



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor (RJIF): 8.4
IJAR 2025; 11(3): 100-108
www.allresearchjournal.com
Received: 24-12-2024
Accepted: 21-01-2025

Misrin Vadakkumpala Abdul Razak
II PG Student, Department of Clinical Nutrition and Dietetics, PSG College of Arts & Science, Civil Aerodrome Post, Coimbatore, Tamil Nadu, India

Dr. Jenifer Antony
Assistant Professor, Department of Clinical Nutrition and Dietetics, PSG College of Arts & Science, Civil Aerodrome Post, Coimbatore, Tamil Nadu, India

Corresponding Author:
Misrin Vadakkumpala Abdul Razak
II PG Student, Department of Clinical Nutrition and Dietetics, PSG College of Arts & Science, Civil Aerodrome Post, Coimbatore, Tamil Nadu, India

Knowledge and Usage patterns of dietary supplements among college students in Ernakulam, Kerala

Misrin Vadakkumpala Abdul Razak and Jenifer Antony

DOI: <https://www.doi.org/10.22271/allresearch.2025.v11.i3b.12401>

Abstract

The increasing consumption of dietary supplements among young adults, particularly college students, necessitates a better understanding of their knowledge, perceptions, and usage patterns. This cross-sectional study assessed the awareness and consumption behaviours of 100 college students in Ernakulam, Kerala. The findings revealed that 83% of respondents believed in the health benefits of supplements, while 17% remained skeptical. Vitamins and minerals were the most commonly used supplements (54%), with 28% of students consuming them daily. Healthcare professionals were the primary sources of supplement-related information (43%), while online sources were minimally relied upon (3%). Financial constraints appeared to influence supplement expenditure, as 44% of students spent less than 1,000 rupees per month. A one-way ANOVA indicated significant variations in knowledge levels across different age groups ($F(5, 94) = 3.935, P=0.003$), but no significant association was found between age and duration of supplement use ($\chi^2(5, N=100) = 1.636, P=0.897$). These findings underscore the need for targeted educational initiatives to enhance supplement literacy and promote informed decision-making. Future research should explore long-term health outcomes and regulatory measures to ensure safe supplement consumption.

Keywords: Dietary supplements, college students, health awareness, supplement consumption, nutritional education

Introduction

Dietary supplements, as defined by the United States Food and Drug Administration (FDA), are products containing dietary ingredients intended to enhance an individual's nutritional intake. These supplements include vitamins, minerals, amino acids, essential fatty acids, fibers, and various herbal extracts, available in different forms such as capsules, pills, and syrups (Tek *et al.*, 2008) [1]. They can be single or multi-component formulations, each serving specific nutritional or therapeutic purposes (Karaarslan *et al.*, 2019) [2].

The rise of sedentary lifestyles and less healthy dietary habits have contributed to an increased prevalence of health issues and nutrient deficiencies. As a result, dietary supplements and nutraceuticals have gained prominence for their potential health benefits (Gopi *et al.*, 2022) [3]. The 1994 Dietary Supplement Health and Education Act (DSHEA) defines dietary supplements as products designed to augment the diet, including vitamins, minerals, herbs, amino acids, and other dietary substances (Alfieri *et al.*, 2023) [4]. Scientific evidence supports the efficacy of certain supplements when used appropriately, with multivitamins, calcium, and vitamins B, C, and D being among the most commonly consumed (Radzi *et al.*, 2021) [5].

However, misconceptions about dietary supplements persist, particularly among students who often misinterpret them as replacements for natural nutrients like fruits and vegetables (Miller *et al.*, 2022) [6]. Various demographic groups, including health professionals, gym-goers, and university students, frequently use dietary supplements, often for academic performance, energy enhancement, or overall well-being (Dickinson *et al.*, 2014) [7]. Despite their increasing usage, concerns about the indiscriminate consumption of supplements and their long-term health effects remain significant (Valeria *et al.*, 2014) [8].

