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Research Article

Prevalence of Dietary Supplements Use among College Students in Iraq

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Abstract

Background: Dietary supplements (DS) are products that are intended to be consumed orally and serve the purpose of supplementing one's diet. Although, these products are very popular, their usage among undergraduate students in Iraq is still obscure. ***Aim***: To evaluate the pattern, type, and reasons for supplement usage among Iraqi undergraduate students and to detect the source of information about dietary supplements. ***Methods***: A sample of 442 students at different colleges in Baghdad were surveyed through a questionnaire composed of 13 questions and divided into four sections: socio-demographic, dietary supplement (DS) knowledge, DS intake, and reasons behind their usage. Descriptive statistics were conducted to determine the frequency and percentages of respondents for each variable. ***Results***: A total of 442 participants were included in the study; 160 (36.2%) were males and 282 (63.8%) were females. Out of the total number of the participants, 329 (74%) were dietary supplement users, 139 (42.25%) were males, and 190 (57.75%) were females. Most of the participants (72%) used vit. D3 supplement, and the mean reason for using DS was to overcome nutritional deficiency. ***Conclusion***: Most of the participants are dietary supplement users, with a higher percentage of females. The main reasons for both genders' resorting to dietary supplement use are to improve their health and improve their immunity.

Keywords: Dietary supplements, Supplement types, Reason of use, Iraqi universities.

انتشار استخدام المكملات الغذائية بين طلاب الجامعات في العراق

الخلاصة

الخلفية: المكملات الغذائية منتجات تستخدم عن طريق الفم لغرض استكمال النظام الغذائي للفرد. على الرغم من أن هذه المنتجات تحظى بشعبية كبيرة، لكن أسباب استخدامها بين طلاب البكالوريوس في العراق لا يزال غامضا. **الهدف**: تقييم نمط ونوع وأسباب استخدام المكملات الغذائية بين طلاب البكالوريوس العراقيين والكشف عن مصدر معلوماتهم حول المكملات الغذائية. **المنهجية**: تم استطلاع عينة من 442 طالبا وطالبة من كليات مختلفة في بغداد من خلال استبيان مكون من 13 سؤالا وقسموا إلى أربعة أقسام: المعرفة الاجتماعية والديموغرافية، ومعرفة المكملات الغذائية، وتناول المكملات الغذائية، وأسباب استخدامها. وأجريت إحصاءات وصفية لتحديد تواتر ونسب المجيبين لكل متغير. **النتائج**: تم تضمين ما مجموعه 442 مشاركا في الدراسة. وكان 160 (36.2 %) من الذكور و 282 (63.8 %) من الإناث. ومن بين العدد الإجمالي للمشاركين، كان 329 (74 %) من مستخدمي المكملات الغذائية، و 139 (42.25 في المائة) من الذكور، و 190 (57.75 %) من الإناث. استخدم معظم المشاركين 237 (72٪) مكملات فيتامين D3، وكان السبب المتوسط لاستخدام المكملات هو التغلب على نقص التغذية. **الاستنتاج**: معظم المشاركين هم من مستخدمي المكملات الغذائية مع نسبة أعلى من الإناث. السبب الرئيسي لكلا الجنسين للجوء إلى استخدام المكملات الغذائية هو تحسين صحتهم وتحسين مناعتهم.

