

# Knowledge, attitude, and practices regarding dietary supplements in Saudi Arabia

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## ABSTRACT

**Objective:** The study was aimed at determining the characteristics and lifestyle choices of dietary supplement users and to assess knowledge, attitude, and practice related to dietary supplements in the health sciences students versus other individuals in Saudi Arabia. **Methods:** A descriptive cross-sectional, online questionnaire-based study was conducted on 351 participants (138 were health sciences students and 203 were not). The results were documented and analyzed using SPSS- version 22. **Results:** More than half of the participants consumed dietary supplements, 53.6% of the health sciences students versus 56.3% of the other individuals. Multivitamins were the most commonly used supplement in all participants (49%). Both groups believed that people might need dietary supplements more during specific times as pregnancy or recovery from diseases, with higher percentage in health sciences students than other people (43% versus 38%). Most of the students were somewhat aware about the facts concerning dietary supplements compared to others. Significant difference ( $P \leq 0.05$ ) was found concerning opinion and beliefs related to dietary supplements between the two groups. However, the health sciences students were not highly knowledgeable about the facts regarding supplements. **Conclusion:** The users of dietary supplements tend to incorporate these products into their lifestyles as part of a broader focus on healthy living. Many of health sciences students do not have accurate information about dietary supplements. It is important to strengthen the health science curriculum concerning this topic, with the aim of producing better-informed future professionals.

**Keywords:** Attitude, dietary supplements, health sciences, knowledge, practices

## Introduction

Diet and nutrition play a key role in the maintenance of good health and prevention of diseases. While a well-balanced diet aims at providing the essential nutrients, the role of dietary supplements in complementing the diet cannot be undermined.<sup>[1]</sup> Dietary supplements represent an important source of essential nutrients.<sup>[2]</sup>

The Dietary Supplement Health and Education Act of 1994 (DSHEA) defines dietary supplements as products, not drugs, that contain an ingredient intended to supplement the diet. They include vitamins, minerals, and other less familiar substances; as herbals, amino acids, and enzymes.<sup>[3]</sup> They often contain 100%

or more of the daily need of one or more nutrients.<sup>[2,4]</sup> However, supplements should not replace the variety of foods that are important to a healthful diet. Unlike drugs, supplements are not intended to treat, diagnose, prevent, or cure diseases.<sup>[5]</sup>

Dietary supplements have been considered by many public health officials worldwide as an important strategy for prevention of micronutrient deficiencies and reduction of birth defects.<sup>[6,7]</sup>

The use of dietary supplements has expanded explosively during the last decades.<sup>[8]</sup> Multivitamins represent the most commonly used supplements in the United States and other developed countries. Over the past decades, multivitamin use has increased,<sup>[9]</sup> particularly among older individuals.<sup>[10]</sup>

Many individuals are capable of obtaining all of the required vitamins and minerals through a healthy diet alone. However,

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some groups of people because of distinct nutritional needs may benefit most from taking a vitamin and mineral supplements. Women of child-bearing age, usually need extra calcium and iron. Pregnant or lactating women, older adults, children and teenagers with irregular eating habits, vegetarians, people with eating disorders or medical conditions as deficiency diseases, and absorption problems, and people who often eat processed or fast food are all groups of concern.<sup>[11]</sup>

Despite variations in the composition of supplemental products, reported characteristics of supplement users have been consistent. Supplement use in adults has been consistently reported to increase with age, income, and education; and within each age group, women are more likely to use supplements than men. These demographic factors may be related to observed differences in health awareness and habits.<sup>[12]</sup>

Several studies have examined lifestyle associations with dietary supplement use. The evidence from numerous surveys showed that dietary supplement users are more likely to adopt a number of positive health-related habits. These include better dietary patterns, regular exercise, maintaining a healthy body weight, and avoidance of smoking.<sup>[9,13]</sup>