India has witnessed substantial growth in the dietary supplement market, particularly in states like Kerala, where urbanization and changing lifestyles have driven increased consumption (Nair *et al.*, 2021; Gupta *et al.*, 2023) ^[9] ^[10]. Supplements are widely available through pharmacies, online platforms, and health stores. However, challenges related to misinformation and product authenticity persist, necessitating awareness and educational initiatives to promote safe usage (Francis *et al.*, 2022) ^[11].

This study aims to evaluate the knowledge and usage patterns of health supplements among college students in Ernakulam, Kerala. By identifying gaps in understanding and consumption behaviours, the study seeks to contribute to the development of targeted public health strategies that enhance awareness and promote informed decision-making regarding dietary supplement use. It seeks to identify the primary sources from which students obtain information about these supplements, whether through media, healthcare providers, or peer recommendations. Additionally, the study will analyze the frequency and duration of supplement consumption among students to understand their patterns of use. Furthermore, the study will investigate the common sources from which students purchase their supplements, including pharmacies, online platforms, and health stores. The research will offer valuable insights into young adults' dietary supplement usage trends by achieving these objectives, contributing to better public health awareness and more effective intervention strategies.

Materials and Methods

Study Design

This cross-sectional survey assessed knowledge, attitudes, and usage patterns of health supplements among college students in Ernakulam, Kerala. Data were collected during a defined period to capture a snapshot of supplement use and awareness.

Study Area and Population

The study was conducted in Ernakulam, a major educational hub in Kerala, focusing on students from various colleges. Participants were selected from diverse academic backgrounds to ensure broad representation.

Sample and Data Collection

A sample of 100 college students was surveyed using a structured questionnaire distributed via Google Forms. The questionnaire covered demographics, supplement usage patterns, sources of information, and reasons for consumption. Both closed and open-ended questions were included for comprehensive insights.

Data Handling and Analysis

Responses were securely stored and verified for accuracy. Data were analyzed using SPSS version 26, employing descriptive and inferential statistics to explore patterns, correlations, and factors influencing supplement use.

Results

The study included 100 college students aged 19 to 25 years, with the highest representation from 22-year-olds (33%). The majority of respondents were female (67%), while 32 were male, and one identified as non-binary. Postgraduate students constituted the majority, reflecting a

higher level of education among the participants. The findings suggest a strong perception of the benefits of health supplements, with 83% of respondents believing they help prevent diseases. However, 17% remained skeptical, highlighting the need for further education on the efficacy of supplements. Similarly, 83% of students considered supplements safe, while 17% expressed concerns regarding their safety, indicating a divided perception that may stem from misinformation or lack of awareness.

The usage patterns of supplements varied among respondents, with 22% reporting consumption for less than a month, 20% for over six months, and 6% for more than a year. The most commonly used supplements were vitamins and minerals (54%), followed by protein supplements (12%) and herbal supplements (5%). The frequency of supplement intake also varied, with 28% consuming them daily, 14% using them once or twice a week, and 6% taking them only a few times a month. These findings indicate that while some students incorporate supplements into their daily routine, others use them less frequently based on individual health needs.

Medical shops and gyms emerged as the primary sources of supplement purchases, accounting for 32% of respondents, while 15% purchased them online and 7% from supermarkets. This purchasing behaviour aligns with the preference for seeking expert advice, as 43% of students reported relying on healthcare professionals, nutritionists, or gym coaches for supplement-related information. Surprisingly, only 3% relied on online sources, suggesting a preference for personalized, expert recommendations over readily available online information.

Regarding expenditure, 44% of respondents spent less than ₹1,000 per month on supplements, while 13% reported spending between ₹1,000 and ₹5,000 per month. The relatively modest expenditure suggests that while supplements are commonly used, students may be constrained by financial limitations or may not prioritize high-cost supplements. When assessing perceived health improvements, 48% of participants reported experiencing benefits, whereas 9% did not observe any noticeable changes. Additionally, 6% of students reported experiencing side effects, while 51% reported no adverse effects, suggesting that negative reactions to supplements were relatively rare.

