

# Community Pharmacist's Awareness, Knowledge and Attitude Towards use of Vitamin Supplements in Pimpri-Chinchwad Municipal Corporation (PCMC) Area of Pune, India: A Descriptive Cross Sectional Study

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## Abstract

**Background:** US FDA defines: dietary supplements is a product that intended to supplement a person's diet, it's generally consist of at least one or more of the following dietary ingredients, vitamin, minerals, a herb or other botanical and amino acid by increasing the daily consumptions of an extract metabolite concentration, constitute or combinations of these medication. Excessive and inappropriate use of medicines has been recognised as a public health problem resulting in increased likelihood of adverse drug event, drug interaction, and inappropriate drug prescribing and increased cost. **Material and Methods:** This was the cross-sectional study conducted in year 2022 at Pimpri Chinchwad (Pune). The total 250 questionnaires are distributed and from that 226 response were received. Target population consist of community pharmacists working in the drug store in this area (n=226). **Results:** Data was represented in three domains of study i. e. awareness, knowledge and attitude. Correlation coefficient using Pearson's method were determined to evaluate strength of correlation between awareness-knowledge, Knowledge-attitude and awareness-attitude. Correlation coefficient were calculated by comparing most relevant and equal number of questions. **Conclusion:** The study demonstrated positive attitude among surveyed community pharmacists in Pune, India. There is lacuna in accurate and adequate awareness, knowledge and attitude of vitamin deficiency, efficiency, recommended daily allowance (RDA), toxicity and interactions among pharmacist as one of the stakeholders of healthcare in India. Few of the remedies viz. framing of guidelines, inclusion in formal education syllabus, continuous education, updation exams etc. may be of use.

**Keywords:** Attitude, awareness, community pharmacist, knowledge, vitamin supplement

## INTRODUCTION

WHO recommended dietary supplements may be useful to improve health in some patients. According to the US FDA, a dietary supplement is a product that intended to supplement a person's diet, it's generally consist of at least one or more of the following dietary ingredients, vitamin, minerals, a herb, or other botanical and amino acid by increasing the daily consumptions of an extract metabolite concentration, constitute or combinations of these medication. The vitamin supplement (VS) industry is reported under the category of the fastest growing industry in the world.<sup>[1,2]</sup> The market of VS is increasing in India, its value is approximately 4% of the total pharmaceutical market sale that is USD 80

million.<sup>[3]</sup> The Indian dietary supplement market was USD 3924.44 million in the financial year 2020 and is predicted to grow at a CAGR of 17.28% until the financial year 2026 to reach USD 10098.57 million by the financial year 2026.<sup>[4]</sup> In health care professional training programs many healthcare professionals learn about the role that nutrients and vitamin

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supplements play in the prevention and treatment of chronic diseases such as osteoporosis, heart disease, cancer and neural tube defects.<sup>[5-8]</sup> Excessive use of supplements is often the cause of potential side effects with emotional disturbance, abdominal problems, liver toxicity, birth defects, and drug-drug interactions.<sup>[9,10]</sup> Survey conducted in India about vitamins showed that 7.8% of study participants use vitamins as an alternative to medicines.<sup>[11]</sup> Excessive and inappropriate use of medicines has been recognized as a public health problem resulting in an increased likelihood of adverse drug event, drug interaction, inappropriate drug prescribing, and increased cost.<sup>[12]</sup> Hence, community pharmacists could play an important role in the awareness, knowledge and attitude of patients regarding the use of vitamin supplements. Moreover, this study may develop awareness, knowledge, and attitude among community pharmacists.

