

Prevalence and Predictors for Use of Dietary Supplements among Young Adult Gym Enthusiasts: A Cross-Sectional Study

Karri Vijaya¹, Epari Ravi Kiran², Mukesh Kumar Padhy³

¹Professor and HOD, Department of Community Medicine, NRI Institute of Medical Sciences, Bheemunipatnam, Sanghivalasa, Visakhapatnam, Andhra Pradesh, India. ²Professor, Department of Community Medicine, GVP Institute of Health Care and Medical Technology, Visakhapatnam, Andhra Pradesh, India. ³Intern, Department of Community Medicine, RI Institute of Medical Sciences, Bheemunipatnam, Sanghivalasa, Visakhapatnam, Andhra Pradesh, India

Abstract

Background: Dietary supplements are increasingly used by young gym-going adults in urban India who are influenced by fitness trends, social media, and the desire to emulate an idealised physique. Indiscriminate, unsupervised use of these products has been linked to gastric disturbances, allergies, and hepatic and renal complications. Data on the prevalence and predictors of such use among Indian gym-goers remain limited. The objective is to determine the prevalence of dietary supplement use among young adult gym-goers, and to assess the predictors influencing their decision to use dietary supplements. **Material and Methods:** A community-based cross-sectional study was conducted over two months among 208 regular gym-goers (18–30 years) attending gyms and fitness centres in and around Visakhapatnam, selected by purposive sampling. Data were collected using a pre-tested, semi-structured questionnaire and analysed using SPSS version 21.0. Categorical variables were compared using the Chi-square test or Fisher's exact test and Z –test with statistical significance set at $p < 0.05$. **Results:** The prevalence of dietary supplement use was 79.3%. Protein powder was the most commonly used supplement (75.96%), followed by vitamins (36.06%) and creatine (35.58%). Most users (65.9%) had been using supplements for less than six months, and 68% consumed them daily. Gym trainers (32.2%) were the leading source of information, and 55.8% of purchases were made online. Improvement in overall health (58.17%) was the most cited reason for use. Awareness of side effects was reported by 66% of participants, although only 7% had actually experienced any. No statistically significant association was found between dietary supplement use and demographic characteristics (age, gender, education). However, a significant association was observed between supplement use and the importance placed on being in good shape ($p = 0.001$), and the belief that supplements are necessary to achieve fitness goals ($p = 0.045$). Creatine use showed a significant association with male gender ($Z = 4.82$). **Conclusion:** Dietary supplement use is highly prevalent among young adult gym-goers in this urban Indian setting and is driven predominantly by psychological and body-image-related predictors rather than demographic factors. Structured educational interventions involving certified trainers and nutrition experts are warranted to promote safe and informed supplement use.

Keywords: Cross-sectional studies; Dietary supplements; Gym enthusiasts; Predictors; Prevalence; Protein powder; Young adults.

Received: 10 August 2026

Revised: 22 August 2026

Accepted: 14 September 2026

Published: 29 September 2026

INTRODUCTION

Urban India has witnessed a marked rise in health consciousness in recent years, driven by lifestyle changes, increased online connectivity, and heightened awareness through media and social influence. Fitness has evolved from a hobby into a priority for many young people, and this trend has fuelled a growing reliance on dietary supplements—not merely to complement the diet, but at times as a substitute for proper nutrition. The idolisation of celebrities and sportspersons by a large segment of the Indian population reinforces the desire to emulate their physiques, and supplements ranging from vitamins and minerals to protein powders and performance enhancers are increasingly perceived as essential to achieving fitness goals. Indiscriminate use of these products without consultation from qualified health professionals can result in adverse effects such as allergies, gastric disturbances, abnormal weight gain, and, in severe cases, hepatic and renal disease.^[1,2] Dietary supplements are formulated to complement, rather than replace, a balanced diet; however, a

common misconception among young users is that supplements can substitute for a diet rich in fruits and vegetables.^[2] Large population-based studies illustrate the scale of this phenomenon. A survey of over 4,000 adults in Denmark found that more than half used micronutrient supplements to maintain a healthy diet.^[3] Among pharmacy students in Saudi Arabia, 46.8% reported supplement use, but only half did so under medical guidance.^[4] In India, a multi-centre study from Ludhiana reported a 70% prevalence of supplement use among gym trainees.^[5] The Indian dietary supplement market has grown at a