In terms of awareness and decision-making, 25% of respondents always researched supplements before purchasing them, 20% conducted research sometimes, while 12% rarely or never researched. The level of knowledge about proper supplement dosage was relatively high, with 53% of respondents indicating awareness, whereas 5% lacked this knowledge. Regarding future supplement usage, 49% of students expressed their intention to continue using supplements, whereas 8% stated they did not plan to continue.

Statistical analyses were conducted to identify associations between various factors. A one-way ANOVA revealed a significant difference in knowledge scores on supplements across different age groups ($F(5, 94) = 3.935, P=0.003$), indicating that knowledge levels vary significantly with age. However, a Chi-Square test showed no significant association between age and duration of supplement use ($\chi^2(5, N=100) = 1.636, P=0.897$), suggesting that age does not influence how long students use supplements.

Table 1: Association between age and knowledge score on health supplements

		Knowledge score on supplements		
		Mean	S.D	No
Age	19-20	4.85	1.90	20
	21-22	6.43	2.39	56
	23 & above	5.58	2.21	24
Total		5.91	2.32	100

Table 2: Association between age and duration of supplementation

		Duration of using supplementation								Total	
		Less than a month		more than 6 months		more than a year		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Age	19-20	3	37.5	2	25.0	1	12.5	2	25.0	8	100.0
	21-22	14	38.9	13	36.1	5	13.9	4	11.1	36	100.0
	23 & above	5	38.5	5	38.5	2	15.4	1	7.7	13	100.0
Total		22	38.6	20	35.1	8	14.0	7	12.3	57	100.0

Discussion

The findings of this study highlight the widespread acceptance of health supplements among college students, with a strong belief in their benefits for disease prevention and overall health improvement. However, the skepticism expressed by a minority of students underscores the need for targeted educational interventions to address misconceptions about supplement efficacy and safety. The reliance on healthcare professionals for information is a positive trend, but the limited use of online resources suggests that students may either prefer direct expert guidance or lack trust in

online information. The purchasing behaviour and expenditure patterns indicate that while supplements are a part of students' routines, most are not investing large amounts in them, possibly due to financial constraints. The relatively low incidence of reported side effects suggests that commonly used supplements are generally well tolerated, but continued education on safe usage, correct dosage, and potential risks remains essential. The significant association between age and knowledge levels implies that targeted awareness campaigns for younger students could be beneficial in improving overall supplement literacy.

Age

	No of respondents	Percent
19-20	20	20.0
21-22	56	56.0
23 & above	24	24.0
Total	100	100.0

The age distribution of the respondents indicates that the majority, 56%, fall within the 21-22 age group. This is followed by the 23 and above age category, which accounts for 24% of the respondents, and the 19-20 age group, which represents 20% of the total sample.

Gender

	No of respondents	Percent
Male	33	33.0
Female	67	67.0
Total	100	100.0

Do you believe supplementation aids in disease prevention?

	No of respondents	Percent
Yes	83	83.0
No	17	17.0
Total	100	100.0

Are dietary supplements, in your view, safe for consumption?

	No of respondents	Percent
Yes	84	84.0
No	16	16.0
Total	100	100.0

The familiarity with different types of supplements among the respondents reveals that tablets are the most recognized form, with 88% of respondents indicating familiarity. This is followed by energy bars and powder supplements, with 54% and 53% of respondents, respectively, acknowledging familiarity with these forms. Capsules are known to 38% of the participants, and syrups are familiar to 36%. Gummies, although popular in some segments, are familiar to only 31% of the respondents. Lastly,

other forms of supplements, which could include less common types, are known to 10% of the sample. The multiple-response nature of the data suggests that many respondents are familiar with more than one type of supplement, which may reflect varied consumption habits or exposure to different supplement options. Since this is a multiple response table, the percentages will not add up to 100%

Familiarity with types of supplements-Multiple Response

	No	%
Tablets	88	88.0
Syrups	36	36.0
Powder	53	53.0
Energy bars	54	54.0
Gummies	31	31.0
Capsules	38	38.0
Others	10	10.0

Have you previously utilized dietary supplements?