## MATERIAL AND METHODS

This was the cross-sectional study conducted in the year 2022 at Pimpri Chinchwad (Pune). A total of 250 questionnaires were distributed and from that 226 responses were received. The target population consists of community pharmacists working in the drug store in this area (n = 226). Eligible respondents were those who were willing to participate and provided verbal consent to fill in and answer all questions. The questionnaires were piloted on a convenient sample of practicing pharmacists to check standability, time consumed by each question, and consistency about related variables. After communication and formal permission, one of the researcher's visits pharmacies. They explain the research goals. Verbal consent was taken before data collection. This survey consists of three parts: I. Demographic characteristics of the survey participant-this part consists of demographic information on gender, age group, level of education and experience in year, etc., These data are represented in Table 1. II. Awareness: This section includes 10 numbers of different questions seeking information

regarding awareness of community pharmacists. Awareness data is represented in Table 2. III. Knowledge: knowledge section consists of 16 different questions enquiring pharmacist about their knowledge with respect to vitamins as dietary supplements. These are displayed in Table 3. IV. Attitude: This section consists of six numbers intended to demonstrate an attitude of pharmacists regarding the use of vitamins. This section attempts to determine attitude/counseling/practice of community pharmacists with regard vitamin supplements as dietary supplement. These are displayed in Table 4.

## Data analysis

Data was organized and analyzed using descriptive statistics such as frequency, percentage; mean, and standard deviation. Responses filled by the community pharmacist to the questionnaire were expressed as frequency and their corresponding percentages. Data was represented in three domains of study that is awareness, knowledge, and attitude. Responses with any degree of agreement were considered a positive replies and all responses with any degree of disagreement were taken as negative responses. Even no response from a participant is considered a negative response. Level of awareness, knowledge and attitude was calculated in the form of the index based on the mean of positive replies. Correlation coefficient using Pearson's method was determined to evaluate the strength of correlation between awareness-knowledge, Knowledge-attitude, and awareness-attitude. Correlation coefficients were calculated by comparing the most relevant and equal number of questions.<sup>[13-17]</sup>

## RESULTS AND DISCUSSION

To the best of our knowledge, this is the first study that assesses the awareness, knowledge, and attitude of community pharmacists in India. As compared to similar other studies conducted earlier by Bastani *et al.* (2016) at South Iran's other studies percentage of female pharmacists is less in the present study. Moreover, the percentage of graduates in pharmacy working as community pharmacists is less among all the other similar studies. This finding is due to Diploma in Pharmacy (D. Pharm.) course being available in India among very few countries and most of the D. Pharm. student opt for community pharmacist positions in India.

Comparison of awareness, knowledge and attitude correct response is shown in Figure 1. The graph clearly demonstrated that 71% community pharmacist have awareness less i.e. 68% have knowledge about its use and lesser i.e. 62% are applying that knowledge in practice (Attitude).

## Demographic characteristics of the respondent pharmacist

Out of 250 distributed questionnaires 226 responses were received. The response rate was 90%. Descriptive findings indicate that, the majority that is of respondents 76% were male and 24% were female. Pre-dominant age group was between 20-29 years (48.6%) followed by 30-39 years (33.6%) that of 40-49 years (15.2%) and lastly 50-59 years (2%-6%). The highest pharmacy degree of approximately half (79.2%) of the responded

**Table 1: Demographic characteristics of survey participants (n=226)**

Characteristics	Categories	Respondents (%)
Gender	Male	172 (76.1%)
	Female	54 (23.9%)
Age group (years)	20-29	110 (48.6%)
	30-39	76 (33.6%)
	40-49	34 (15.2%)
	50-59	6 (2.6%)
Level of education	Diploma In Pharmacy	179 (79.2%)
	Bachelor of Science in Pharmacy	42 (18.6%)
	Master of Science in Pharmacy	4 (1.8%)
	Doctor of Pharmacy (Pharm D) PhD in Pharmacy	1 (0.4%)
Experience (years)	1-5	87 (38.5%)
	6-10	51 (22.6%)
	11-15	38 (16.9%)
	16-20	50 (22.0%)

