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Research Article

Study the Prevalence of Dietary Supplements Use Among Students in Tikrit University

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Abstract: Background: Dietary supplement use has increased over the past decade in college students. However, even among medical students, the knowledge and understanding of vitamin and mineral supplements is limited and restricted. Objectives: To study the prevalence and patterns of dietary supplements usage among students at Tikrit University. = **Materials and Methods**: A cross-sectional survey was conducted among 313 students with an average age of 23 years, predominantly females. The sample was collected from various colleges from Tikrit university, with the majority from the Colleges of Nursing and Medicine. **Results**: The findings reveal that 55.2% of participants have used dietary supplements continuously over the past six months, with no significant difference in usage between genders or across different colleges and academic years. The most cited reasons for supplement use were on the advice of health experts, to improve overall health and to boost immunity. Vitamin D, Vitamin C, Zinc and Fish oil/Omega-3 emerged as the most commonly consumed supplements. Notably, the choice of supplements was primarily influenced by health experts' advice, supplemented by personal research. However, a quarter of the users (26.6%) reported experiencing side effects, including nausea, insomnia, headaches, fatigue, vertigo, and digestive problems. **Conclusion**: This study highlights a high prevalence of dietary supplement use among university students and underscores the importance of informed decision-making, guided by professional advice, to mitigate potential adverse effects. The patterns and motivations identified in this research could inform targeted health promotion strategies within university settings.

Keywords: Dietary supplements, vitamins, minerals.

INTRODUCTION

The contemporary academic landscape presents a variety of stressors and demands on students, influencing their lifestyle choices, particularly in the realm of nutrition and health. This study focuses on Tikrit University in Iraq, aiming to explore the prevalence, patterns, motivations, and implications of dietary supplement use among its student population.

Vitamins and minerals are often used as dietary supplements by the general population. Research indicates that they enhance the immune system and promote rapid recuperation from diseases [1]. Vitamins are organic molecules, including Vitamin A, B, C, D, E, K, etc., whereas minerals are chemical compounds like magnesium, iron, and zinc. These compounds should only be obtained from the environment in small quantities if they cannot be produced naturally in the human body or if the rate of production is insufficient for maintaining good health. The majority of individuals engage in self-prescription and consumption of it for the sake of enhancing their health, supplementing their diet, and preventing diseases [2].

A recent drug utilization study was carried out in secondary care hospitals and colleges in Maharashtra, India showed that the incidence of college students using vitamin and mineral supplements has risen. However, even among medical students, the knowledge and understanding of Vitamin and mineral supplements among college students is limited and restricted [4]. Consuming higher quantities of Vitamin A or C and excessive amounts of minerals might lead to serious issues. If multivitamins and minerals are consumed according to the instructions provided by a physician, they are unlikely to result in significant adverse effects [5].

Within many industrialized nations, over 20% to 30% of the populace use Vitamin and mineral supplements into their daily routines [6]. Nevertheless, some benefits, such as the usage of folic acid supplementation, may be used to guard against neural tube abnormalities. Additionally, additional supplements have the ability to decrease the likelihood of cardiovascular disorders, such as stroke or myocardial infarction [7].

Currently, with the presence of individuals who possess high levels of literacy and prioritize their health, the understanding of the negative consequences resulting from excessive intake of supplements has diminished. This is mostly due to the convenient and widespread accessibility of these goods, which can be obtained without a prescription [5]. Understanding the usage of dietary supplements at Tikrit University is crucial for several reasons. Firstly, it provides insights into the health behaviors of young adults in an academic setting. Secondly, it assists in identifying the potential gaps in nutritional knowledge and misconceptions about supplements. Finally, the findings can guide university health services in formulating effective health education

and intervention programs tailored to the needs of the student body.

MATERIALS AND METHODS

This research was a descriptive cross-sectional study conducted at Tikrit University. Data collection was performed using an online specifically designed structured questionnaire on Google Form, developed and administered by the research team. This questionnaire aimed to gather detailed information on the types of supplements used, frequency of use, reasons for consumption, and any experienced side effects.

