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Research Article

Prevalence and Usage of Dietary Supplements among Teenagers in Chennai: A Cross-sectional Study

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Abstract

Introduction: The use of dietary supplements is increasingly common among teenagers globally, driven by a variety of motivations such as perceived health benefits, peer influence, and body image concerns. Dietary supplements include vitamins, minerals, amino acids, and herbal products intended to supplement one's diet and promote health. However, inappropriate or excessive use of these supplements can pose health risks, particularly in adolescents who may lack sufficient information about proper dosage and potential side effects. This study aims to analyze the prevalence and usage patterns of dietary supplements among teenage students in Chennai. **Methods and Materials:** This cross-sectional study was carried out for a period of 6 months from May to October 2024. A semi structured questionnaire was used to collect data and a total of 175 responses analysed using descriptive statistics with statistical significance, p-value < 0.05. **Results:** Approximately 60% of the participants reported using dietary supplements. Among the users, 65% were male, and 35% were female, indicating a higher prevalence of dietary usage among male teenagers. A significant difference in supplement use was observed between medical and non-medical students. The most commonly used supplements were multivitamins, protein powders, and omega-3 fatty acids. Medical students showed a higher usage of specific supplements, possibly due to greater awareness of health benefits. Most students reported using supplements for general health improvement, increased energy, and enhanced physical appearance. Medical students more frequently cited specific health benefits and disease prevention as reasons for use. **Conclusion:** This study indicates a high prevalence of dietary supplement use among teenagers in Chennai, with a notable gender difference and higher usage rates among medical students. The findings suggest that medical students, possibly due to their academic training, may have a heightened awareness of dietary supplements' potential benefits. However, the widespread use of supplements among teenagers, especially for aesthetic reasons, underscores the need for health education that informs adolescents about safe and effective use. Schools, parents, and healthcare providers should collaborate to ensure that teenagers have access to reliable information, minimizing the risks associated with unsupervised supplement intake.

Keywords: Dietary supplements, Protein, Vitamin, Teenagers

INTRODUCTION

Dietary supplements, including vitamins, minerals, amino acids, herbs, and other nutritional products, are increasingly being used worldwide, particularly among adolescents. Teenagers, due to the rapid physical and psychological changes they experience, often seek supplements to meet their nutritional needs, enhance physical appearance, or improve athletic performance. However, this growing trend raises important questions about the awareness, motivations, and health implications associated with supplement use among young people.

In India, urban areas like Chennai exhibit a particularly notable trend in dietary supplement usage among teenagers, influenced by increasing awareness of health and fitness, peer influence, and exposure to media promoting health products. Studies in similar urban regions in India indicate that around 30-40% of teenagers report using some form of dietary supplement, with males showing a slightly higher prevalence rate than females. This trend is driven by various factors, including fitness goals, academic stress, and lifestyle factors associated with urban living. Moreover, the academic background of teenagers also plays a significant role in their usage of dietary supplements. Students in medical fields, with more exposure to health-related information, often report a higher prevalence of supplement use compared to non-medical students, likely due to an enhanced awareness of nutrition and health practices.

Research on the prevalence of dietary supplement use specifically among teenagers in Chennai is limited. However, studies across urban Indian populations provide a comparative backdrop, with usage rates among teenagers estimated to range from 25-35% in

non-medical students to as high as 50% in those pursuing medical or health-related courses. This disparity underscores the role of education in shaping attitudes toward health, nutrition, and supplement use. Male students are also more inclined towards supplement use, possibly due to a higher interest in muscle building, strength enhancement, or athletic performance.

Despite these findings, the widespread use of supplements among teenagers is not without risks. Misconceptions, misinformation, and a lack of regulated guidelines often lead to improper use of supplements, which can result in adverse health effects. Teenage bodies are still developing, and unnecessary or excessive supplementation can interfere with natural growth, potentially causing issues ranging from hormonal imbalances to kidney or liver complications. Therefore, understanding the factors influencing dietary supplement use among teenagers in Chennai, as well as the extent of their knowledge about safe usage, is crucial.

This study aims to assess the prevalence and usage patterns of dietary supplements among male and female teenagers in Chennai, with a focus on differences between students from medical and non-medical backgrounds. By investigating these patterns, this study seeks to provide insights that can help shape targeted educational programs and health policies to guide teenagers towards safe and informed dietary practices

METHODS AND MATERIALS:

A descriptive, cross-sectional, questionnaire-based study was conducted for a period of 6 months from May-October 2024 with aim of assessing the knowledge, perception and practice towards dietary supplements among young adults. Taking 95% confidence interval and7.5% margin of error in to consideration, a total of 175 participants were included in the study.