Address for correspondence: Dr. Epari Ravi Kiran, Professor, Department of Community Medicine, GVP Institute of Health Care and Medical Technology, Visakhapatnam, Andhra Pradesh, India. E-mail: dravikiran@gmail.com

DOI:
10.21276/amit.2026.v13.i3.1078

How to cite this article: Vijaya K, Kiran ER, Padhy MK. Prevalence and Predictors for Use of Dietary Supplements among Young Adult Gym Enthusiasts: A Cross-Sectional Study. *Acta Med Int.* 2026;13(3):394-402.

compound annual growth rate of 15% between 2014 and 2019, reaching an estimated value of USD 3.5 billion,^[6] yet an estimated 60–70% of supplements sold in India are believed to be counterfeit, making genuine and adulterated products difficult to distinguish. The protein supplement market alone is projected to reach USD 10.80 billion by 2030, with gym enthusiasts forming its largest consumer base.^[7-9]

Commonly used products include whey and casein proteins, branched-chain amino acids, creatine, glutamine, mass gainers, multivitamins, omega-3 fatty acids, and pre- and post-workout formulations. Whey protein, favoured for its rapid absorption and role in stimulating muscle protein synthesis, is the most widely used supplement among gym-goers.^[8] While such products can offer measurable benefits when used appropriately, uninformed or excessive use—particularly of unregulated grey-market formulations—has been associated with health risks including hepatic and renal impairment, hypertension, and headache.^[9]

Despite the expanding market and popularity of these products, there remains limited Indian evidence on the prevalence and predictors of dietary supplement use specifically among young adult, non-athlete gym-goers. Understanding usage patterns and the motivations underlying them is essential for developing targeted educational and regulatory strategies that promote safe and informed supplement use. This study was therefore undertaken with the following objectives.

Objectives

- To determine the prevalence of dietary supplement use among young adult gym-goers.
- To assess the predictors influencing their decision to use dietary supplements.

MATERIALS AND METHODS

Study design and setting: A community-based cross-sectional study among all young adult gym trainees attending selected gyms and fitness centres in and around Visakhapatnam during the study period over a period of two months.

Study population and sampling: All young adult gym

trainees aged 18–30 years who had regular gym attendance which was defined as resistance training or weightlifting at least twice weekly and those who provided informed consent were included in the study. Those who were below 18 years and above 30 years, who had inconsistent gym attendance (fewer than two sessions per week), who were professional athletes or individuals with extensive nutrition training and members who were not accessible after a minimum of three gym visits by the principal investigator were excluded from the study. The sample size was calculated using the formula $N = Z^2Pq/E^2$, where $Z = 1.96$ (95% confidence level), $P = 0.84$ (prevalence of dietary supplement use from a previous study),^[10] and $E = 0.05$ (allowable error), giving a minimum required sample of 207, rounded to 208. Gyms and fitness centres in and around the medical college were selected by purposive sampling, and eligible members were recruited consecutively until the target sample size was achieved. Approval was obtained from the Institutional Research Committee and Institutional Human Ethics Committee, along with permissions from participating gyms. Each gym was visited a minimum of three times, extended as required. Data were collected using a self-administered questionnaire, with the tool translated and validated for the local language and pilot-tested prior to use.

Study instrument: A semi-structured questionnaire covering general information, socio-economic factors, dietary habits, physical activity, and supplement use was developed, pre-tested on 10 respondents (who were excluded from the final sample), and refined before use.