Scientific reports have indicated reasons behind taking supplements as to maintain general good health,<sup>[14]</sup> ensure adequate nutrition,<sup>[15]</sup> enhance physical appearance,<sup>[16]</sup> and promote weight loss.<sup>[17]</sup>

Consumers of supplements use a variety of sources to gain knowledge about dietary supplements and to make their decisions to use these products, mostly without knowing the credibility and reliability of the information.<sup>[18]</sup> These sources include family, friends, media (television, magazines, newspapers, and internet), doctors, pharmacists, nurses, and nutritionists.<sup>[19,20]</sup>

Many supplements contain active ingredients that have strong biological effects in the body. This could make them unsafe in some situations and hurt or complicate health.<sup>[5]</sup> Consumers may believe dietary supplements as “assumers may believe dietary supplementts that have strong biological effects in the body. Dietary supplements always not subjected to the same stringent safety and efficacy regulations that FDA imposes on prescription and over-the-counter drugs.<sup>[21]</sup>

Adverse effects caused by dietary supplements have been reported worldwide and have been attributed to two causes. The first is the use of low quality or illegal products that contain drug ingredients, and the other cause-which is more important-is the inappropriate use of dietary supplements, including their excessive intake and the concomitant use of various dietary supplements and/or medicines.<sup>[22]</sup>

In certain population groups, dietary supplements may not be risk free under certain circumstances as pregnancy, nursing, children, and some chronic medical conditions as hypertension,

diabetes mellitus, and heart diseases. Large doses of even safe dietary supplements such as vitamins and minerals might result in direct toxicity to consumers. Excessive use of calcium might lead to renal complications, while excessive use of vitamin A has been linked to liver abnormalities and some central nervous system adverse effects.<sup>[23]</sup>

There is inconsistent evidence on which dietary supplements actually lower risk of chronic diseases and some may even increase risk. Previous meta-analysis of randomized controlled trials showed inconsistent effects of dietary supplements.<sup>[24]</sup> One of the largest meta-analysis showed that treatment with beta carotene, and vitamin E may increase mortality,<sup>[25]</sup> whereas vitamin D supplementation seems to be associated with reduced mortality.<sup>[26]</sup> Vitamin B supplementation has a significant protective effect on stroke, but no effect on cardiovascular disease mortality or cancer. Calcium supplementation has no significant effects on cancer risk.<sup>[27]</sup> Omega-3 fatty acids are probably the most studied dietary supplement and recent studies showed no protective effects on cardiovascular diseases. However, there seems to be some differences between primary and secondary prevention trials, between lower versus higher doses and between different clinical end-points.<sup>[28]</sup>

Consumers have little rigorous scientific information to guide them in selecting the types and dosages of supplements. According to the United States Commission on Dietary Supplement Labels, it is important for health and nutrition professionals to become more knowledgeable about all types of dietary supplements in order to help consumers make appropriate choices.<sup>[29]</sup>

Data on the prevalence and use of dietary supplements are limited in Saudi Arabia and little is known about supplement users and their dietary behavior. Health sciences students can widely influence the beliefs and practices regarding health in general population. They can advise people regarding the use of dietary supplements and the effects of those supplements on health. Since, it is believed that the health behavior and opinion of health sciences students will be reflected in their attitude while counseling patients regarding diet and nutrition.<sup>[1]</sup>

## Aim of the Work

The aim of this study is to determine the characteristics and lifestyle choices of dietary supplement users and to assess knowledge, attitude, and practice related to dietary supplements in the health sciences students versus other individuals in Saudi Arabia.

## Methods

### Study design

A descriptive cross-sectional, online questionnaire-based study was conducted on 351 participants (138 were a health

sciences students and 203 were not), during the period of March–April 2015. A structured self-administered questionnaire was formed based on a review of the dietary supplements literatures. It included three parts: Sociodemographic data and lifestyle practices of the participants, with a closed insight to supplement users; practices of participants concerning use of vitamins, minerals, herbals, and other dietary supplements with detailed information about type, consumption frequency, and duration; and finally knowledge and opinion regarding dietary supplements in all participants.