Participants aged 15–30 years and consumed dietary supplements in the past or currently use them were included in the current study. Individuals with chronic illnesses requiring prescribed supplements and not willing to participate were excluded from the study. Random sampling technique was used to recruit the study population.

The pre-designed questionnaire used for data collection consists of 4 sections. The first section included questions related to participant's socio-demographic characteristics and the remaining 3 sections included questions assessing respondents KAP related to dietary supplements.

KAP Questionnaire Sections:

1. Knowledge Assessment: Focused on understanding of dietary supplement types, their ingredients, health benefits, and risks. (E.g., "Can you identify which vitamins support bone health?")

2. Attitude Assessment: Explored perceptions and beliefs about supplement efficacy, side effects, and preferences for natural foods versus synthetic supplements. (E.g., Likert-scale questions on agreement with statements like "Dietary supplements are necessary for optimal health.")

3. Practice Assessment: Examined usage patterns, sources of recommendations, and adherence to supplement regimens. (E.g., "How often do you use dietary supplements?")

The participants' knowledge and attitude responses were evaluated using Bloom's taxonomy cut-off pattern as follows:

- High Level (80-100%): Strong knowledge and a positive attitude toward the topic.
- Moderate Level (60-79%): Moderate knowledge with a neutral attitude.
- Low Level (<60%): Limited knowledge and a negative attitude.

For Practice, the score 50 % and above was considered as good practice

This scoring system facilitated a clear interpretation of the participants' overall knowledge, attitudes, and practices, which were used to analyze their responses and draw meaningful conclusions.

Statistical Analysis

Data were entered and analyzed using SPSS (Statistical Package for Social Sciences) software, version 23. Descriptive statistics using frequency and proportion were used to summarize the data; chi-square test and spearman rank correlation were used to assess the association between demographic data and knowledge, attitude, and practice; and a *P*-value of less than 0.05 was considered statistically significant.

RESULTS:

Socio-demographic characteristics of study sample

Among 175, Most of the participants (100) were males achieving an approximate percentage of (57.14%) and most of the participants were found to be in the age group of 18-20 years. Regarding qualifications, 168 (96%) respondents were graduates and only 7 (4%) participants completed their schooling only. Out of 168 graduates, 122 (69.71) graduates were from medical ground, and others (26.28%) were from non medical background including arts, science, engineering and IT. Refer (Table 1)

Table 1: Socio-demographic details

Variables	Category	Frequency (n=175)	Percentage (%)
Age (in years)	15-20	86	49.14
	21-25	78	44.57
	26 and above	11	6.28
Gender	Male	100	57.14
	Female	75	42.85
Educational Qualification	Finished only schooling	07	4.00
	Graduates	168	96.00
	-Medical	122	69.71
	-Non Medical (arts, science & engineering)	46	26.29

Knowledge Based Responses

The correct responses of to 7 knowledge questions regarding prevalence and usage of dietary supplements has been explained in Table 2. Each correct response was given one mark and others are expressed as zero.

Most of them have a moderate knowledge about usage of dietary supplements.60.9% are aware of what is DS,75% on DS constituents, 57% about myth of DS, 76% on identification of DS, 76% vitamin essential to bones, 81% identification of minerals and 62% have knowledge about protein powder. Refer (Table 1)

Table 1 Knowledge based responses

S. No	Knowledge Questions	Correct	Incorrect
		Frequency (percentage)	Frequency (percentage)
1	What is a dietary supplement?	106 (60.5%)	69 (39.5%)
2	What are the major constituents present in the dietary supplements?	131 (74.8%)	44(25.2%)
3	Identify the myth statement about dietary supplements	101 (57%)	74 (42.2%)
4	Identify the dietary supplements from the given option?	134 (76%)	41 (23.4%)
5	Which vitamin is essential for bone strength from the given option?	133 (76%)	42 (24%)
6	Identify the minerals from the given option	142 (81%)	33 (18%)
7	What is a protein powder?	109 (62%)	66 (37.7%)

Attitude based responses:

The table highlights a positive yet cautious attitude toward dietary supplements. Most respondents (85.7%) support their use, with 60% believing they can be taken without physician advice. However, concerns about side effects (56.5%) and interactions with medications (40.6%) persist. majority (61.7%) recognize dietary habits' influence on supplement needs, and 84% feel supplements meet expectations. Opinions are split on using supplements as substitutes for natural nutrients (43.4%) or reducing medication reliance (40%). One third of the study population 150 (85.7%) agreed that, supplements are suitable for all ages, cautious optimism underscores concern about risks and long-term value. Refer (Table 2)

