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Dietary supplement uses among medical students at the University of Tripoli-Libya

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Abstract

Dietary supplement (DS) use epitomizes an important source of well-balanced diet. This diet is essential for the maintenance of general health and chronic disease avoidance. Dietary supplements have developed in many countries, and their use among medical students is growing worldwide.

Therefore, this study aimed to assess the prevalence and usage patterns of DS among medical students in University of Tripoli, Tripoli-Libya.

The data were collected through an online Google form among students at Tripoli University- Faculty of medicine and surgery on the year of 2024 end using paper-based questionnaires. A total of 84 students completed a questionnaire consisting of three measures; Sociodemographic characteristics, the prevalence of dietary supplement use, and the awareness about the use of these supplements.

Through the results, we find that the study surveyed a group of students (predominantly female, N=66 vs. N=18 males). Moreover, the majority of participants were single and the most were aged 23-25; the mainly had a normal BMI (65.5%) and was non-smokers (97.6%). Also, this survey exhibited that the prevalence of supplement use was very high; only (2.4%) of students reported never using them. As well, there is a notable gap between the students' belief in supplements and their actual knowledge.

In conclusion, Dietary supplement use is highly prevalent among Libyan medical students, driven mainly by perceived health benefits and fatigue management.

Keywords: Dietary supplement (DS), Prevalence, Knowledge, Usage, Attitudes.

الملخص

تمثّل استخدام المكملات الغذائية مصدراً مهماً لنظام غذائي متوازن، وهذا النظام الغذائي ضروري للحفاظ على الصحة العامة والوقاية من الأمراض المزمنة. وقد انتشرت المكملات الغذائية في العديد من البلدان، ويتزايد استخدامها بين طلاب الطب في جميع أنحاء العالم.

لذا، هدفت هذه الدراسة إلى تقييم مدى انتشار استخدام المكملات الغذائية وأنماط استخدامها بين طلاب الطب في جامعة طرابلس، طرابلس–ليبيا.

تم جمع البيانات من خلال استمارة إلكترونية عبر Google Forms بين طلاب كلية الطب والجراحة بجامعة طرابلس في نهاية عام 2024، بالإضافة إلى استخدام استبيانات ورقية. بلغ إجمالي عدد الطلاب الذين أكملوا الاستبيان 84 طالباً، وتكون الاستبيان من ثلاثة محاور: الخصائص الاجتماعية والديموغرافية، ومدى انتشار استخدام المكملات الغذائية، والوعي حول استخدام هذه المكملات.

أظهرت النتائج أن الدراسة شملت مجموعة من الطلاب (مع غلبة للإناث، حيث بلغ عددهن 66 مقابل 18 من الذكور). كما كانت أغلبية المشاركين من غير المتزوجين، وكانت الفئة العمرية الأكثر شيوعاً هي 23–25 عاماً، وكان مؤشر كتلة الجسم طبيعياً لدى معظمهم (65.5%)، وكان غالبية المشاركين من غير المدخنين (97.6%). كما كشفت الدراسة أن معدل انتشار استخدام المكملات كان مرتفعاً جداً، حيث أفاد (2.4%) فقط من الطلاب أنهم لم يستخدموها مطلقاً. ولوحظ أيضاً وجود فجوة ملحوظة بين اعتقاد الطلاب بفعالية المكملات ومعرفتهم الفعلية بها.

في الختام، يُعد استخدام المكملات الغذائية شائعاً بشكل كبير بين طلاب الطب الليبيين، ويعود ذلك بشكل رئيسي إلى الاعتقاد بفوائدها الصحية وإدارة حالات الإرهاق والتعب.

الكلمات المفتاحية: المكملات الغذائية، الانتشار، المعرفة، الاستخدام، الاتجاهات

Introduction

The prevention of diseases and maintenance of good health require sufficient and a well-balanced diet. This diet ensures an adequate quantity of vitamins, minerals and nutrients[1]. The inadequate nutrition is one of the several risk factors that contribute to the development of non-communicable diseases, such as coronary heart disease, type 2 diabetes mellitus, osteoporosis and cancers[2]. Dietary supplements can contain nutrients, vitamins, minerals and other ingredients which can be used for lowering the health problem's risk and for managing nutritional deficiencies[3].