Statistical analysis: Data were entered in Microsoft Excel and analysed using SPSS version 21.0. Normally distributed quantitative variables were summarised as mean $\pm$ standard deviation, and non-normally distributed variables as median with interquartile range. Qualitative variables were expressed as percentages. Categorical variables were compared using Pearson's Chi-square test or Fisher's exact test, as appropriate, with statistical significance set at $p < 0.05$.

Ethical Considerations: Approval of Institutional Human Ethics Committee of NRI Institute of Medical Sciences vide Serial No. IEC/NRI/116/2024 dated 30-10-2024 was obtained prior to commencement of the study. The purpose of the study was explained to all participants, and written informed consent was obtained before enrolment.

RESULTS

Table 1. Socio-demographic profile of study participants (N = 208)

Variable	Frequency (n)	Percentage (%)
Age (years)		
18–21	88	42.3
22–25	86	41.3
26–30	34	16.3
Gender		
Male	149	71.6
Female	59	28.4
Occupation		
Medical student	14	6.7
B.Tech student	3	1.4
Other courses	120	57.7
Professional	41	19.7
Job holder	22	10.6

Unemployed	8	3.8
Education		
Illiterate	1	0.5
Primary	1	0.5
Secondary	2	1
PUC	40	19.2
Graduate	160	76.9
Post-graduate	4	1.9
Marital status		
Single	186	89
Married	22	11

A total of 208 young adult gym-goers were enrolled in the study. Most participants were aged 18–21 years (42.3%), male (71.6%), pursuing graduate studies (76.9%), and single (89.0%).

Table 2: Age-wise distribution of participants by gender (N = 208)

Age group (years)	Male n (%)	Female n (%)	Total n (%)
18–21	62 (41.61)	26 (44.07)	88 (42.31)
22–25	63 (42.28)	23 (38.98)	86 (41.35)
26–30	24 (16.11)	10 (16.95)	34 (16.35)
Total	149 (100.00)	59 (100.00)	208 (100.00)

Within the 18–21-year age group, females predominated (44.07%); males predominated in the 22–25-year group (42.28%); the 26–30-year group showed near-equal representation of both genders.

Table 3: Prevalence of dietary supplement use among study participants (N = 208)

Response	Frequency (n)	Percentage (%)
Yes	165	79.3
No	43	20.7

Overall, 79.3% of participants reported using dietary supplements in some form.

Table 4: Types of dietary supplements used by study participants (N = 208) *

Type of supplement	Frequency (n)	Percentage (%)
Protein powder	158	75.96
Creatine	74	35.58
Branched-chain amino acids (BCAA)	16	7.69
Vitamins	75	36.06
Minerals	41	19.71
Glutamine	7	3.37
Others	5	2.40

*Multiple responses permitted

Protein powder was the most commonly used supplement (75.96%), followed by vitamins (36.06%) and creatine (35.58%).

Table 5: Duration of dietary supplement consumption among users (N = 208)

Duration	Frequency (n)	Percentage (%)
Less than 6 months	137	65.9
6 months to 1 year	37	17.8
1 year to 2 years	18	8.7
Greater than 2 years	16	7.7
Total	208	100.0

The majority of users (65.9%) had been consuming dietary supplements for less than six months.

Table 6: Monthly expenditure on dietary supplements among users (N = 208)

Monthly expenditure (₹)	Frequency (n)	Percentage (%)
< 2000	93	44.71
2000–7000	90	43.27
7000–12000	18	8.65
> 12000	7	3.37
Total	208	100.00

Nearly half of participants (44.71%) spent less than ₹2000 per month on dietary supplements, while 43.27% spent between ₹2000 and ₹7000.

Table 7: Frequency of dietary supplement use among users (N = 208)

Usage of dietary supplement	Frequency (n)	Percentage (%)
Daily	142	68
Weekly	35	17
Monthly	2	1
Rarely	29	14
Total	208	100

The majority of users (68%) consumed dietary supplements on a daily basis.

Table 8: Sources of information about dietary supplements (N = 208)

Source	Frequency (n)	Percentage (%)
Doctor	38	18.3
Friends	47	22.6
Social media	42	20.2
Gym trainers	67	32.2
Others	14	6.7

*Multiple responses permitted.

