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RESEARCH ARTICLE
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A COMPARATIVE STUDY OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS VITAMIN D AMONG THE MEDICAL STUDENTS OF DIFFERENT YEARS STUDYING IN A MEDICAL COLLEGE OF SOUTHERN RAJASTHAN

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INTRODUCTION

Vitamins are known to be a group of chemically unrelated families of organic substances which cannot be synthesized in the human body, and need to be ingested in small quantities through diet to prevent disorders of metabolism and deficiency. Thirteen vitamins are recognized in human body which are broadly divided into two types according to their solubility, that is fat soluble and water soluble vitamins. Fat soluble vitamins are A, D, E and K and also include 50 or so carotenoids that have various degree of Vitamin A activity. Water soluble vitamins comprises Vitamin B group as B1 –thiamine, B2 riboflavin, B6 –niacin, pantothenic acid, biotin, folate, B12 and Vitamin C.

VITAMIN D

Vitamin D, or calciferol, is a fat-soluble vitamin essential for health. It exists in five forms (D1–D5), with D2 (ergocalciferol) and D3 (cholecalciferol) being the most studied. Vitamin D2 Found in plant sources like mushrooms. Vitamin D3 Produced in the skin via sunlight and is more functional in the human body.(1,3,4)

HISTORY

Rickets, known as the "English Disease," was first observed in Scotland by Sir Edward Mellanby. Influenced by McCollum's research, Mellanby theorized that dietary deficiency caused rickets. He tested this by feeding dogs an oatmeal-based Scottish diet while keeping them away from sunlight, which led to rickets in the dogs. Mellanby discovered that cod liver oil cured the disease and initially believed Vitamin A was responsible. However, McCollum later found that cod liver oil treated rickets even after its Vitamin A content was destroyed, revealing that another component, later identified as Vitamin D, was key to preventing and curing rickets.(5,6,7)

In our study, we included first, second, and third-year medical students, as they typically possess foundational knowledge of physiology, biochemistry, and nutrition, making them well-suited to evaluate the application of theoretical knowledge to practical behavior. As future healthcare

professionals, these students will play a vital role in educating patients about nutrition and lifestyle interventions. Assessing their current understanding and attitudes toward vitamin D helps identify educational gaps that could impact their future practice. Second-year students, being early in their training, present an opportunity for interventions (e.g., educational programs) to shape their attitudes and practices before habits become firmly established. Additionally, medical students often act as informal educators to peers, family, and friends, and addressing their knowledge gaps can enhance their ability to raise awareness about vitamin D in both social and professional settings.

MATERIAL AND METHODS –

The present study is hospital based cross sectional study conducted in Pacific Medical College and Hospital, Udaipur. This study included second year students by circulating self-made semi structured questionnaire via social media after achieving ethical permission from the institution. On the basis of available previous literature, a self-designed questionnaire constituting 77 questions were developed. The questionnaire comprises of informed consent form and Knowledge, Attitude and Practice based questions. Before conducting the study, a pilot study was conducted to prevalidated the questionnaire, changes were applied according to the responses wherever needed. To conduct the study prevalidated self-made semi structured questionnaire was circulated among the study population through class representatives and volunteers. A week's time frame was given to the responders to submit the questionnaire.

Scoring Method

Client satisfaction questionnaire is prepared using 5 point Likert scale ranging from Very Poor (1) to Very Good (5)

Five - point numerical scales ranging from Very poor to Very Good were used. Weights assigned are given as under:

- Very Good 5
- Good 4
- Satisfactory 3
- Poor 2
- Very Poor 1

STATISTICAL ANALYSIS

Data was entered in Microsoft excel and was analysed using Statistical Package for the Social Sciences (SPSS)ver. 21. For qualitative data, percentage and frequency were calculated and Chi square test was used for association between two attributes, and for quantitative data mean, SD were calculated and 't', ANOVA test were used for statistical significance. P value of less than 0.05 was considered significant.