**Statistical analysis**

The results were documented and analyzed using SPSS- version 22 (SPSS Inc., Chicago, USA). Responses of health sciences students versus other individuals regarding knowledge and use of dietary supplements were all documented and analyzed. Chi-square test was used to test the differences in proportion of categorical variables between the two groups concerning opinion about dietary supplements. Statistical results were considered to be significant at  $P \leq 0.05$ .

**Results**

The study included 351 participants who completed the questionnaire, from them, 138 were health sciences students and 213 were not. The majority of the respondents were females (84%) and the rest (16%) were males. The greatest proportion of the participants was in the age group of 18–25 years (63%) and with high educational level (81.2%) [Table 1].

As shown in Table 2 concerning lifestyle practices, most of the participants were nonsmokers (92.6%), with good health status (91.2%), occasionally eat healthy food (62.7%) and getting enough sleep (44.7%), but high percentage of participants was exercised irregularly (76.4%).

Concerning demographic characteristics and lifestyle of dietary supplement users, most of the supplement users were female (85.9%), of young age (18–25 years) (59.2%), and with high educational level (84.5%). Also, high percentage of the users were nonsmokers (94.3%), eat healthy diet (33.5%), getting enough sleep (41.2%), and exercised regularly (30%) [Table 3].

Concerning use, practices, and attitudes regarding dietary supplements, more than half of the participants consumed dietary supplements [Table 4]. Usage was (53.6%) among health sciences students, which is slightly lower than the other individuals (56.3%).The supplements most commonly used in all participants were multivitamins (49%), vitamin D (37.6), iron (28.9%), calcium (26.8%), omega-3 (21.1%), vitamin B (16%), and folic acid (14%) [Figure 1].

The study showed that regular supplement usage was more in health sciences students (48.6%) than others (46.7%). A total of 92.4% of the health sciences students indicated that they were read and follow direction on the supplement label as compared to (84%) in the other

**Table 1: Sociodemographic characteristics of the study participants (n=351)**

| Variable          |                          | Number | Percentage (%) |
|-------------------|--------------------------|--------|----------------|
| Gender            | Male                     | 56     | 16             |
|                   | Female                   | 295    | 84             |
| Age               | <18                      | 11     | 3.1            |
|                   | 18-25                    | 221    | 63             |
|                   | 26-45                    | 92     | 26.2           |
|                   | >45                      | 27     | 7.7            |
| Educational level | Primary school           | 9      | 2.6            |
|                   | High school              | 57     | 16.2           |
|                   | College                  | 285    | 81.2           |
| Specialty         | Health sciences students | 138    | 39.3           |
|                   | Other individuals        | 213    | 60.7           |

**Table 2: Distribution of lifestyle practices among the study participants (n=351)**

| Variable         |                      | Number | Percentage (%) |      |
|------------------|----------------------|--------|----------------|------|
| Smoking          | Smoker               | 22     | 6.3            |      |
|                  | Ex-smoker            | 4      | 1.1            |      |
|                  | Nonsmoker            | 325    | 92.6           |      |
| Regular exercise | Yes                  | 83     | 23.6           |      |
|                  | No                   | 268    | 76.4           |      |
| Health status    | Good                 | 320    | 91.2           |      |
|                  | Poor                 | 31     | 8.8            |      |
| Eat healthy      | Yes                  | 101    | 28.8           |      |
|                  | No                   | 30     | 8.5            |      |
| Diet             | Occasional           | 220    | 62.7           |      |
|                  | Getting enough sleep | Yes    | 140            | 39.9 |
|                  | No                   | 54     | 15.4           |      |
|                  | Occasional           | 157    | 44.7           |      |