Gym trainers were the leading source of information (32.2%), followed by friends (22.6%) and social media (20.2%).

Table 9: Primary reasons for using dietary supplements (N = 208)*

Reason	Frequency (n)	Percentage (%)
To enhance athletic performance	66	31.73
To improve overall health	121	58.17
To support muscle growth	103	49.52
Body shaping	85	40.87
Weight gain	26	12.5

*Multiple responses permitted.

Improving overall health (58.17%) and supporting muscle growth (49.52%) were the most cited reasons for supplement use.

Table 10: Sources of purchase of dietary supplements (N = 208)*

Source of purchase	Frequency (n)	Percentage (%)
Exclusive outlet	71	17.3
Gym	63	15.4
Medical store	47	11.5
Online	228	55.8

*Multiple responses permitted.

The majority of purchases (55.8%) were made online, followed by exclusive outlets (17.3%).

Table 11: Perceived benefits after consumption of dietary supplements (N=208)*

Benefit	Frequency(n)	Percentage (%)
Boost in energy	106	50.96
Enhancement in strength	130	62.50
Enhancement in appearance	82	39.42
Others	14	6.73

*Multiple responses permitted.

Enhancement of strength (62.5%) and a boost in energy (50.96%) were the most frequently reported perceived benefits.

Table 12: Awareness of side effects of dietary supplements among study participants (N = 208)

Response	Frequency (n)	Percentage (%)
Yes	137	66
No	71	34
Total	208	100

Two-thirds of participants (66%) were aware of potential side effects of dietary supplements.

Table 13: Experience of side effects among dietary supplement users (N = 208)

Response	Frequency (n)	Percentage (%)
Yes	15	7
No	193	93
Total	208	100

The overwhelming majority of users (93%) did not experience any side effects from dietary supplement use.

Table 14: Distribution of predictors for dietary supplement use (N = 208)

Predictor	Frequency (n)	Percentage (%)
Importance of physical appearance		
Very important	129	62
Somewhat important	68	32.7
Not very important	10	4.8
Not at all important	1	0.5
Pressure from social media to maintain physique		
Yes	87	41.8
No	121	58.2
Importance of being in good shape		
Very important	112	53.8
Somewhat important	81	38.9
Not very important	12	5.8
Not at all important	3	1.4
Anxious/self-conscious about body		
Yes	133	63.9
No	75	36.1
Frequency of comparing physique with others		
Always	32	15.4
Never	28	13.5
Often	50	24
Rarely	30	14.4
Sometimes	68	32.7
Belief that supplements are necessary for fitness goals		
Yes	138	66
No	70	34

Physical appearance was rated 'very important' by 62.0% of participants; 63.9% reported being self-conscious about their body, and 66.0% believed supplements were necessary to achieve their fitness goals.

Table 15: Association between dietary supplement use and demographic characteristics (N = 208)

Variable	Users	Non-users	P-value
Age (years)			
18–21	67	21	0.334
22–25	68	18	
26–30	30	4	
Gender			
Male	118	31	1.000
Female	47	12	
Education			
Illiterate	0	1	0.223
Primary	1	0	
Secondary	2	0	
PUC	29	11	
Graduate	129	31	
Post-graduate	4	0	
Gym membership duration (years)			
0–1	150	40	0.697
1–2	10	2	
2–4	2	0	
>5	3	0	

No statistically significant association was observed between demographic characteristics and dietary supplement use ($p > 0.05$).