Nowadays, the administration of dietary supplements has grown due to their considered safety if administered within their accepted recommended dietary intakes and effectiveness in serving individuals needs reaching their nutritional targets[4,5].

In the United States, approximately 68% of Americans adults have been reported consume the dietary supplements to improve their health, prevent disease and give them energy[6]. In addition, the prevalence of dietary supplements consumption has been increased among adult students in Asia, Canada, Middle East and parts of Europe[7,13].

Many studies showed that the use of dietary supplements have potentially grown among students to maintain their good health and enhance their performance[14,15].

Based on our knowledge, there is no study aimed to evaluate the dietary supplements usage in Libyan medical students. Therefore, we aimed in this study to investigate the prevalence of dietary supplements use and examine their knowledge, attitude and practice among students in Libya specifically faculty of medicine at the University of Tripoli.

Material and Methods

We conducted a cross-sectional study using questionnaire through an online Google form among students at Tripoli University- Faculty of medicine and surgery on the year of 2024 end.

The study participants were about 134 students aged from 17 to 26 years and above. Among these students 84 students filled out the questionnaire completely. Hence, we excluded the uncompleted forms. The students were recruited by faculty members and students through social media after obtaining student's informed consent. The consent procedure involved acknowledging the students the objectives of this study and their rights to accept or refuse the participation.

The questionnaire was in English and structured based on literature review and was divided into three parts. The first part was the sociodemographic which includes gender, age, marital status, source of income, monthly income and year of the study at the University. In addition, we included the life style characteristics such as, BMI (kg/m^2) upon calculating the given body weight and height, smoking, physical activity and using of dietary supplements. The second part was the prevalence which includes the reasons, sources, knowledge and good/bad experience of dietary supplement use. The third part included the awareness about the use of these supplements.

All data were analyzed using Statistical Package for Special Science SPSS Statistics version 27.0 (IBM SPSS Statistics for Windows).

The percentages, means and standard deviation were calculated for the variables as appropriate and their associations were examined via chi-square tests. The association were considered significant when *p* values were less than 0.05.

The results were described and summarized in tables.

Results

The majority of participants were female about 66 participants, while the other 18 participants were males. In addition, the majority of participants were single and about half of students aged 23-25. More than half of the participants depended on their parents for their source of income. Moreover, about 53.5% the students had a monthly income about 2000-5000 LYD which considered average wage according to Libyan population. According to their years of study, the majority of participants were in their fourth and fifth year of study at the University.

Regarding the student's lifestyle characteristics, most of the participants had a normal BMI (65.5%) and were nonsmokers (97.6%), and more than half were not physically active and a had a sedentary lifestyle (59.5%). Moreover, the study showed that the prevalence of dietary supplement use among studied students was high and only 2.4 % of students were not customized to use dietary supplements (Table 1).

The participants who used or sometimes used the dietary supplements (N=82) reported that the most common reasons for using dietary supplements included promoting general

physical and mental health (35.4%), having nutritional deficiency (26.8%), reducing fatigue (20.7%), followed by improving diet (9.8%) and preventing illness (3.7%) (Table 2).

This study showed that the participants encouraged themselves (59.8%) to take the dietary supplements, while some participants took it based on physician's prescription (23.2%) or a consultation from the pharmacists (10.9%).

Regarding the negative experience of using the dietary supplements, this study revealed that the majority of the students (47.6%) did not experience any negative or adverse effects, while weight gain and sleeplessness were present on the exposure of dietary supplements by students (23.2%) and (12.2%) respectively. On the other hand, the most frequently reported beneficial effects of dietary supplement use were increased alertness (36.6%) and improving school performance (19.5%).

In our survey we aimed to study the reasons for stopping dietary supplements intake by students. This survey exhibited that the reasons for stopping dietary supplements intake were end of prescription or scheduled use period (43.9%), losing interest in their use (28%), expensive (17.1%), no benefit was seen (7.3%) and side effects were detected (3.7%) respectively (Table 2).