RESULTS

TABLE 1 DISTRIBUTION OF PARTICIPANTS ACCORDING TO GENDER AND YEAR OF STUDY

	MALE(%)	FEMALE (%)	TOTAL(%)
MBBS I YEAR	98 (40.50)	72(45)	170(42.29)
MBBS II YEAR	76 (31.40)	64(40)	140(34.83)
MBBS III YEAR	68 (28.10)	24(15)	92(22.89)
TOTAL	242 (100)	160(100)	402(100)

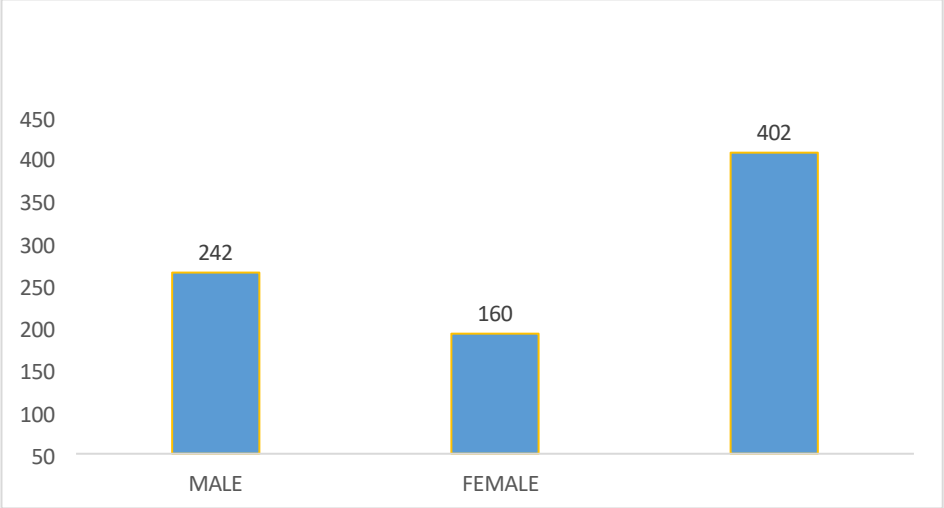

TABLE 2 DISTRIBUTION OF PARTICIPANTS ACCORDING TO GENDER AND THEIR RESIDENCE

RESIDENCE	MALE(%)	FEMALE(%)	TOTAL(%)
DAYSCHOLARS	81 (33.47)	49 (30.63)	130 (32.34)
HOSTELITE	161 (66.53)	111 (69.38)	272 (67.66)
TOTAL	242 (100)	160 (100)	402 (100)

TABLE – 3 DISTRIBUTION OF PARTICIPANTS ACCORDING TO VEGETARIAN AND NON VEGETARIAN

	VEG (%)	NON VEG (%)	TOTAL (%)
MBBS I YEAR	147 (86.47)	23 (13.53)	170 (100)
MBBS II YEAR	124 (72.94)	16 (9.41)	140 (100)
MBBS III YEAR	13 (7.65)	79 (46.47)	92 (100)

TABLE -4 DISTRIBUTION OF PARTICIPANTS ACCORDING TO GENDER AND URBANIZATION STATUS

HOME	MALE(%)	FEMALE (%)	TOTAL (%)
URBAN	124 (51.24)	94 (58.75)	218 (54.23)
RURAL	118 (48.76)	66 (41.25)	184 (45.77)
TOTAL	242 (100)	160 (100)	402 (100)