**Table 3: Sociodemographics and lifestyle practices among dietary supplement users (n=194)**

| Variable          |                      | Dietary supplement user (n=194) |                |      |
|-------------------|----------------------|---------------------------------|----------------|------|
|                   |                      | Number                          | Percentage (%) |      |
| Gender            | Male                 | 27                              | 13.9           |      |
|                   | Female               | 167                             | 85.9           |      |
| Age               | <18                  | 5                               | 2.6            |      |
|                   | 18-25                | 115                             | 59.2           |      |
|                   | 26-45                | 57                              | 29.4           |      |
|                   | >45                  | 17                              | 8.8            |      |
| Educational level | Primary school       | 5                               | 2.6            |      |
|                   | High school          | 25                              | 12.9           |      |
|                   | College Graduate     | 164                             | 84.5           |      |
| Smoking           | Smoker               | 8                               | 4.1            |      |
|                   | Ex-smoker            | 3                               | 1.6            |      |
|                   | Nonsmoker            | 183                             | 94.3           |      |
| Regular exercise  | Yes                  | 58                              | 30             |      |
|                   | No                   | 136                             | 70             |      |
| Health status     | Good                 | 175                             | 90.2           |      |
|                   | Poor                 | 19                              | 9.8            |      |
| Healthy           | Yes                  | 65                              | 33.5           |      |
|                   | No                   | 15                              | 7.7            |      |
| Diet              | Occasional           | 114                             | 58.8           |      |
|                   | Getting enough Sleep | Yes                             | 80             | 41.2 |
|                   | No                   | 26                              | 13.4           |      |
|                   | Occasional           | 88                              | 45.4           |      |

**Table 4: The use of dietary supplements in the health sciences students versus other individuals (n=351)**

| Variable           | Health sciences students (n=138) |                | Other Individuals (n=213) |                | Total (n=351) |                |
|--------------------|----------------------------------|----------------|---------------------------|----------------|---------------|----------------|
|                    | Number                           | Percentage (%) | Number                    | Percentage (%) | Number        | Percentage (%) |
| Supplement user    | 74                               | 53.6           | 120                       | 56.3           | 194           | 55.3           |
| Nonsupplement user | 64                               | 46.4           | 93                        | 43.7           | 157           | 44.7           |

individuals. While about 44.6% of the health sciences students were taking dietary supplements according to doctor prescription, 54.2% of the other individuals were doing. The experience of side effects related to dietary supplements between health sciences students and other individuals were (16.6%) and (13.5%), respectively. Stomach upset/pain and nausea/vomiting were the most side effects occurred in participants [Table 5].

By assessing knowledge and opinion of participants regarding supplements, participants in both groups believed that people might need dietary supplements more during specific times as pregnancy or recovery from diseases, with higher percentage in health sciences students than other people (43% vs 38%). Health sciences students considered elderly as the least group needs dietary supplements (9%), while others considered childhood period as the least (12%) [Figure 2a and b].

Reasons for consumption of dietary supplements in the opinion of almost all the participants were similar. The commonest reasons were to maintain good health and ensure adequate nutrition. Weight loss was considered the least reason for use among the participants [Table 6].

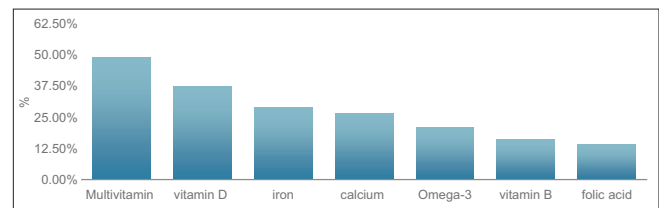
The source of information about dietary supplements which is the most appropriate in the opinion of the majority of health sciences students was internet and pharmacists (62.3% and 46.3%, respectively) compared to (47.4% and 40.8%) for the internet and doctors respectively in other individuals. Media (newsletter, magazine) was considered to be the least appropriate by the health sciences students (15%) as compared to books for the others (4.7%) [Figure 3].