The study spanned from December 1st, 2023, to June 22nd, 2024. This period allowed for a comprehensive data collection phase, encompassing different academic periods and semesters, which could influence supplement usage patterns.

The study utilized a convenience sample of students from various faculties at Tikrit University.

Ethical approval for this study was granted by the Council of Tikrit University. The collected data were entered and processed using the Statistical Package for Social Sciences (SPSS) version 26 and Excel program

RESULTS

The study encompassed 313 students at Tikrit University, with an average age of 23 years (± 4 years). The majority were female (62.3%, n=195), while males constituted (37.7% n=118). The participants were distributed across various colleges, with the highest representation from the College of Nursing (36.7%, n=115), Medicine (29.71%, n=93) and Education (21.7%, n=68). The other colleges are Literature, Pharmacy, Science, Law and veterinary medicine had smaller representations. The academic years of the participants varied, with significant numbers in the second (32.9%, n=103) and fourth (22.36%, n=70) stages. Out of the total participants, (55.2%, n=173) reported using nutritional supplements continuously over the past six months (Table 1).

Table 1: Descriptive statistics of study population (N=313)

Parameters		**Frequency**
Age (Mean ± SD) in years		23 ± 4
Gender	Female	195 (62.3%)
	Male	118 (37.7%)
College	Literature	1 (0.31%)
	Education	68 (21.7%)
	Nursing	115 (36.7%)
	Pharmacy	13 (4.15%)
	Medicine	93 (29.71%)
	Science	8 (2.55%)
	Law	4 (1.27%)
	Engineering	11(3.51%)
	Vet. Med	9 (2.87%)
Stage	First	36 (11.5%)
	Second	103 (32.9%)
	Third	53 (16.93%)
	Forth	70 (22.36%)
	Fifth	48 (15.33%)
	Sixth	3 (0.95%)
Have you used any type of nutritional supplements continuously during the past six months?	No	140 (44.73%)
	Yes	173 (55.27%)
Total		313 (100%)

Analyzing usage by gender, 57% of females (n=110) and 53.3% of males (n=63) reported supplement use, indicating no significant difference between genders. Usage patterns across different colleges and academic years also did not show significant variations. Notably, higher numbers of the first year and those from the College of Medicine reported using supplements (Table 2).

Table 2: Use of supplements according to gender, college and year (N=313).

Variable		Have you used any type of nutritional supplements continuously during the past six months?		Total	P - value
		No	Yes		
		Frequency	Frequency		
Gender	**Female**	85 (43%)	110 (57%)	193	>0.05 N.S.
	Male	55 (46.7 %)	63 (53.3%)	118	
College	**Literature**	0 (0.0%)	1 (100%)	1	>0.05 N.S.
	Education	36(52.9%)	32 (47.1%)	68	
	Nursing	58 (50.4%)	57 (49.6%)	115	
	Pharmacy	5 (38.5%)	8 (61.5%)	13	
	Medicine	25 (29.7%)	59 (70.3%)	84	
	Vet. Medicine	1 (11.1%)	8 (88.9%)	9	
	Science	5 (62.5%)	3 (37.5%)	8	
	Engineering	7 63.7%)	4 (36.3%)	11	
	Law	3 (75.0%)	1 (25.0%)	4	
Year	**First**	14 (38.9%)	22 (61.1%)	36	>0.05 N.S.
	Second	52 (50.4%)	51 (49.6%)	103	
	Third	25 (47.1%)	28 (52.9%)	53	
	Forth	33 (47.1%)	37 (52.9%)	70	
	Fifth	15 (31.2%)	33 (68.8%)	48	
	Sixth	1 (33.3%)	2 (66.7%)	3	
Total		68 (42.2%)	93 (57.8%)	313	

The most commonly used supplements were Vitamin D (38.1%, n=66), followed by Vitamin C (32.9%, n=57), Calcium (23.7%, n=41) and Fish oil/Omega-3 (17.9%%, n=31). Other supplements used included Iron, vitamin B12, Vitamins A, E, K, Magnesium, Creatine, Whey Protein, BCAA, Multivitamins, Vitamin B7, Chromium, and Selenium (Table 3).