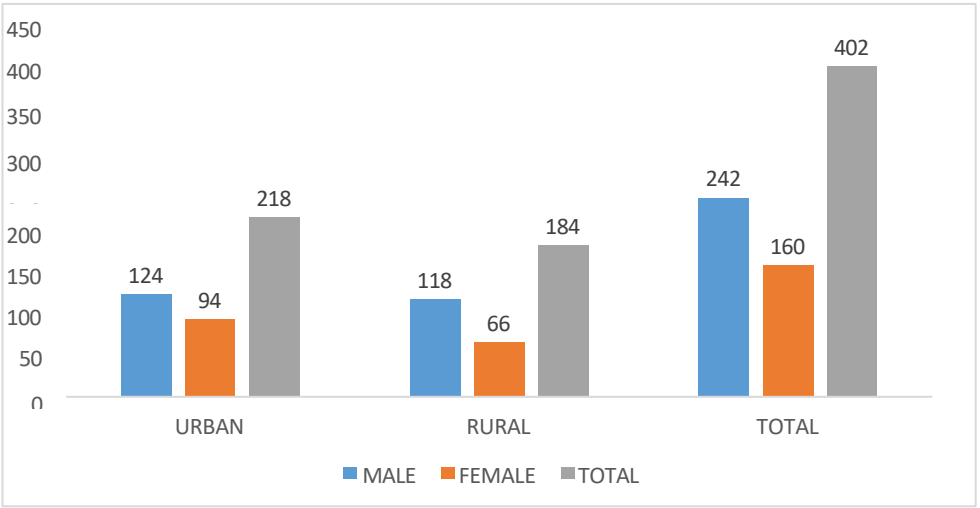

TABLE – 5 DISTRIBUTION OF PARTICIPANTS ACCORDING TO HABIT

YEAR	ALCOHOL (%)	SMOKING(%)	TOBACCO USER(%)	NONE(%)	TOTAL (%)
FIRST	72 (42.35)	45 (26.47)	13 (7.65)	40 (23.53)	170 (100)
SECOND	27 (15.88)	29 (17.06)	5 (2.94)	79 (46.47)	140 (100
THIRD	5 (2.94)	7 (4.12)	18 (10.59)	62 (36.47)	92 (100)

TABLE -6 DISTRIBUTION OF PARTICIPANTS ACCORDING TO FAST FOOD CONSUMING HABIT

YEAR	DAILY (%)	WEEKLY (%)	ONCE IN A MONTH (%)	OCCASIONALLY (%)	TOTAL (%)
FIRST	10(5.88)	52 (30.59)	44 (25.88)	64 (37.65)	170 (100)
SECOND	1 (0.59)	40 (23.53)	42 (24.71)	57 (33.53)	140 (100)
THIRD	0 (0)	42 (24.71)	22 (12.94)	28 (16.47)	92 (100)

TABLE- 7 DISTRIBUTION AND COMPARISON OF MEAN SCORE OF KNOWLEDGE, ATTITUDE AND PRACTICE AMONG FIRST, SECOND AND THIRD YEAR MBBS STUDENTS

MEAN SCORE	EDUCATIONAL QUALIFICATION			P VALUE
	FIRST YEAR	SECOND YEAR	THIRD YEAR	
KNOWLEDGE	17.14±3.15	18.09±3.10	18.72±3.14	0.000
ATTITUDE	17.24±2.99	16.89±3.00	17±2.96	0.567
PRACTICE	9.81±3.20	10.36±3.22	10.41±2.96	0.198

TABLE 8 PERCENTAGE OF ADEQUATE AND INADEQUATE KNOWLEDGE AMONG FIRST, SECOND AND THIRD YEAR STUDENTS

MBBS YEAR	EXCELLENT (%)	GOOD (%)	INADEQUATE (%)	TOTAL (%)
FIRST	18(22.22)	99(44)	53(55.20)	170(42.28)
SECOND	27(33.33)	86(38.22)	27(28.12)	140(34.82)
THIRD	36(44.44)	40(17.77)	16(16.66)	92(22.88)
TOTAL	81(100)	225(100)	96(100)	402(100)

TABLE -09 PERCENTAGE OF POSITIVE AND NEGATIVE ATTITUDE AMONG FIRST, SECOND AND THIRD YEAR STUDENTS

MBBS YEAR	POSITIVE ATTITUDE (%)	NEGATIVE ATTITUDE (%)	TOTAL (%)
FIRST YEAR	97(57.05)	73(42.94)	170(42.28)
SECOND YEAR	71(50.71)	69(49.28)	140(34.82)
THIRD YEAR	48(52.17)	44(47.82)	92(22.88)
TOTAL	216(53.73)	186(46.26)	402(100)

Chi square -1.35 degree of freedom -2 p value -0.50

TABLE 10 COMPARISON OF MEAN SCORE OF ATTITUDE AMONG FIRST, SECOND AND THIRD YEAR

YEAR	POSITIVE	NEGATIVE	P value
FIRST	19.31±2.00	14.49±1.47	0.000
SECOND	19.25±1.86	14.46±1.76	0.000
THIRD	19.27±1.87	14.52±1.66	0.000

TABLE -11 COMPARISON OF MEAN SCORE OF PRACTICE AMONG FIRST SECOND AND THIRD YEAR STUDENTS

MBBS YEAR	EXCELLENT	GOOD	POOR	P VALUE
FIRST	14.66±0.28	12.12±0.89	7.29±2.74	0.000
SECOND	15.12±0.47	12.43±0.91	7.42±2.76	0.000
THIRD	15.00±0.00	12.29±0.90	8.23±2.59	0.000