**Table 2: The frequencies and percentages of the correct responses to Awareness questions by pharmacists (n=226)**

Statement	Aware	Not Aware
Generally, I have sufficient information about Vitamin Supplements	207 (91.59%)	19 (8.40%)
Total balanced diet is more achievable by eating healthier than by vitamin supplements	193 (85.39%)	33 (14.60%)
Vitamin supplements may contain unlabeled toxic ingredients	98 (43.36%)	128 (56.63%)
A growing body of research evidence supports the causality of different types of cancer by vitamins, which are often employed as antioxidants in routine practice	98 (43.36%)	128 (56.63%)
Some lifestyle issues may reduce the absorption of vitamins or may even cause the complete depletion of vitamins	168 (74.33%)	58 (25.66%)
Chronic consumption of some drugs may cause a significant depletion of vitamins	143 (63.27%)	83 (36.72%)
Serious drug interactions and side effects can be potentiated due to concomitant consumption of vitamin supplements and drug therapy	133 (58.84%)	93 (41.15%)
Vitamin Supplements have a positive impact on public health	187 (82.74%)	39 (17.25%)
Pharmacists should be knowledgeable about Vitamin Supplements and consulting in this field is part of pharmacist duties	198 (87.61%)	28 (12.38%)
Vitamin Supplements should be dispensed according to the nutritionist's.	183 (80.97%)	43 (19.02%)
Mean of % Data	71.15	28.85
SD	17.92	17.92

**Table 3: The frequencies and percentages of the correct responses to Knowledge questions by pharmacists (n=226)**

Statement	Know	Don't Know
Generally, I have sufficient knowledge about contraindications of Vitamin	178 (78.76%)	48 (21.23%)
I have sufficient knowledge about drug - vitamin interaction	167 (73.89%)	59 (26.10%)
I have sufficient knowledge about the indication of some vitamins as dietary supplements	166 (73.45%)	60 (26.54%)
I have sufficient knowledge about the dosage and administration of some vitamin	201 (88.93%)	25 (11.06%)
I have sufficient knowledge about the adverse effect of vitamins as dietary supplements.	183 (80.97%)	43 (19.02%)
I have sufficient knowledge about the effectiveness of vitamins as dietary supplements	207 (91.59%)	19 (8.40%)
Recommended dietary allowance (RDA) for each Vitamin for adults (19-50 yrs.)	126 (55.75%)	100 (44.24%)
RDA for vitamin K (90 micro gram)	107 (47.34%)	119 (52.65%)
Excessive intake of Vitamin D more than RDA can cause poor appetite/vomiting	126 (55.75%)	100 (44.24%)
RDA for folic acid=400 mg	124 (54.86%)	102 (45.13%)
RDA for vitamin D=400 IU	127 (56.19%)	99 (43.80%)
Excessive intake of Vitamin E chances of hemorrhagic stroke, Skin	124 (54.86%)	102 (45.13%)
Cracking at the corner of the mouth could indicate Vitamin B 2 deficiency	170 (75.22%)	56 (24.77%)
Dandruff could indicate biotin deficiency	152 (67.25%)	74 (32.74%)
Conjunctival dryness could indicate Vitamin A deficiency	171 (75.66%)	55 (24.33%)
Poor concentration could indicate Vitamin B 12 deficiency	157 (69.46%)	69 (30.53%)
Mean of % Data	68.75	31.25
SD	13.31	13.31

**Table 4: The frequencies and percentages of the correct responses to Attitude questions by pharmacists (n=226)**

Statement	Accept	Do not Accept
Vitamin Supplement considered an important source of profit for pharmacists	128 (56.63%)	98 (43.36%)
Price is an important factor in recommending supplements to customer	80 (35.39%)	146 (64.60%)
Customers usually are influenced by pharmacist's comments about vitamin supplements	143 (63.27%)	83 (36.72%)
I always allot enough time for counseling of patients regarding vitamins as dietary supplements	180 (79.64%)	46 (20.35%)
I always counsel patients regarding the significance of vitamins.	191 (84.51%)	35 (15.48%)
Mean of % Data	63.89	33.11
SD	19.61	19.61