This survey included studying the comprehension and awareness of students on using the dietary supplements. About three-thirds of the students (72.6%) did not have sufficient information about the dosage of dietary supplements. Most of the students thought that using the supplements was good for their health (85.7%), while 14.3% were not sure and none of the students answered no to this question.

Moreover, more than half of the participants (67.9%) agreed that lifestyles like smoking, drinking soft drinks, and taking medications deplete their nutrition. In addition, a high percentage (86.9%) thought that the dietary supplements like minerals and vitamins are necessary for food metabolism, and only (13.1%) reported the otherwise.

Concerning the student's comprehension about the safety of using the dietary supplements, this survey showed that most of the students realized that using the dietary supplements is not always safe (80.9%), (72.6%) of the students recognize the side effects of dietary supplements, and (57.2%) of the students acknowledged that interactions can

occur when administering the dietary supplements with food, drinks, and drugs. However, high percentages of the participants would advise their family and friends to take nutritional supplements when doctors recommend it and (11.9%) of the students did not recommend them at all (Table 3).

The association between gender, age and the prescriber shows that the p-values are greater than 0.05 for all variables. Therefore, we can say that there is no significant association between gender and prescriber nor the association between age and prescriber (Table 4-5).

Moreover, in this study, no significant association between gender and reasons for stopping dietary supplements nor the association between age and reasons for stopping dietary supplements were shown (Table 6-7).

Parameter	N (%)
Gender	
Male	**18 (21.4%)**
Female	**66 (78.6%)**
Age (Years)	
17 – 19	**4 (4.8 %)**
20- 22	**18 (21.4 %)**
23-25	43 **(51.2%)**
26 And above	19**(22.6%)**
Marital status	
Single	**75 (89.3%)**
Married	**9 (10.7%)**
Source of income	
Parents support	48**(57.14%)**
Part-time Job	22**(26.2%)**
Savings	2 **(2.4%)**
Parents support, Part-time Job	6 **(7.14%)**
Parents support, Savings	3 **(3.6%)**
Parents support, Savings, Part-time Job	3 **(3.6%)**
Monthly income LYD	
Less than 2000	**25 (29.8%)**
2001-5000	**45 (53.5%)**
More than 5001	**14 (16.7%)**
Year of Study	
1st Year	**11 (13.1%)**
2nd Year	**7 (8.3%)**
3rd Year	**8 (9.5%)**

4th Year	24 (28.6%)
5th Year	27 (32.2%)
6th Year (Intern)	7 (8.3%)
BMI (kg/m2)	
Underweight	2 (2.4%)
Normal	55 (65.5%)
Overweight	20 (23.8%)
Obese	7 (8.3%)
Smoking	
Yes	2 (2.4%)
No	82 (97.6%)
Physical activity	
Sedentary lifestyle	50 (59.5%)
Daily workout	14 (16.7%)
Weekly workout	20 (23.8%)
How long you have been using dietary supplements	
Never use	2 (2.4%)
Sometimes use	44 (52.4%)
One month	15 (17.6%)
Three months	9 (10.7%)
Six months	2 (2.4%)
Nine months	1 (1.2%)
More than one year	11 (13.1%)

Table 1: Participants Sociodemographic characteristics and lifestyle characteristics of study participants.

Parameter	N (%)
What are your reasons for using dietary supplements؟	
Nutritional deficiency	22 (26. 8%)
Improve diet	8 (9. 8%)
To prevent an illness	3 (3.7%)
To promote general health (Physical and mental)	29 (35.4)
To reduce fatigue	17 (20.7%)
Vit D deficiency	1 (1.2%)
Pregnancy	1 (1.2%)
To lose weight	1 (1.2%)
Who prescribed you the dietary supplement?	
Physician	19 (23.2%)
Pharmacist	9 (10.9%)
Self-prescribed	49 (59. 8%)
Relatives and friends	2 (2.4%)
TV, Internet	3 (3.7%)