Table 16: Association between reason for dietary supplement use and demographic characteristics (N = 208)

Reason for using Dietary Supplement	Gender				Age				
	Male	Female	Total	P value	18-21	22-25	26-30	Total	P value
Enhance athletic performance	58	8	66	<0.001*	29	23	14	66	0.075
Improve overall health	80	41	121	0.037*	55	42	24	121	0.002*
Support muscle growth	85	18	103	<0.001*	38	45	20	103	0.008*
Body shaping	66	19	85	0.110	33	35	17	85	0.032*
Weight gain	21	5	26	0.269	10	13	3	26	0.048*

* $p < 0.05$

A statistically significant association with gender was observed for enhancing athletic performance ($\chi^2 = 12.56$, $df = 1$, $p < 0.001$), improving overall health ($\chi^2 = 4.34$, $p =$

0.037), and supporting muscle growth ($\chi^2 = 11.91$, $p < 0.001$), with all three reasons cited disproportionately more often by male participants. Body shaping ($p = 0.110$) and weight gain

($p = 0.269$) showed no significant gender association. With respect to age, the distribution across the three age bands (18–21, 22–25, 26–30 years) differed significantly from an even distribution for improving overall health ($\chi^2 = 12.02$, $df = 2$, $p = 0.002$), supporting muscle growth ($\chi^2 = 9.69$, $p = 0.008$), body shaping ($\chi^2 = 6.87$, $p = 0.032$), and weight gain ($\chi^2 = 6.08$, $p = 0.048$), indicating that these reasons for DS

use vary meaningfully by age group. Enhancing athletic performance approached but did not reach statistical significance for age ($\chi^2 = 5.18$, $p = 0.075$). Overall, gender was significantly associated with performance-, health-, and muscle-related reasons for supplement use, while age was significantly associated with the majority of reasons cited, with the exception of enhancing athletic performance.

Table 17: Association between dietary supplement use and predictors (N = 208)

Predictor	Users	Non-users	P-value
Physical appearance			
Very important	99	30	0.425
Somewhat important	58	10	
Not very important	7	3	
Not at all important	1	0	
Pressure from social media			
Yes	67	20	0.493
No	98	23	
Importance of being in good shape			
Very important	90	22	0.001*
Somewhat important	68	13	
Not very important	7	5	
Not at all important	0	3	
Anxious/self-conscious about body			
Yes	105	28	0.857
No	60	15	
Compare physique with others			
Always	27	5	0.836
Never	21	7	
Often	38	12	
Rarely	25	5	
Sometimes	54	14	
Believe supplements necessary for fitness goals			
Yes	115	23	0.045*
No	50	20	

* $p < 0.05$

A significant association was found between supplement use and the importance placed on being in good shape ($p = 0.001$) and the belief that supplements are necessary to achieve fitness goals ($p = 0.045$).

Table 18: Association between type of dietary supplement used and gender (N = 208)

Supplement	Female n (%)	Male n (%)	Z value	Total, n (%)
Protein powder	43 (72.88)	115 (77.18)	0.654	158 (75.96)
Creatine	6 (10.17)	68 (45.64)	4.816*	74 (35.58)
BCAA	2 (3.39)	14 (9.40)	1.465	16 (7.69)
Vitamins	26 (44.07)	49 (32.89)	-1.514	75 (36.06)
Minerals	12 (20.34)	29 (19.46)	-0.143	41 (19.71)
Glutamine	1 (1.69)	6 (4.03)	0.841	7 (3.37)

* $p < 0.001$.

It presents the association between supplement type and gender (N = 208; 59 females, 149 males). Protein powder was the most widely used supplement (75.96%), with similar uptake among females (72.88%) and males (77.18%; $Z = 0.654$, not significant). Creatine use differed significantly by gender, being more common among males (45.64%) than females (10.17%) ($Z = 4.816$, $p < 0.001$). No significant

gender differences were observed for BCAA (9.40% vs. 3.39%; $Z = 1.465$), vitamins (32.89% vs. 44.07%; $Z = -1.514$), minerals (19.46% vs. 20.34%; $Z = -0.143$), or glutamine (4.03% vs. 1.69%; $Z = 0.841$). Overall, Creatine was the only supplement significantly associated with gender, favouring male participants.