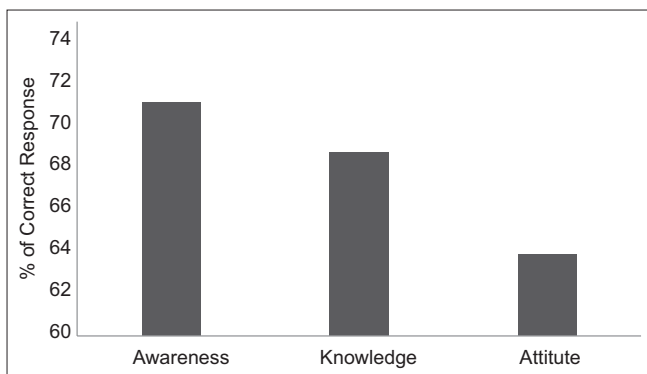
pharmacists was a diploma in pharmacy followed by bachelor of pharmacy (18.6%) where as master of pharmacy (1.8%) and pharm D or PhD (0.4%). The highest percentage of surveyed pharmacists had experience in the range of 1-5 Years that is, 39%. Whereas, the lowest percentage of surveyed pharmacists have experience in the range of 11-15 that is 17%.

### Awareness among respondent pharmacist

It is observed that about 3/4<sup>th</sup> of the surveyed population of community pharmacists was aware of the vitamins as dietary supplements and they believe that judicious use of vitamin supplements has a positive impact on public health. But they prioritize food as the best source of vitamins as compared to

**Table 5: Correlation among awareness, knowledge and attitude**

Variable	Correlation coefficient	Significant at P
Awareness-knowledge	0.8071	0.01
Knowledge-Attitude	0.8734	0.1
Awareness-Attitude	0.5961	Moderately significant

**Figure 1:** Awareness, knowledge, and attitude index

vitamin supplements. Most will believe that they have sufficient information about vitamin supplements. It is also observed that less participants are aware of the drug interactions caused by vitamin supplements, and their toxic and carcinogenic nature of few vitamins.

### Knowledge among respondent pharmacists

Almost about  $\frac{3}{4}$  of the surveyed population of community pharmacists knows the conventional use of vitamins as dietary supplements. But, only  $\frac{1}{2}$  of them have accurate knowledge about the RDA value of different vitamins. Moreover, only  $\frac{1}{2}$  of them have knowledge about which vitamin deficiency causes which disease. Surveyed population of community pharmacists lacks knowledge about toxic effects of vitamin supplements when used beyond RDA value.

### Attitude among respondent pharmacist

Few more than  $\frac{1}{2}$  of the surveyed population of community pharmacists showed correct attitude toward the use of vitamin supplements. It is also observed that pharmacists have an impact on patients regarding the use of vitamins as dietary supplements. This impact can be used to improve awareness, knowledge, and attitude among patients also. Moreover, the attitude of responsibility is observed among surveyed community pharmacists towards society regarding the correct and responsible use of vitamins as dietary supplements rather than just a way of earning profit.

### Awareness, knowledge, and attitude correlation

A decreasing order of percentage response is observed starting from Awareness: Knowledge: Attitude. It confirms the theory of a few things will be converted from awareness to knowledge and then to attitude. Since, attitude is at highest order in thinking skills. Hence, creating bulk of awareness regarding

use of vitamin as supplement is mandate to actually bring the correct use of it.

Moreover, it is observed that there is a highest significant correlation among the Awareness Knowledge questionnaire. There is the second highest significant correlation between Knowledge Attitude and moderate significance among Awareness Attitude. This clearly demonstrates correct categorization of different questions into awareness, knowledge, and attitude sections. These are displayed in Table 5.

Similar to other studies conducted in Ethiopia, Saudi Arabia, Iran, and Pakistan community pharmacists in India also lack awareness and correct knowledge of vitamins as dietary supplements. This may be one of the reasons for the lacuna in implementation of correct practice of use of vitamin as dietary supplements into dispensing, and counseling.

## CONCLUSION

This study focuses on a current serious issue in India. The study demonstrated a positive attitude among surveyed community pharmacists in Pune, India. There is a lacuna in accurate and adequate awareness, knowledge and attitude of vitamin deficiency, efficiency, recommended daily allowance (RDA), toxicity, and interactions among pharmacists as one of the stakeholders of healthcare in India. A few of the remedies viz. framing of guidelines, inclusion in formal education syllabus, continuous education, updation exams, etc., may be of use.

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## Conflicts of interest

There are no conflicts of interest.

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