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INTRODUCTION

Dietary supplements (DS), are products that are intended to be consumed orally and serve the purpose of supplementing one's diet [1]. According to several studies, a higher education level is associated with a greater frequency of DS consumption as compared to a lower education level [2,3]. In point of fact, 43–80% of undergraduate students in the United States of America, Australia, and Canada reported using DS, with the most commonly reported types of use being vitamins/minerals, muscle-enhancing dietary supplements (MEDS) (such as protein, creatine, and amino acids), weight loss supplements, and herbs [4,5]. The most commonly cited reasons for use are health promotion, increased energy, enhanced athletic performance, and improved appearance [6]. The high rate of DS use among college students is associated with greater levels of physical activity and a lower body mass index (BMI) [7], and the majority of studies find no gender difference in the frequency of usage [8]. The high prevalence of DS usage among students persists despite the paucity of information about the effectiveness of such supplements as well as the short-term and long-term health implications of their use [9]. Because public health guidelines do not cover the use of DS, this raises a worry because its usage could potentially increase the risk of an intake that is higher than the safety limits of a variety of nutrients [10]. Muscle-enhancing dietary supplements, in particular, have been shown to be dangerous due to the presence of illicit drugs and harmful substances (including microbiological agents and foreign objects), the presence of toxic agents, and the presence of potentially dangerous prescription-only pharmaceuticalS [11]. This is a result of inadequate quality control at the manufacturing level which considered dangerous because the use of MEDS has been linked to problems with body image [12]. These concerns have been shown to be related to increased stress levels, decreased quality of life in young people, and decreased mental health in university students [13]. Studies have also observed that male and female students who are participating in health-related study programs report decreased use of DS in general compared to students who are participating in programs that are not linked to health [14], Also it appears vital to keep constant track of and evaluate trends in DS use among students [15]. The objective of this study was evaluate the pattern, type, and reasons of supplements usage among Iraqi undergraduate students and to detect the source of information about dietary supplements.

METHODS

Study design and participants

A cross-sectional study that was carried out at the University of Baghdad (Human Sciences, Education, and Business Administration), Al-Rafidain University College (Department of Pharmacy and Department of Dentistry), Al-Mustafa University College (Department of Lab Analysis), and Al-Safwa University College (Department of anesthesia and intensive care), a total of 442 students enrolled as participants. Participants of both genders and ranging from 19 to 25 years old were chosen.

Data collection

In order to collect data for the goal of evaluating dietary supplement use among university students, a multicomponent questionnaire was utilized to collect data. More specifically, the prevalence, knowledge, and motives for the use of dietary supplements were evaluated. The questionnaire contained a total of thirteen questions, which were as follows: socio-demographic (gender, age, social status, university specialization, health status), dietary supplement users and their knowledge about this issue; type of consumed dietary supplements, and the reasons behind this practice; who advised you to use it; the benefit that you get from it; and whether the user advised anyone else to use it, in addition to associated side effects due to DS consumption. Three hundred student questionnaire forms were handed out to students in a random fashion, and the remaining 142 were collected through the use of an online electronic questionnaire that was published. The participation of some of the students in the survey declined by them. Other students were given the questionnaires of those who declined to participate so that they might fill them out. There were ten students that chose not to participate. Others were willing to take part, and as a result, all 300 slots in the survey were taken up.

Ethical considerations

The oral agreement was gained from the students who consented to take part in the study and fill out the questionnaires prior to the beginning of the data collection process. Participation in it was entirely voluntary, and any data gathered would be utilized for nothing but the aim of this study.

Data analysis

The findings of the questionnaire were used to collect information, which was then analyzed with descriptive statistics. The results of this analysis were presented in the form of numbers and percentages to explain the shifting categories. Additionally, the variable categories such as gender, health status, marital status, and academic concentration at the institution were written down in addition to being presented in the form of numbers and percentages. We analyzed many specializations that fall under the category of the medical group as well as those that are outside of the medical group in terms of the number of people who take various forms of nutritional supplements.

RESULTS

We have included in this document for the reader a collection of tables that provide a summary of the results of our search. These tables contain figures and

percentages that demonstrate how the responses to the questionnaire are distributed across the categories.

Table 1 is a summary of the socio-demographic characteristics (gender, marital status, health status, university specialization) and knowledge of nutritional supplements for users and nonusers within the age group recorded in the table (19–25 years). According to the data presented in Table 1, there were 160 male participants (36.2%), whereas there were 282 female participants (63.8%). The overall number of students who used dietary supplements was 329 (74%), with the majority of users being females (190; 57.8%), while the number of male students who consume these supplements was 139 (42.2%).