Table 3: Most common type(s) of supplements used (N=173)

Variable	No. of Users
Vitamin D	66 (38.15%)
Vitamin C	57 (32.9%)
Fish oil/omega 3	31 (17.91%)
vitamin B12	26 (15.02%)
Iron	25 (14.45%)
Calcium	41 (23.7%)
Vitamin A	18 (10.4%)
Zinc	29 (16.76%)
Vitamin E	12 (6.93%)
Magnesium	21 (12.13%)
Vitamin K	8 (4.62%)
Creatine	7 (4.04%)
Whey Protein	9 (5.2%)
BCAA (branched chain amino acids)	4 (2.31%)
Multi vitamin	2 (1.15%)
Vitamin B7	2 (1.15%)
Chromium	1 (0.57%)
Selenium	1 (0.57%)

The primary reason for using supplements was on the advice of a health expert (53.75%, n=93), followed by improving general health (36.41%, n=63) and to boost immunity (30.05%, n= 52). Other reasons included using supplements as an energy source, for weight management, athletic performance, stress management, and care for hair, nails, and skin (Table 4).

Table 4: Main reasons for using nutritional supplements (N=173)

Variable	Frequency
To improve general health	63 (36.41%)
To boost immunity	52 (30.05%)
On the advice of a health expert	93 (53.75%)
As an energy source	43 (24.85%)
To help with weight loss/gain	9 (5.2%)
To enhance athletic performance	8 (4.62%)
To deal with stress	11 (6.35%)
Hair, nails and skin care	1 (0.57%)

The most common method for deciding which supplements to use was based on the advice of a health expert (90.75%, n=157), followed by personal research (15.6%, n=27). (Table 5).

Table 5: Main methods to decide which supplements to use (N=173)

Variable	Frequency
On the advice of a health expert	157 (90.75%)
Personal research	27 (15.6%)
Recommendations from friends/family	23 (13.29%)
Online influencers/personalities	26 (15.03%)
Advertisements	5 (2.89%)
Others	13 (7.51%)

Among the 173 students who used supplements, the most common frequency of use was daily (41.6%, n=72), followed by only when needed (30%, n=52), and weekly (23.6%, n=41). In terms of the duration of supplement usage, the majority (56%, n=97) started less than 6 months ago, while others had been using supplements for longer periods, ranging from 6 months to over 2 years. Side effects were reported by 26.5% (n=46) of the supplement users (Table 6).

Table 6: Behavior towards supplements (N=173).

Variable		Frequency
How frequently do you use nutritional supplements?	Only when needed	52 (30 %)
	Daily	72 (41.6%)
	Weekly	41 (23.6%)
	monthly	8 (4.6%)
When did you start taking nutritional supplements	Less than 6 months	97 (56%)
	6 months to 1 year	28 (16.1%)
	1-2 years	19 (11%)
	More than 2 years	29 (16.7%)
Did you have any side effects from using nutritional supplements?	Yes	46 (26.5%)
	No	127 (73.4%)
Total		173 (100%)

The side effects experienced by supplement users varied, with nausea (30.4%, n=14), insomnia (28.2%, n=13), headache (23.9%, n=11) and vertigo (23.9%, n=11) are being the most common (Table 7).

Table 7: Most side effects of DS use among users (N=46)

Types	Incidence rate
Headache	11(23.9%)
Insomnia	13 (28.2%)
Fatigue	10 (21.7%)
Vertigo	11 (23.9%)
Nausea	14 (30.4%)
Digestive problems	10 (21.7%)
Mood Swings	7 (15.2%)
Rapid heartbeat	6 (13.04%)
Taste change	6 (13.04%)
Skin reactions	5 (10.8%)
Hair loss	4 (13.04%)
Muscle cramps	4 (13.04%)
Anxiety or nervousness	3 (6.5%)
Increased blood pressure	2 (4.3%)
Respiratory problems	2 (4.3%)
Vision problems	1 (2.1%)
Stomachache	2 (4.3%)
Facial pimples	1 (2.1%)