Table 2: Attitude based responses

S. No	Attitude Questions	Positive N (%)	Negative N (%)
1	On your opinion, what is the purpose for taking supplements	150 (85.7%)	25 (14.2%)
2	Natural food which contains the nutrient or Dietary supplements.	148 (84%)	27 (15.4%)
3	Do you think dietary supplements can be taken without physician's advice?	105 (60%)	70 (40%)
4	What's your view on dietary supplements?	116 (66.2%)	59 (33.7%)
5	Do you consider the side effects associated with the supplements you are taking?	99 (56.57%)	76 (43.4%)
6	Does disliking of a natural food containing the nutrient, emphasize you to take a supplement containing that nutrient?	76 (43.4%)	99 (56.57%)
7	Do you think food habits have an impact on one taking dietary supplements?	108 (61.7%)	67 (38.2%)
8	Do you agree that supplements are always intended to satisfy the expected results?	147 (84%)	28 (16%)
9	Do you think intake of supplements along with medications has no effect on the medications?	104 (59.4%)	71 (40.5%)
10	Do you agree with the statement "Dietary supplements can be used by any age group of people"?	150 (85.7%)	25 (14.2%)
11	If you are supporting dietary supplements, what is the main reason behind it?	102 (58.2%)	73 (41.7%)
12	If you have decided to take supplements, what will be the reason?	89 (50.8%)	86 (49.1%)
13	Supplements decrease the burden of taking medicines?	70 (40%)	105(60%)

Practice based responses:

The table 3, reveals varied practices and awareness regarding dietary supplements. While 58.8% have used supplements, only 31.4% report sufficient knowledge, with 68.5% indicating limited awareness. Among users, 60.5% take supplements for specific health reasons, and 73.7% regularly use common forms. However, long-term consistent use is low (22.2%), suggesting sporadic or short-term usage. Additionally, opinions are divided on using supplements from specific health systems (48%). Refer (Table 3)

Table 3: Practice based responses

S. No	Practice Questions	Positive N (%)	Negative N (%)
1	Have you ever taken dietary supplements?	103 (58.8%)	70 (40%)
2	How do you know about dietary supplements?	55 (31.4%)	120 (68.5%)
3	If you are taking supplements, what made you do so?	106 (60.5%)	69 (39.4%)
4	Which form of supplements are you taking?	129 (73.7%)	46 (26.2%)
5	If you are taking supplements by yourselves, how long you are taking it?	39 (22.2%)	136 (77.7%)
6	From which system , you are taking supplements?	84 (48%)	87 (49.7%)

Table 4: Table 5: Association of age with KAP

Age domain	N (frequency)	Good	Moderate	Poor	P value	R^2
Knowledge						
15-20	86	33	36	17		
21-25	78	39	28	11	<0.0001	0.0682
26-30	11	05	04	02		
Attitude						
15-20	86	03	64	19		
21-25	78	09	64	05	<0.0001	0.0148
26-30	11	09	02	00		
Practice						
15-20	86	19	33	34	<0.0001	0.0679
21-25	78	17	36	25		
26-30	11	02	04	05		

P value< 0.005 considered statistically significant

Table 5; Association of educational qualification with KAP

Study domain	N (frequency)	Good	Moderate	poor	P value	R^2
Knowledge						
School	07	02	03	02		
Medical	122	61	46	15	<0.0001	0.0682
Non medical	46	14	19	13		
Attitude						
School	07	01	00	06		
Medical	122	09	94	19	<0.0001	0.0148
Non medical	46	03	38	05		
Practice						
School	07	00	06	01		
Medical	122	31	51	40	<0.0001	0.0679
Non medical	46	06	21	19		

P value< 0.005 considered statistically significant

DISCUSSION:

This study explored the knowledge, attitudes, and practices regarding dietary supplement use among a sample population in Chennai and drew comparisons to trends seen in Western countries. Analysis of socio-demographic data and responses highlights key insights and implications regarding the awareness, attitudes, and behaviours surrounding dietary supplement use, revealing similarities and differences with global trends.

Knowledge about Dietary Supplements

In our study, a majority (60.5%) of participants in Chennai had a basic understanding of dietary supplements, with specific knowledge about ingredients (74.8%), the role of vitamins in bone health (76%), and mineral identification (81%). However, only 57% of respondents could correctly identify myths about supplements. In Western countries, knowledge levels about dietary supplements tend to be higher due to widespread marketing and higher accessibility to health information [1-3]. A study in the U.S., for instance, found that about 80% of adults could identify the role of vitamins and minerals in overall health and well-being, often attributed to strong health education and public awareness campaigns [4].

Our results indicate a notable gap in specific knowledge about dietary supplements, particularly among younger individuals and non-medical students. This mirrors

findings in other countries where younger age groups also show a tendency toward misinformation about supplements, which calls for focused educational interventions to address these misconceptions [5,6].