While using the dietary supplement, have you experienced any of the following bad results?	
Abdominal pain	3 (3.7%)
Constipation	1 (1.2%)
Nausea	2 (2.4%)
Weight gain	19 (23.2%)
Heart palpitations	4 (4.9%)
Sleeplessness	10 (12.2%)
Heart palpitations, Sleeplessness	1 (1.2%)
Heart palpitations, Sleeplessness, Shortness of breath, Weight gain	1 (1.2%)
Seizures	1 (1.2%)
Heart palpitations, Seizures	1 (1.2%)
None	39 (47.6%)
While using the dietary supplement, have you experienced any of the following good results?	
Better school performance	16 (19.5%)
Increased alertness	30 (36.6%)
Memory improved	11 (13.4%)
Better school performance, increased alertness	5 (6.1%)
Better school performance, Memory improved	2 (2.4%)
Increased alertness, Memory improved	10 (12.2%)
Better school performance, increased alertness, Memory improved	4 (4.9%)
Weight loss	2 (2.4%)
None	2 (2.4%)
Why did you stop taking dietary supplements?	
End of prescription or scheduled use period	36 (43.9%)
Expensive	14 (17.1%)
Losing interest in using it	23 (28%)
Not benefit was seen	6 (7.3%)
Side effects were detected	3 (3.7%)

Table 2: Questionnaire used to determine knowledge, attitudes and practices regarding dietary supplements in study participants.

Parameter	N (%)
Do you have sufficient information about the dosage of dietary supplements?	
Yes	23 (27.4%)
No	61 (72.6%)
Do you think using dietary supplements is good for your health?	
Yes	72 (85.7%)
No	0

Not sure	**12 (14.3%)**
Do you think your lifestyle, like smoking, drinking soft drink, and taking medications, deplete your nutrition?	
Yes	**57 (67.9%)**
No	**14 (16. 7%)**
Not sure	**13 (15.4%)**
Do you think dietary supplements, like minerals and vitamins, are necessary for food metabolism?	
Yes	**73 (86.9%)**
No	**11 (13.1%)**
Do you think the use of dietary supplements is always safe?	
Yes	**16 (19.1%)**
No	**68 (80.9%)**
Do you know the side effects of dietary supplements?	
Yes	**61 (72.6%)**
No	**23 (27.4%)**
Do you think that taking a drug, food or drinks with the dietary supplement might interact with each other?	
Yes	**48 (57.2%)**
Some knowledge	**27 (32.1%)**
No	**9 (10.7%)**
Do you advise your family and friends to take dietary supplements?	
Yes, when doctors recommend	**53 (63.1%)**
Yes, I always recommended	**21 (25%)**
Not at all	**10 (11.9%)**

Table 3: Awareness and knowledge about the dosage, necessity, safety, side effects, drug interactions and recommendation of using the dietary supplements.

		Gender				
		Female		Male		
Prescriber		**n**	**%**	**n**	**%**	**p-value**
Attending physician	**No**	**49**	**75.4%**	**16**	**24.6%**	**.188**
	Yes	**17**	**89.5%**	**2**	**10.5%**	
Internet- TV	**No**	**64**	**79.0%**	**17**	**21.0%**	**.609**
	Yes	**2**	**66.7%**	**1**	**33.3%**	
Pharmacist	**No**	**58**	**77.3%**	**17**	**22.7%**	**.951**
	Yes	**8**	**88.9%**	**1**	**11.1%**	
Relatives and friends	**No**	**64**	**78.0%**	**18**	**22.0%**	**.455**
	Yes	**2**	**100.0%**	**0**	**0.0%**	
Self-prescribed	**No**	**29**	**83.0%**	**6**	**17.0%**	**.357**
	Yes	**37**	**75.5%**	**12**	**25.5%**	

Table 4: Association Between Gender and Prescriber

Prescriber		Age Group 17-19 n	%	20-22 n	%	23-25 n	%	26 and above n	%	p-value
Attending physician	No	3	4.6%	13	20.0%	34	52.3%	15	23.1%	.944
	Yes	1	5.3%	5	26.3%	9	47.4%	4	21.1%	
Internet- TV	No	3	3.8%	18	22.5%	42	52.5%	17	21.2%	.872
	Yes	1	33.3%	0	0.0%	1	33.3%	1	33.3%	
Pharmacist	No	4	5.3%	15	20.0%	38	50.7%	18	24.0%	.621
	Yes	0	0.0%	3	33.3%	5	55.6%	1	11.1%	
Relatives and friends	No	4	4.9%	17	20.7%	42	51.2%	19	23.2%	.719
	Yes	0	0.0%	1	50.0%	1	50.0%	0	0.0%	
Self-prescribed	No	2	5.6%	11	30.6%	17	47.2%	6	16.7%	.294
	Yes	2	4.2%	7	14.6%	26	54.2%	13	27.1%	