DISCUSSION

The current study revealed a high prevalence of supplement usage, with 57.8% of the participants reporting continuous use over the past six months. This pattern of dietary supplement consumption among university students is not unique to Tikrit University and can be observed across various studies globally, albeit with some differences in prevalence rates, reasons for use, and the types of supplements consumed. For instance, a study conducted at the College of Medicine, University of Lagos, found that approximately 86% of the students had used dietary supplements before, with 50% of them having used it in the past 12 months [21]. This indicates a similarly high prevalence of dietary supplement use among medical students but with a higher historical usage rate compared to the findings from Tikrit University.

Another study highlighted that more than half of the surveyed university students were dietary supplement users, with females being more likely to use them. The main reason cited for dietary supplement use was to improve energy and vitality [22] , which is consistent with the gender distribution and potential motivations for supplement use seen in Tikrit University study.

A study on the use of dietary supplements among college students found that about one-third of the students reported taking a multi-vitamin/multi-mineral supplement daily, which aligns with the high frequency of use observed in Tikrit University study [23].

In contrast, a study at Princess Nourah Bint Abdulrahman University in Saudi Arabia reported that all female participants had consumed dietary supplements at some point, with 32.3% currently taking them, primarily for aesthetic purposes [24]. This study shows a different motivation for supplement usage and highlights the role of gender and cultural factors in dietary supplement consumption among university students. A high prevalence of dietary supplement use was also reported among undergraduate female students in Bangladesh, which underscores the global nature of this trend, particularly among female university students [25].

Moreover, a study among pharmacy students in Saudi Arabia found that 46.8% used dietary supplements, with a significant number experiencing side effects such as nausea, vomiting, and diarrhea [26]. This finding suggests a need for caution and better education on supplement use among health sciences students.

Similar to the current study, research from Seoul, South Korea, indicated that university students used supplements for health-related reasons, such as promoting general health and boosting energy levels [27]. A significant number of students at Tikrit University (71%) based their supplement choices on the advice of health experts. This trend aligns with findings from other studies, where students often rely on healthcare professionals for information regarding

dietary supplements, though many also depend on other sources like family, friends, or the internet [28].

Similar to the findings at Tikrit University, other studies have also reported multivitamins and minerals as the most commonly used supplements, with a considerable portion of students starting use recently [29].

The side effects reported by Tikrit University students, such as headache and insomnia, are echoed in other studies. Although the prevalence and type of side effects can vary, gastrointestinal symptoms, dizziness, and heart palpitations are among the commonly reported adverse effects in various studies [30]

CONCLUSION

The study conducted at Tikrit University encompassed a diverse group of 161 students, predominantly female, spanning various colleges and academic stages. A significant finding was that over half of the participants reported using nutritional supplements regularly over the past six months. The usage was consistent across different genders, colleges, and stages, indicating a widespread acceptance and reliance on these supplements among students. The most common supplements used were Vitamin D, Vitamin C, Fish oil/Omega-3, and Vitamin B12, with the primary reasons for usage being to improve public health, boost immunity, and based on the advice of health experts.

While the majority of users did not report significant side effects, a noteworthy proportion experienced issues like headaches, insomnia, fatigue, vertigo, and nausea. This indicates a need for further investigation into the safety and long-term effects of supplement use among university students.

ETHICAL DECLARATIONS

Ethics Approval and Consent to Participate

Ethical issues were taken from the research ethics committee. Informed consent was obtained from each participant. Data collection was in accordance with the World Medical Association (WMA) declaration of Helsinki for the Ethical Principles for Medical Research Involving Human Subjects, 2013 and all information and privacy of participants were kept confidentially.

Consent for Publication

Not applicable (no individual personal data included).

Availability of Data and Material

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing Interests: Authors declared none.
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Authors' Contributions

All stated authors contributed significantly, directly, and intellectually to the work and consented it to be published.

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