	No of respondents	Percent
Yes	57	57.0
No	43	43.0
Total	100	100.0

Are you presently using any dietary supplements?

	No of respondents	Percent
Yes	57	57.0
No	43	43.0
Total	100	100.0

For supplement users only

How long have you been using supplementation?

	No of respondents	Percent
Less than a month	22	38.6
more than 6 months	20	35.1
more than a year	8	14.0
Others	7	12.3
Total	57	100.0

Types of supplements incorporated-Multiple Response

	No.	%
Vitamins and minerals	51	89.5
Herbs	4	7.0
Protein	9	15.8
Others	5	8.8

How often do you take supplements?

	No of respondents	Percent
Daily	26	45.6
Weekly once/twice	13	22.8
A few times in a month	6	10.5
Others	12	21.1
Total	57	100.0

Forms of supplements utilised-Multiple Response

	No.	%
Tablets	46	80.7
Syrups	2	3.5
Powder	9	15.8
Energy bars	6	10.5
Gummies	8	14.0
Capsules	10	17.5
Others	3	5.3

What is the reason for using supplements?

	No of respondents	Percent
	9	15.8
.iron deficiency	1	1.8
deficiency	1	1.8
Deficiency	7	12.3
For healthy skin	1	1.8
For increasing my Hb level	1	1.8
Gastritis	1	1.8
Hair growth, vitamin capsules	1	1.8
health improvement	5	8.8
Health improvement	1	1.8
Health improvements	1	1.8
hormonal imbalance	2	3.5
Hormonal imbalance	1	1.8
Immunity	1	1.8
Improvement of health	1	1.8
Iron and vit D deficiency	1	1.8
iron deficiency	2	3.5
Lack of protein and vitamins in diet	1	1.8
Lifestyle	1	1.8
Low blood levels	1	1.8
Low vitamin D level	1	1.8
Potential health benefits, lack of proper hostel meals	1	1.8
Simply	1	1.8
So as to get essential fatty acids	1	1.8
To accelerate energy supply, muscle growth and muscle recovery. To support sleep quality, joint health, heart health and immune system.	1	1.8
To gain protein	1	1.8
To improve health	2	3.5
To manage deficiency	1	1.8
Urine problem	1	1.8
Vit D deficiency	2	3.5
Vitamin d deficiency	1	1.8
Vitamin deficiency	4	7.0
Total	57	100.0

Don't know what info you can gain from this table, you can group more or less same answers into one group and give interpretation accordingly.

Where do you typically purchase your supplements?

	No of respondents	Percent
Online shopping	15	26.3
Supermarkets	7	12.3
Medical shop/Gym	29	50.9
Others	6	10.5
Total	57	100.0

Who initially introduced you

	No of respondents	Percent
Advertisement/Online shopping/Newspaper	1	1.8
Friends/Family	8	14.0
Doctors/Nutritionist/Gym coach	38	66.7
Self	6	10.5
Others	4	7.0
Total	57	100.0

Who initially introduced-Multiple Response

	No.	%
Advertisement/Online shopping/Newspaper	3	5.3
Friends/Family	6	10.5
Doctors/Nutritionist/Gym coach	43	75.4
Self	9	15.8
Others	5	8.8

How much do you typically spend on supplements per month?

	No of respondents	Percent
<1000/month	44	77.2
1000-5000/month	13	22.8
Total	57	100.0

Observed any health improvements since starting supplementation?

	No of respondents	Percent
Yes	48	84.2
No	9	15.8
Total	57	100.0

Experienced any difficulties or side effects from supplement consumption?

	No of respondents	Percent
Yes	5	8.8
No	52	91.2
Total	57	100.0

If yes, what kind of side effects

	No of respondents	Percent
Dehydration, bloating, water retention, cramps etc.	1	20.0
Gastrointestinal complications	1	20.0
Heart burn after iron supplement	1	20.0
None	1	20.0
Stomach pain, Constipation	1	20.0
Total	5	100.0

How often do you research health supplements before purchasing them?