Table 19: Association between dietary supplement use and lifestyle predictors (N = 208)

Lifestyle predictor	Users	Non-users	P-value
Physical activity per week			
<5 hours	21	6	0.245
5–10 hours	92	29	
>10 hours	52	8	
Follows a specific diet			

Yes	57	15	
No	108	28	1.000
Consumption of fast food/processed meals			
Daily	13	6	
Monthly	26	9	0.454
Rarely	45	11	
Weekly	81	17	
Adequate sleep (6–8 hours)			
No	49	19	
Yes	116	24	0.099
Experience of stress			
Daily	48	7	
Monthly	28	8	0.283
Rarely	37	9	
Weekly	52	19	
Engagement in other health behaviours (yoga, meditation)			
No	109	26	
Yes	56	17	0.591

No statistically significant association was observed between lifestyle characteristics and dietary supplement use ($p>0.05$).

DISCUSSION

This cross-sectional study of 208 young adult gym-goers in Visakhapatnam was undertaken to determine the prevalence and predictors of dietary supplement use in this population, a group that forms a substantial and growing share of India's dietary supplement market.

Socio-demographic characteristics: Most participants (42.3%) were aged 18–21 years, a period commonly associated with heightened interest in fitness and body image. Males predominated overall (71.6%), consistent with the widely reported male preponderance of gym attendance and supplement use, while the high proportion of students (65.8%) reflects a demographic actively balancing academics with fitness pursuits. Females were concentrated in the youngest age band whereas males predominated in the 22–25-year group, and gender representation became more balanced by the 26–30-year group, possibly reflecting a broader, more even adoption of fitness culture with increasing age. Ashok Kumar C et al.,^[15] similarly reported that 60% of their gym-going study participants were aged 20–25 years and 51.8% were students.

Prevalence, type, duration, and expenditure: The overall prevalence of dietary supplement use in this study (79.3%) is comparable to the 88% reported among gym-goers in Lucknow^[11] and the 78% reported among urban Indian adolescents by the ASSOCHAM Social Development Foundation survey.^[20] It is somewhat higher than the 70% prevalence reported from Ludhiana^[16] and considerably higher than the 52% reported among gym-goers by Chandana KN et al.^[14] Protein powder was the most frequently used supplement (75.96%), a pattern mirrored in the Thane study by Shreevidya K et al.,^[10] where protein products were used by 82% of participants, and in the Ludhiana study, where 98% of male users consumed protein supplements.^[16] That most users (65.9%) had been consuming supplements for under six months suggests a relatively recent surge in uptake, potentially reflecting the growing influence of social media and fitness trends. Expenditure was modest for most participants—44.71% spent under ₹2000 monthly—though this still represents a meaningful financial commitment for a largely student population; comparable spending patterns

(mean ₹3,867/month) were reported among gym-goers in Lucknow.

Frequency of use, sources of information, and purchase: Daily supplement use was reported by 68% of participants, indicating that supplementation is, for many, integrated into routine practice rather than used occasionally. Gym trainers were the leading source of information (32.2%), followed by friends (22.6%), a pattern consistent with the Lucknow study in which 68% of respondents were advised by gym instructors and 24% by friends.^[11] This reliance on trainers and peers rather than qualified health professionals raises concern where trainers lack formal nutrition training, as it may perpetuate inaccurate or unsafe advice. Online platforms were the dominant purchase channel (55.8%), offering convenience and affordability but raising concerns regarding product authenticity given the substantial grey-market presence in India's supplement industry.

Perceived benefits and awareness of side effects: Improvement in overall health (58.17%) and support for muscle growth (49.5%) were the leading reported reasons for use, and a majority of users perceived tangible benefits—enhanced strength (62.5%) and increased energy (50.9%)—that likely reinforce continued use. While 66% of participants were aware of potential side effects, only 7% reported having experienced any, a pattern also observed by Shreevidya K et al.,^[10] where 30% of users reported never experiencing side effects, although others reported gastrointestinal disturbances such as bloating, constipation, and diarrhoea. The low reported incidence of side effects in the present study may reflect appropriate use among most participants, but could equally reflect under-recognition of subtle or long-term adverse effects.