Table 5: Association Between Age Group and Prescriber

			Gender Female	Male	p-value
Reason For Stopping	End of prescription or scheduled use period	n	28	8	.869
		%	77.8%	22.2%	
	Expensive	n	12	2	
		%	85.7 %	14.3%	
	Losing interest in using it	n	18	5	
		%	78.3%	21.7%	
	Not benefit was seen	n	5	1	
		%	83.3%	16. 7%	
	Side effects were detected	n	3	0	
		%	100.0%	0.0%	

Table 6: Association Between Gender and Reason for Stopping Dietary Supplements

			Age Group 17-19	20-22	23-25	26 and above	p-value
Reason For Stopping	End of prescription or scheduled use period	n	2	8	19	7	.834
		%	5.6%	22.2%	52.8%	19.4%	
	Expensive	n	0	3	7	4	
		%	0.0%	21.4%	50.0%	28.6%	
	Losing interest in using it	n	2	4	12	5	
		%	8.7%	17.4%	52.2%	21.7%	
	Not benefit was seen	n	0	0	3	3	
		%	0.0%	0.0%	50.0%	50.0%	
	Side effects were detected	n	0	0	2	1	
		%	0.0%	0.0%	66. 7%	33.3%	

Table7: Association Between Age Group and Reason for Stopping Dietary Supplement

Discussion

This study assessed the prevalence, patterns, and awareness of dietary supplement use among medical students at the University of Tripoli, Libya. The findings reveal a high prevalence of dietary supplement use, indicating that supplement consumption is common among medical students.

The prevalence observed in this study appears higher than that reported among medical students in Saudi Arabia, where usage were lower (43.1%) compared to our findings[16]. This difference may reflect dietary inadequacies, academic stress, irregular eating habits, and limited access to balanced nutrition, leading students to rely on supplements as a compensatory measure. Similar trends to our findings have been reported in other Saudi Arabia university study, suggesting that supplement use is often perceived as necessary rather than optional[17].

The primary reasons for supplement use in this study were promotion of general physical and mental health, correction of nutritional deficiencies and reduction of fatigue, which aligns with findings from studies conducted in UAE[18]. Unlike other study where aesthetic reasons were predominated possibly reflecting differences in academic demands and sociocultural factors[19].

A notable concern is the high rate of self-prescription, with most students initiating supplement use without professional consultation. This finding is consistent with University of Tabuk, Saudi Arabia students study and raises concerns about inappropriate dosing and unnecessary supplementation[20]. Although students demonstrated reasonable awareness regarding supplement safety and potential side effects, knowledge about correct dosage was insufficient, highlighting a gap between awareness and safe practice.

While many students in our study reported perceived benefits such as increased alertness and improved academic performance, a considerable proportion also experienced adverse effects, including weight gain, sleeplessness and palpitations. These findings reinforce that dietary supplements are not risk-free and emphasize the need for medical supervision.

No significant associations were observed between gender or age and prescribing patterns or reasons for discontinuation, suggesting that supplement use is widespread across demographic subgroups and primarily driven by shared academic and lifestyle factors.

The present study has a limitation that the sample size was too small to be representative of all medical students attending Tripoli University. Further research is recommended that should involve a larger study sample to determine how economic factors influence dietary supplement use. It should determine types of dietary supplement taken and also evaluate the impacts of dietary supplement consumption on medical students' daily routines.

Conclusion

Dietary supplement use is highly prevalent among Libyan medical students, driven mainly by perceived health benefits and fatigue management. Despite reasonable awareness of safety concerns, widespread self-prescription and inadequate knowledge of dosage persist. These findings highlight the need for enhanced nutrition education and evidence-based guidance within medical curricula to promote safe and rational use of dietary supplements.

Conflict of Interest

The authors declare that there is no conflict of interest.

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