Table 1: Sociodemographic characteristics of the participants.

Parameters	Dentistry	Pharmacy	Lab Analysis	Anesthesia	Human studies	Total
No of participants	76(17.2%)	132(29.8%)	50(11.3	54(12.2%)	130(29.4)	442
Gender						
Male	22(28.9%)	44(33.3%)	32(64%)	32(59.3%)	30(23.1%)	160 (36%)
Female	54(71.1%)	88(66.7%)	18(36%)	22(40.7%)	100(76.9%)	282 (63%)
Marital status						
Single	74(97.4%)	126(95.45%)	45(90%)	48(88.9%)	104(80%)	397 (89%)
Married	2 (2.6%)	6(4.55%)	5(10%)	6(11.1%)	26(20%)	45 (11%)
Health status						
Healthy	50(65.8%)	130(98.5%)	50(100%)	46(85.2%)	104(80%)	380 (86%)
Presence of disease	26(34.2%)	2(1.5%)	0(0%)	8(14.8%)	26(20%)	62 (14%)
DS consumption						
Consumers	74(97.4%)	125(94.7%)	50(100%)	48(88.9%)	32(24.6%)	329 (74%)
Non-consumers	2(2.6%)	7(5.3%)	0(0%)	6(11.1%)	98(75.4%)	113 (25%)
Knowledge about DS						
Yes	44(57.9%)	92(69.7%)	36(72%)	22(40.7%)	24(18.5%)	218 (49%)
No	32(42.1%)	40(30.3%)	14(28%)	32(59.3%)	106(81.5%)	224(51%)

According to Table 2, the medical category of the students who utilize dietary supplements includes particularly pharmacists and medical laboratory technicians. Vitamin C (238; 72%), Vitamin D3 (237; 72%), and Omega-3 Fatty Acids were the supplements that were consumed by the vast majority of users (187; 57%).

Table 2: The most consumed dietary supplements reported during the study.

Type of DS	No. of users
Vitamin D3	237 (72%)
B complex (B1, B6, B12)	133 (40%)
Vitamin C	238 (72%)
Iron	134 (40%)
Calcium	102 (31%)
Omega 3	187 (57%)
Multivitamin	139 (42%)
Melatonin	41 (12%)
Zinc	141 (43%)
Creatine	54 (16%)
Branched Chain Amino Acid (BCAA)	30 (9%)
Proteins	71 (22%)
Energy supplement	54 (16%)

The results presented in Table 3 include answers to a set of questions related to the dietary supplements that the participants consumed to find out the purpose of their use of the dietary supplement, as well as to know who advised them to use it and about the benefit they got from him and knowing if they advised anyone to use the supplement they used. As regards the reasons behind their usage, it was found to be most of the participants (69%) used DS to replace their nutrient deficiency, 48% of them used DS as a support to their immunity during the COVID-19 pandemic, 27% of the participants used DS in their life either to enhance their endurance during sport or to increase their energy.

Table 3: Answers of the participants to the questions related to the outcomes of DS use.

Questions	Respondents
Why did you use DS?	
Studying and forgetting	83 (25%)
Sports activity	90 (27%)
Nutrient deficiency	227 (69%)
Sleep disorder	36 (11%)
Energy boost	90 (27%)
During the covid-19 pandemic	157 (48%)
Health of hair, skin, and nails	9 (3%)
Who advised you to use DS?	
Doctor	151 (46%)
Pharmacist	99 (30%)
Friend	41 (12%)
Family/Relatives	70 (21%)
Internet	81 (25%)
Coach	12 (4%)
What benefit did you get from the DS?	
Improved academic performance	57 (17%)
Improved sleep quality	49 (15%)
Improved general health	246 (75%)
Increased sports activity	148 (45%)
Did you advise anyone to use the DS?	
Yes	212 (64.4%)
No	117 (35.6%)

