	113 (80.7)	85(85.0)	28 (70.0)	**0.028**
Total	140 (100.0)	100 (100.0)	40 (100.0)	

Chi Square test was used for P value calculation. P-values < 0.05 were considered statistically significant, and are expressed in bold typing.

While analyzing knowledge on vitamin D in the MBBS category, 54 (59.3%) students had scores representing good knowledge on pre-test assessment which improved to 90 (98.9%) on post-test evaluation. Likewise, 37 (40.7%) students of MBBS category had poor pre-test knowledge on evaluation which dropped down to 1 (1.1%) on post-test assessment. Similarly, while analyzing knowledge in the BDS category, 22 (61.1%) students had scores representing good knowledge on pre-test assessment which improved to 35 (97.2%) on post-test evaluation. Whereas, 14 (38.9%) students had poor pre-test knowledge on evaluation which dropped down to 1 (2.8%) on post-test assessment. In total 76 (59.8 %) had good pre-test knowledge and 125 (98.4%) had good post-test knowledge (Table 3).

In the MBBS category, 66 (72.5%) students had shown positive attitude regarding vitamin D in pre-test assessment, which improved to 86 (94.5%) after educational training (i.e. post-test assessment) and 25 (27.5%) had a negative attitude in pre-test which dropped down to 5 (5.5%) on post-test assessment and it was statistically significant (p <0.001). In the BDS category, 19 (52.8%) students had shown positive attitude in pre-test assessment which improved to 36 (100.0%) after taking educational training and 17 (47.2%) had negative attitude in pre-test which dropped down to 0 (0.0%) on post-test assessment and it was statistically significant (p <0.001).

Overall, there was a 38.6% increase in knowledge after taking educational training. In MBBS, it was 39.6% and in BDS it was 36.1% increment in knowledge. The proportion of knowledge increment was statistically significant (p <0.001). Also, there was a 29.2% increment in their positive attitude. In MBBS and BDS, 22%, 47.2% positive attitudes were developed respectively after educational training. The proportion of attitude was statistically significant (p <0.001).

DISCUSSION

In this study, we evaluated pre-test and post-test knowledge, attitude and practice of MBBS and BDS students where they were evaluated before and after giving educational training on vitamin D. In MBBS category, 54 (59.3%) students had good pre-test knowledge and after educational training it increased to 90 (98.9%). Whereas in the BDS category, 22 (61.1%) students had good pre-test knowledge which increased to 35 (97.2%) after giving educational training. This increment shows that participants have gained knowledge after taking educational training on vitamin D.

Similar study was done in Kathmandu Medical College, Duwakot by Manandhar *et al*[14] where they found that in MBBS category, 51(61.4%) students had good knowledge on vitamin D, 31(37.3%) were average and only 1(1.2%) was

poor whereas in BDS category 34(82.2%) were good, 4(10.3%) were average and only 1(2.6%) was in poor category.

A study done by Al-Amri *et al*[26] in Saudi Arabia showed that among 186 participants, 51.3% had good knowledge regarding vitamin D and 48.7% had poor knowledge. Some of the studies showed that the level of knowledge was quite low across Canada, Japan, Sharjah, Saudi Arabia and Turkey.[27-31] Another study done in Rawalpindi found that almost half of the participants (47%) had a good understanding of nutritional knowledge on vitamin D.[32]

Regarding their attitude, in MBBS category, 66 (72.5%) students had shown positive attitude towards vitamin D and 27.5% had shown negative attitude in pre-test and afterwards it changed to 94.5% with positive and 5.5% with negative attitude (p <0.001).

Whereas in the BDS category, 19 (52.8%) students had a positive attitude and 17 (47.2%) had a negative attitude in pre-test which afterwards after taking educational training, 36 (100.0%) had positive attitude and 0% had negative attitude in post-test and p<0.001. This proves that after educational training participants changed their attitude regarding vitamin D.

Regarding practice in MBBS category, 15 (15.0%) students were found to have good practice and 85 (85.0%) were found to have poor practice. Whereas in the BDS category, 12 (30.0%) were found to have good practice and 28 (70.0 %) were found to have poor practice.

The relationship of attitude and practice towards vitamin D was consistent with the study done in Rawalpindi. Despite having good general and nutritional knowledge; only 32.9% of individuals had a positive attitude, which has a strong link to female gender. This is most likely due to the fact that girls are more concerned about their health than boys.[32]

We saw a good gain in knowledge after giving educational training on vitamin D in both medical and dental students. There was a statistically significant difference between medical and dental students in comparing pre and post-test evaluation. There was significant improvement in their knowledge, attitude following the interactive educational training on vitamin D. This emphasizes our future strategies should focus on providing vitamin D related information to medical and dental graduates which would be applicable in day-to-day life. The use of various media should be encouraged to make our communities more aware of the use of dietary supplements and information on vitamin D which they can integrate into their everyday practice. We recommend a large population study to determine the knowledge, attitude and practices of people about vitamin D.

LIMITATIONS: This study was done on medical and dental students of NMC only, as it was an interventional study taken on small sample size it would fail to depict a generalized real situation. The post-test was carried out immediately after the intervention and may have influenced the improvement in knowledge and attitude scores.

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