The participants' opinion were asked, whether they considered diet only sufficient for good health for all, whether they showed dietary supplements necessary for all ages, whether they considered regular use of supplements could prevent occurrence of chronic diseases or cancers and whether they considered use of dietary supplements as completely safe. The participants had three options to express their opinions namely, 'agree', 'disagree', and 'not sure'. The responses of health sciences students were generally between 'agree' and 'disagree'. Other individuals responded "not sure" for almost all five questions [Figure 4].

Most of the students were aware of the facts concerning dietary supplements compared to others. To make a clear demarcation of the respondents' opinion, their responses were scored. One was given for the correct answer and zero for the wrong one. For the five items, no was the right answer. Significant difference between the two groups was found for all the five questions although

**Table 5: Practice of dietary supplement use in health sciences students versus other individuals (n=194)**

| Variable   | Health sciences students users (n=74) |                | Users of other individuals (n=120) |                |
|--|---------------------------------------|----------------|------------------------------------|----------------|
|  | n                                     | Percentage (%) | n                                  | Percentage (%) |
| Regular use of supplements                                 | 36                                    | 48.6           | 56                                 | 46.7           |
| Taking dietary supplement according to doctor prescription | 33                                    | 44.6           | 65                                 | 54.2           |
| Follow direction on the supplements label                  | 70                                    | 95.8           | 105                                | 87.5           |
| Experience of side effects during use                      | 10                                    | 13.5           | 20                                 | 16.6           |



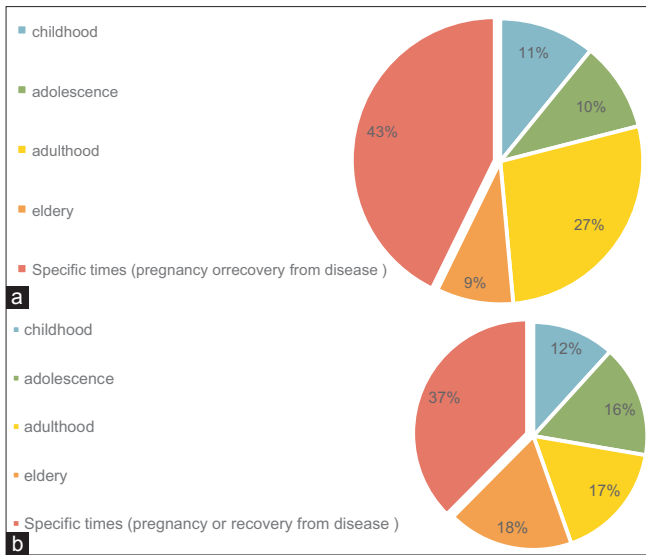
**Figure 1: Types of the most commonly used dietary supplements among the participants (n=194)**

the percentage of right answers in health science students were generally low [Table 7].

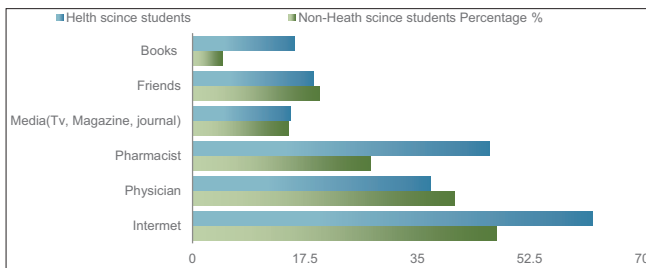
## Discussion

It is a well-known fact that a balanced diet and adequate nutrition is very essential in maintaining good health. With growing awareness among people about health and preventing diseases, usage of dietary supplements is rampant.<sup>[2,15]</sup> It was documented from various studies that awareness regarding nutrition is increasing in the general population.<sup>[2,30]</sup> The study done by Radimer *et al.* suggests that there is a dramatic increase in supplement usage and nutritional awareness in the developed countries.<sup>[4]</sup> Hence, this study was conducted in order to gain an insight into the usage of dietary supplements in Saudi Arabia.