A Quarter of users (25%) took DS to enhance their memory and performance during their study. While 11% and 3% of participants used DS to overcome sleep disorders and decrease hair loss respectively. Also, most of the students (46%) who participated in this study took DS according to Physicians' recommendations with less percentage (30%) depending on Pharmacists' recommendations, while other participants took the recommendations from the Internet, their relatives, or their friends, and with 25%, 21% and 12% respectively. In addition to the previous results, the study showed that most of the participants (75%) have improved their general health, and 45% of them felt better in Physical activity. While 17% and 15% of the students felt a positive impact on their academic performance and sleep quality respectively. Also, most of the participants (64%) recommended others to take DS during their life. Table 4 summarizes the incidence of various adverse effects reported by the DS consumers during the study.

Table 4: Incidence and types of side effects practiced by the DS users.

Type of side effects	Incidence rate
Complain of side effects	
Yes	179 (54.4%)
No	150 (45.6%)
Type of side effects	
Skin rash	7 (2%)
Insomnia	31(31%)
Appetite changes	96 (29%)
GIT disorder	54 (16%)
Menstrual cycle disorder	44 (13%)
Constipation	25 (8%)
Diarrhea	31 (9%)
Kidney stone	6 (2%)
Hypertension	13 (4%)
Dizziness and headache	44 (13%)
Nausea and vomiting	32 (9%)
Hirsutism	30 (9%)
Acne	19 (6%)

DISCUSSION

Dietary supplements are becoming increasingly popular due to their ease of use and low cost [16]. Out of the 442 participants, 67 percent of medical students used DS at some point in their lives. Several research on medical students in Nigeria and Lebanon reported nearly identical numbers of 68 and 50 percent, respectively [16,17]. During our study, the majority of the consumers (86 percent) were medical students compared to non-medical students, which is consistent with many other studies and can be related to the many medical courses they took during their college studies [18,19]. We also revealed that 63.8 percent of the participants were females; this point consistent with earlier studies conducted in the United States, Serbia, and Lebanon, which found that females consume more than males [5,19,17]. Furthermore, current study found that 86% of participants are healthy and have no connected health issues, whereas just 14% have a specific ailment and take DS to cure it. This detection is match with what has been reported by Lawand and colleagues (2021). In addition, a dietary supplement questionnaire was administered to aid in determining the type of DS consumed by college students [17]. Single-ingredient vitamins are the most commonly used DS among students, followed by multivitamins, energy supplements, and B-complex vitamins. These points also detected by several previous studies [17,7,21,22]. The most prevalent reasons for DS consumption were to combat nutritional deficiencies (69%) and to boost immunity (48%) as which is also match with previous studies findings [7,23,24]. More than half of the individuals (54.4 percent) experienced at least one adverse impact when using DS during a specific timeframe; this result contradicts several published studies that reported the adverse effects that developed concurrently while using DS were low and sometimes infrequent [25]. Furthermore, the findings of this study revealed that physicians (46%) and pharmacists (30%) are the most trusted sources of information about DS and their use, with the Internet playing an increasing role in receiving advice (25%). These findings corroborated numerous other studies that demonstrated how widely accessible DS was and the role of healthcare practitioners or the internet in disseminating information regarding DS usage [26-28]. The current study has certain limitations. The sample size was a significant constraint because it may not have adequately reflected the reality of the community under examination, making valid findings unattainable. More research with a bigger sample size from the collegiate community, which will be a more representative sample, is required.

Conclusion

According to the findings of the study, most students utilized dietary supplements for a variety of reasons, the most common of which was to improve their health and vitality.

Conflict of interests

The authors declare no conflict of interests.

Source of fund

No specific fund received.

Data sharing statement

Supplementary data can be provided by the corresponding author based on reasonable request.

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