Predictors of dietary supplement use: Body-image and psychological factors emerged as the principal predictors of supplement use in this study. Physical appearance was rated very important by 62% of participants, 41.8% reported feeling pressure from social media to maintain a certain physique, and 63.9% described themselves as self-conscious about their bodies. Supplement use was significantly associated with placing high importance on being in good shape ($p=0.001$) and with the belief that supplements are necessary to achieve fitness goals ($p=0.045$), whereas no significant association was found with demographic characteristics such as age, gender, or education.

This pattern parallels the findings of Chelli AC et al,^[15] among gym-goers in Bangalore, where no significant differences emerged between supplement users and non-users by gender, age, occupation, or income, and of Bansal S and Pandey P,^[13] who similarly found no influence of geographic location or education level on protein supplement use, despite confirming greater use among males. Creatine use was significantly associated with male gender in the present study ($Z=4.816$), consistent with broader evidence that performance-oriented supplements are disproportionately used by men.^[16] Taken together, these findings suggest that psychological drivers—body dissatisfaction, social comparison, and perceived necessity—are more influential determinants of supplement use in this population than demographic profile, a pattern that resonates with longitudinal evidence linking adolescent protein-supplement use to later initiation of more harmful muscle-building substances, including anabolic steroids.^[17,18] Similar associations between drive for muscularity, weight training, and supplement use/intention have also been reported among adolescent boys in Australia.^[19]

CONCLUSION

Dietary supplement use is highly prevalent (79.3%) among young adult gym-goers in this urban Indian setting, with protein powder the predominant product used. Use is driven predominantly by psychological and body-image-related predictors—particularly the desire to be in good shape and the belief that supplements are necessary for achieving fitness goals—rather than by demographic characteristics. Given the largely unregulated nature of the supplement market and the reliance of users on gym trainers and online platforms rather than qualified health professionals for information and products, there is a clear need for structured educational and regulatory measures to promote safe and informed use.

Recommendations: There should be education campaigns. Structured awareness workshops on safe and effective supplement use should be organised in gyms and universities in collaboration with nutrition experts. Regulation of online purchases should be enforced. Users, particularly students, should be educated on verifying product authenticity and using reputable purchasing platforms. Trainer certification has to be ensured. Gyms should be encouraged to employ certified trainers with adequate nutrition knowledge, and to provide access to a qualified nutritionist or dietitian.

Peer-influence management has to be done. Accurate, evidence-based information should be disseminated through social and peer networks that strongly influence supplement-use decisions. There should be a balance between perception and reality: Education should emphasise that supplements complement, rather than replace, a balanced diet, to prevent overuse or neglect of natural dietary sources. Monitoring long-term effects is the need of the hour. Longitudinal studies are needed to monitor the potential long-term health impact of prolonged daily supplement use, given the reassuring but limited follow-up on side effects in this study. There should be regular health assessment: Periodic health check-ups

should be encouraged among users to assess the efficacy and safety of ongoing supplement use.

Limitations: The study was restricted to gym-goers residing in Visakhapatnam city, and the cross-sectional design and limited study period constrained the number of participants that could be enrolled, which may limit the generalisability of findings to other regions or populations.

Financial support and sponsorship

Dr.NTR University of Health Sciences -Under Graduate Student Research Scholarship