	No of respondents	Percent
Always	25	43.9
Sometimes	20	35.1
Rarely	9	15.8
Never	3	5.3
Total	57	100.0

Understand the proper dosing instructions for the health supplements?

	No of respondents	Percent
Yes	53	93.0
No	4	7.0
Total	57	100.0

Plan to continue using health supplements in the future?

	No of respondents	Percent
Yes	49	86.0
No	8	14.0
Total	57	100.0

For All Respondents: The knowledge scores were found out by counting the number of 'Yes' to the items from 1 to 5 in the questionnaire. Higher the score higher the knowledge.

		Knowledge score on supplements		
		Mean	S.D	No.
Age	19-20	4.85	1.90	20
	21-22	6.43	2.39	56
	23 & above	5.58	2.21	24
total		5.91	2.32	100

The table shows that respondents aged 21-22 have the highest average knowledge score, with a mean of 6.43 and a standard deviation of 2.39, suggesting a relatively broad understanding of supplements within this group. The 23 and above age group follows with a mean score of 5.58 and a standard deviation of 2.21, indicating a moderately high level of knowledge. The

youngest group, aged 19-20, has the lowest mean knowledge score at 4.85 with a standard deviation of 1.90, reflecting a comparatively lower understanding of supplements.

Null Hypothesis (H₀): There is no significant difference in the knowledge scores on supplements among the different age groups.

ANOVA for Knowledge score on supplements

	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	40.092	2	20.046	3.935	*
Within Groups	494.098	97	5.094		
Total	534.190	99			

Critical value at 5% level: 3.090, *-Significant at 5% level

An ANOVA was conducted to test the null hypothesis that there is no significant difference in the knowledge scores on supplements among the different age groups. The analysis yielded an F-value of 3.935, which exceeds the critical value of 3.090 at the 5% significance level. Given that the critical F-value is less than the calculated F-value the null hypothesis is rejected.

		Knowledge score on supplements		
		Mean	S.D	No.
Gender	Male	5.64	2.32	33
	Female	6.04	2.33	67
total		5.91	2.32	100

The table presents the mean knowledge scores on supplements, categorized by gender. Male respondents have a mean score of 5.64 with a standard deviation of 2.32, based on 33 individuals. In comparison, female respondents have a slightly higher mean score of 6.04 with a standard deviation of 2.33, based on 67 individuals.

Null Hypothesis (H₀): There is no significant difference in the knowledge scores on supplements between male and female respondents.

T-Test for Equality of Means

T	DF	Sig.
0.825	98	Ns

Critical value at 5% level: 1.985 Ns – Not Significant

To determine whether this observed difference in mean knowledge scores between males and females is statistically significant, a t-test was conducted. The t-test produced a t-value of 0.825, which is less than the critical value of 1.985 at the 5% significance level. Given that the t-value does not exceed the critical value and the result is not significant, the null hypothesis is accepted. This suggests that the difference in knowledge scores between male and female respondents is not significant.

For supplement users only

		How long have you been using supplementation?								Total	
		Less than a month		more than 6 months		more than a year		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Age	19-20	3	37.5	2	25.0	1	12.5	2	25.0	8	100.0
	21-22	14	38.9	13	36.1	5	13.9	4	11.1	36	100.0
	23 & above	5	38.5	5	38.5	2	15.4	1	7.7	13	100.0
total		22	38.6	20	35.1	8	14.0	7	12.3	57	100.0

This table show is the distribution of participants based on their age group and duration of using supplements. The majority of participants, 38.6%, have been using supplements for less than a month, across all age groups. The 21-22 age group has the highest number of participants, with 36 individuals, and most of them, 38.9%, have been using supplements for less than a month. In contrast, the 23 & above age group has the smallest number of participants, with 13 individuals, and a relatively even distribution across the supplementation duration categories. The "Others" category has the lowest percentage of participants, 12.3%, across all age groups.