In contrast, Western countries have made strides in establishing structured educational programs on dietary supplement use, especially in schools and universities. For example, the U.K. and U.S. have integrated public health campaigns promoting responsible supplement use and reducing misinformation through media and health-focused curricula [7]. Chennai, and India more broadly, could benefit from similar programs aimed at young adults to bridge this knowledge gap, especially given the rising trend of dietary supplement use.

Attitudes toward Dietary Supplements

Respondents in Chennai demonstrated a cautiously optimistic attitude towards supplements, with 85.7% supporting their use and 84% reporting satisfaction with the outcomes. However, concerns about side effects (56.5%) and a preference to avoid supplementation without medical advice (40%) reflect a healthy degree of caution. This is consistent with findings from Western studies, where users also acknowledge potential risks associated with supplements, such as drug-supplement interactions and unknown side effects [8,9].

In Western countries, attitudes toward dietary supplements have evolved towards informed caution, with regulatory bodies like the FDA in the U.S. issuing guidelines and warnings about overuse and unverified health claims. Consequently, consumers in Western countries often exhibit a balanced outlook, valuing natural nutrients over synthetic options, which is reflected in our study where only 43.4% were comfortable substituting supplements for natural foods [10,11].

Moreover, our study reveals that age and educational background significantly influenced attitudes in Chennai, with older respondents (26-30 years) and those with medical education showing more favourable attitudes. Western countries have also observed that demographic factors such as education level and income correlate with positive attitudes toward dietary supplements, as individuals with more education tend to be more informed and discerning about supplement use [12].

Practices Related to Dietary Supplement use

Our findings indicate that 58.8% of respondents in Chennai had used dietary supplements, often motivated by specific health needs (60.5%). However, only 31.4% felt knowledgeable about these supplements, suggesting a gap between usage and understanding. In Western countries, usage rates tend to be higher, with 77% of U.S. adults reporting regular supplement use, likely due to broader access and higher awareness levels [13,14].

Regularity of use was higher among Chennai respondents, with 73.7% using supplements sporadically, but only 22.2% used them consistently. In comparison, Western studies reveal a more consistent usage pattern, partly due to physician recommendations and widespread guidance on appropriate dosages. Additionally, around 48% of Chennai respondents used supplements from specific health systems, as opposed to the general trend in the U.S. and U.K., where consumers often follow more structured supplement regimens [15].

Our results also indicate that medical students in Chennai are more consistent with supplement usage than non-medical students, echoing trends in Western research where individuals with healthcare education are more likely to adopt consistent health practices. Western countries' accessibility to a broader range of supplements, coupled with strong regulation, may also contribute to higher and more regular usage patterns.

Implications of Knowledge, Attitudes, and Practices on Health Outcomes

The study suggests a complex relationship between knowledge, attitudes, and practices regarding dietary supplements in Chennai. The positive inclination toward supplement use among respondents is accompanied by gaps in specific knowledge, which may lead to misuse or unnecessary reliance. The cautious attitude towards side effects and interactions with medications further underscores the need for caution, as similarly seen in Western populations where users are often advised by healthcare professionals to weigh the benefits and risks of supplement use [16].

In Chennai, the inconsistent practices and knowledge gaps may hinder the full realization of supplement benefits. Western countries have proactively established safety standards and guidelines through agencies like the FDA and European Food Safety Authority (EFSA), which have contributed to higher public trust and more informed consumption patterns. Establishing similar systems in India could foster more effective and safer supplement use.

Educational and Policy Recommendations

Our findings underline the need for enhanced awareness and education on dietary supplements, especially in regions like Chennai, where supplement use is on the rise among younger populations. Western countries have successfully implemented public awareness campaigns and educational programs that promote informed supplement use. For instance, the U.K. regularly updates its public health policies on supplement use through NHS campaigns, addressing misconceptions and promoting evidence-based usage.

Incorporating similar initiatives in India, with a focus on local demographics and specific health challenges, could greatly improve the understanding of dietary supplements among non-medical students and younger individuals. Additionally, policies encouraging transparency in supplement labelling, evidence-based health claims, and information access could further support responsible usage. Healthcare providers should also engage more actively in discussing dietary supplements with younger patients, following the example of Western healthcare practices.[17]

CONCLUSION

This study presents a cautiously optimistic view of dietary supplement usage in Chennai. The study can be concluded that, there was a relatively high prevalence of DS consumption among Chennai teenagers, with notable knowledge gaps and inconsistent practices similar to those observed in other developing regions. Compared to Western countries, where regulatory measures and public health initiatives have promoted safer, more informed supplement use, there is an opportunity in Chennai for education-focused programs and policies to bridge these gaps. A collaborative approach involving healthcare professionals, educational institutions, and policymakers could help cultivate a well-informed population that can make safe, beneficial decisions about dietary supplements.

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