TABLE – 12 PERCENTAGE OF GOOD, POOR AND EXCELLENT PRACTICE AMONG THE FIRST, SECOND AND THIRD YEAR STUDENTS

MBBS YEAR	EXCELLENT (%)	GOOD (%)	POOR (%)	TOTAL (%)
FIRST	3(1.76)	84(49.41)	83(48.82)	170(42.28)
SECOND	4(2.85)	76(54.28)	60(42.85)	140(34.82)
THIRD	3(3.26)	48(52.17)	41(44.56)	92(22.88)
TOTAL	10(2.48)	208(51.74)	184(45.77)	402(100)

Chi square -1.64 degree of freedom -4 p value -0.800

DISCUSSION AND CONCLUSION

The number of male students decreases as the year of study progresses, while the percentage of female students increases. In the first year, male students form a larger percentage (40.5%) compared to female students (45%).In the third year, male students represent 28.1%, while female students make up 15%, showing a significant drop in male participants as the year's advance.Most students (67.66%) are hostelites, with a slightly higher proportion of male students (66.53%) compared to female students (69.38%).Dayscholars make up 32.34% of participants, with more males (33.47%) than females (30.63%).The percentage of vegetarian students decreases significantly from first to third year.In the first year, a large proportion (86.47%) of students are vegetarians, which drops dramatically to 7.65% in the third year, while non-vegetarian students increase from 13.53% in the first year to 46.47% in the third year.A higher proportion of participants (54.23%) come from urban areas compared to rural areas (45.77%).More female students (58.75%) are from urban areas than male students (51.24%), reflecting a regional gender distribution.The prevalence of alcohol consumption and smoking decreases as students progress through the years. In the first year, 42.35% of students consume alcohol, and 26.47% smoke. By the third year, these numbers drop to 2.94% and 4.12%, respectively.Tobacco use also decreases, with 7.65% of first-year students being tobacco users, while in the third year, this drops to 10.59%.Fast food consumption decreases over the years. In the first year, 37.65% of students consume fast food occasionally, while in the third year, this number drops to 16.47%.The percentage of students consuming fast food weekly also drops from 30.59% in the first year to 24.71% in the third year. There is a significant increase in the knowledge score from the first to the third year (p=0.000), suggesting that students gain more knowledge over time.The attitude score does not change significantly between years (p=0.567), indicating that students' attitudes remain relatively consistent across the years.There is no significant change in practice scores (p=0.198), suggesting that the practices related to health may not improve markedly over time.In the first year, a large percentage of students (55.20%) have inadequate knowledge. However, by the third year, only 16.66% of students are classified as having inadequate knowledge, showing improvement in knowledge over time.The overall attitude is generally positive. A higher percentage of students exhibit a positive attitude in the first year (57.05%) compared to the second year (50.71%) and third year (52. 17%).There is a slight decrease in the positive attitude as students progress from first to third year, although it is not statistically significant. Positive and negative attitude scores are statistically significant (p=0.000) across all years, with first-year students having the highest positive attitude scores (19.31±2.00) and the lowest negative attitude scores (14.49±1.47).There is a significant difference in practice scores across the years (p=0.000), with first-year students having the lowest

mean score for practice (9.81±3.20) and third-year students showing the highest (10.41±2.96).There is a general trend where the percentage of students with excellent practice remains low (1.76% in the first year, 2.85% in the second year, and 3.26% in the third year), while the majority of students show poor practice (48.82% in the first year, 42.85% in the second year, and 44.56% in the third year).

Conclusion:

- **Knowledge**: There is a notable improvement in students' knowledge about health as they progress from the first to the third year of study, with a significant increase in the number of students possessing adequate knowledge by the third year.
- **Attitude**: Although the majority of students maintain a positive attitude toward health, there is a slight decline in positive attitude scores as they move through the years, although it is not statistically significant.
- **Practice**: The overall health practices among students remain poor, with only a small percentage demonstrating excellent practices. However, the practice scores do improve slightly in the third year.
- **Dietary Habits**: Vegetarianism significantly decreases as students progress in their studies, with a corresponding increase in non-vegetarianism, especially in the third year.
- **Health Behaviors**: There is a notable decrease in harmful health behaviors, such as alcohol consumption, smoking, and tobacco use, as students move through their studies. Similarly, the consumption of fast food decreases over time

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