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Herriman M, Fletcher L, Tchaconas A, Adesman A, Milanaik R. Dietary supplements and young teens: misinformation and access provided by retailers. *Pediatrics*. 2017;139(2):e20161257. doi:10.1542/peds.2016-1257.
- Alfawaz H, Khan N, Alfaifi A, Shahrani FM, Al Tameem HM, Al Otaibi SF, et al. Prevalence of dietary supplement use and associated factors among female college students in Saudi Arabia. *BMC Womens Health*. 2017;17:116. doi:10.1186/s12905-017-0475-y.
- Tetens I, Biloft-Jensen A, Spagner C, Christensen T, Gille MB, Bügel S, et al. Intake of micronutrients among Danish adult users and non-users of dietary supplements. *Food Nutr Res*. 2011;55:7153. doi:10.3402/fnr.v55i0.7153.
- Samreen S, Siddiqui NA, Wajid S, Mothana RA, Almarfadi OM. Prevalence and use of dietary supplements among pharmacy students in Saudi Arabia. *Risk Manag Healthc Policy*. 2020;13:1523–1531. doi:10.2147/RMHP.S256656.
- Thakur A, Brar JK. Intake of dietary supplement among people exercising in gyms in Ludhiana City. *Chem Sci Rev Lett*. 2018;7:1018–1029.
- IMARC Group. India dietary supplements market: industry trends, share, size, growth, opportunity and forecast 2021–2026 [Internet]. 2021 [cited 2021 Feb 8]. Available from: <https://www.imarcgroup.com/india-dietary-supplements-market>. (industry report).
- O'Brien SK, Malacova E, Sherriff JL, Black LJ. The prevalence and predictors of dietary supplement use in the Australian population. *Nutrients*. 2017;9(10):1154. doi:10.3390/nu9101154.
- Witard OC, Jackman SR, Breen L, Smith K, Selby A, Tipton KD. Myofibrillar muscle protein synthesis rates subsequent to a meal in response to increasing doses of whey protein at rest and after resistance exercise. *Am J Clin Nutr*. 2014;99(1):86–95. doi:10.3945/ajcn.112.055517.
- Samal JRK, Samal IR. Protein supplements: pros and cons. *J Diet Suppl*. 2018;15(3):365–371. doi:10.1080/19390211.2017.1353567.
- Shreevidya K, Badal S. Knowledge and use of dietary supplements in gym going population of Thane district, India. *Int J Innov Res Sci Eng Technol*. 2017;6:9611–9616.
- Singh Rana S, Agarwal R. Legal status and use of dietary supplements: a study among gym-goers in Lucknow, Uttar Pradesh. 2019;6(3):253–256.
- Saoji A, Saoji PA, Hajare S, Dharmadhikari P. Nutritional supplements: a craze among youngsters. *Med J DY Patil Vidyapeeth*. 2023;16:56–60..
- Bansal S, Pandey P. Consumption pattern of protein supplements among gym goers. *Pharma Innov J*. 2022;11(6):1760–1763.
- Chandana KN, Farha S, Syeda R, Pallavi BM, Veena. Comparative

- study on nutrition knowledge and consumption of dietary supplements among athletes and fitness practitioners. *Int J Health Allied Sci.* 2023;12(1):Article 3. doi:10.55691/2278-344X.1064.
15. Ashok Kumar C, Pramukh M, Madhavaiah C. Dietary supplements use among gym goers in India. *Int J Multidiscip Res Rev.* 2018 Sep. ISSN:2455-3085.
 16. Thakur A, Kaur Brar J. Intake of dietary supplement among people exercising in gyms in Ludhiana City. *Chem Sci Rev Lett.* 2018;7(28):1018–1029.
 17. Mazzilli M, Macaluso F, Zambelli S, Picerno P, Iuliano E. The use of dietary supplements in fitness practitioners: a cross-sectional observation study. *Int J Environ Res Public Health.* 2021;18(9):5005. doi:10.3390/ijerph18095005.
 18. Nagata JM, Hazzard VM, Ganson KT, Austin SB, Neumark-Sztainer D, Eisenberg ME. Muscle-building behaviors from adolescence to emerging adulthood: a prospective cohort study. *Prev Med Rep.* 2022;27:101778. doi:10.1016/j.pmedr.2022.101778.
 19. Yager Z, McLean S. Muscle building supplement use in Australian adolescent boys: relationships with body image, weight lifting, and sports engagement. *BMC Pediatr.* 2020;20:89. doi:10.1186/s12887-020-1993-6.
 20. ASSOCHAM Social Development Foundation. Survey on dietary supplement consumption among urban Indian adolescents [Internet]. 2012 [cited 2024 Nov 8]. Available from: <http://www.assochem.org/newsdetail.php?id=5370>. (organisational report).