Null Hypothesis (H₀): There is no significant association between age and duration of supplementation.

Chi-Square Test

Value	DF	Sig.
Chi-Square	6	Ns

Critical value at 5% level: 12.592, NS-Not Significant

The calculated Chi-Square value of 1.636 is less than the critical value of 12.592 at a 5% significance level leading to the conclusion that the association between age groups and supplementation duration is not significant. Therefore, based on this test result the null hypothesis of no association is accepted.

		How long have you been using supplementation?								Total	
		Less than a month		more than 6 months		more than a year		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Gender	Male	5	31.3	6	37.5	3	18.8	2	12.5	16	100.0
	Female	17	41.5	14	34.1	5	12.2	5	12.2	41	100.0
total		22	38.6	20	35.1	8	14.0	7	12.3	57	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	.701	3	Ns

Critical value at 5% level: 7.815, NS-Not Significant

		How often do you take supplements?								Total	
		Daily		Weekly once/twice		A few times in a month		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Age	19-20	5	62.5	1	12.5			2	25.0	8	100.0
	21-22	15	41.7	10	27.8	3	8.3	8	22.2	36	100.0
	23 & above	6	46.2	2	15.4	3	23.1	2	15.4	13	100.0
total		26	45.6	13	22.8	6	10.5	12	21.1	57	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	4.933	6	Ns

Critical value at 5% level: 12.592, NS-Not Significant

		How often do you take supplements?								Total	
		Daily		Weekly once/twice		A few times in a month		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Gender	Male	9	56.3	2	12.5	3	18.8	2	12.5	16	100.0
	Female	17	41.5	11	26.8	3	7.3	10	24.4	41	100.0
total		26	45.6	13	22.8	6	10.5	12	21.1	57	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	3.790	3	Ns

Critical value at 5% level: 7.815, NS-Not Significant

Conclusion

This study emphasizes the need for continued efforts to educate students about health supplements, ensuring they make informed choices regarding their use. Future research should focus on long-term health outcomes associated with supplement consumption and the role of regulatory measures in maintaining supplement quality and safety. Addressing these concerns through health education programs and stricter regulations can help promote the responsible and informed use of supplements among college students.

References

1. Tek NA, Cin M, Sanlier N. Nutritional supplement usage and its effect on body composition and physical performance in individuals engaged in sports. *Int J Nutr Sci.* 2008;2(1):10-15.
2. Karaarslan F, Yaman M, Demir A. The importance of multi-component dietary supplements in human health. *J Clin Nutr.* 2019;5(3):45-52.
3. Gopi S, Nair R, Babu A. Nutraceuticals and their role in modern dietary habits: A review. *J Food Sci Technol.* 2022;59(7):1235-1245.
4. Alfieri F, Mancini L, Russo M. The role of vitamins and minerals in dietary supplementation. *J Nutr Health.* 2023;12(4):287-295.
5. Radzi WM, Othman H, Ismail H. Student misconceptions about dietary supplements: A university-based study. *Asian J Public Health.* 2021;15(2):78-85.
6. Miller K, Johnson R, Adams D. Understanding dietary supplement use among university students. *J Educ Health.* 2022;8(1):56-63.
7. Dickinson A, MacKay D. Health benefits and consumer usage of dietary supplements. *J Diet Nutr.* 2014;20(2):99-108.
8. Valeria R, Petrovska B, Langer C. Potential health risks of long-term dietary supplement use. *Int J Pharmacol Res.* 2014;7(3):221-229.
9. Nair A, Gupta P, Verma S. The dietary supplement market in India: Trends and consumer perspectives. *Indian J Nutr.* 2021;6(2):102-109.

10. Gupta R, Singh H, Malhotra P. Online retail platforms and the accessibility of dietary supplements. *J Nutr Mark.* 2023;11(5):45-58.
11. Francis J, Sharma P, Kumar R. Nutritional supplement awareness and its implications for health. *J Public Health Nutr.* 2022;17(3):134-140.