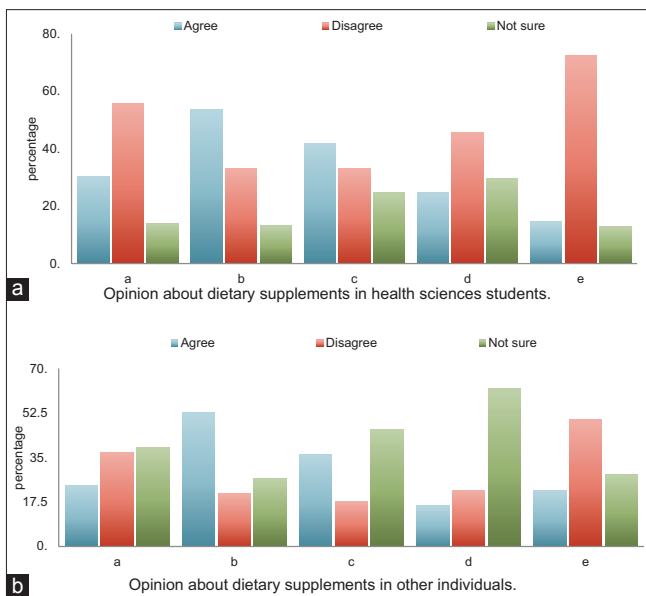
Many studies documented supplement users as having somewhat positive attitude toward their health.<sup>[12]</sup> They were more likely to be affluent, health conscious, less likely to smoke, and likely to eat more healthy food.<sup>[31]</sup> Other studies on the demographic characteristics of dietary supplements users also found that they were mainly females, with a higher education and of young age (20–39 years).<sup>[12,32]</sup> These results were consistent with our study results.



**Figure 2:** (a) Stages needed dietary supplements more in the opinion of health sciences students (b) Stages needed dietary supplements more in the opinion of other individuals



**Figure 3:** Sources of information about dietary supplements in health sciences students versus other individuals



**Figure 4:** Opinion about dietary supplements in health sciences students and other individuals/(a) The amount of supplements they get from food is enough for their health needs. (b) Dietary supplements are necessary for all ages. c-Regular use of supplements prevents chronic diseases. d-Dietary supplements can prevent cancers. e-Supplements are sold over the counter so, they are completely safe to take

**Table 6: Reasons for consumption of dietary supplements in health sciences students versus other individuals (n=351)**

| Reason                    | Health sciences students (n=138) |              | Other individuals (n=213) |                |
|---------------------------|----------------------------------|--------------|---------------------------|----------------|
|                           | n                                | Percentage % | n                         | Percentage (%) |
| Maintain good health      | 46                               | 33.3         | 85                        | 40             |
| Ensure adequate nutrition | 47                               | 34.1         | 57                        | 26.8           |
| Weight loss               | 0                                | 0            | 5                         | 2.3            |
| Enhance appearance        | 19                               | 13.8         | 19                        | 8.9            |
| Prevent disease           | 8                                | 5.8          | 12                        | 5.6            |
| No specific reason        | 18                               | 13           | 35                        | 16.4           |

Our study found that females were more likely to use supplements (86%). Women may be more health conscious than men; however, the increased rates of supplement usage among women could also partially be attributed to the increased use of supplemental calcium and vitamin D among women for the purpose of maintaining bone health throughout the lifespan and preventing the onset of osteoporosis during aging.<sup>[33]</sup>

Our results showed that supplement usage is higher in people with high education (84.5%), which was consistent with previous studies. The National Health and Nutrition Examination Survey (NHANES) 2003–2006 showed that supplements were used by 61% of those with more than a high-school education and by only 37% of those with less than high-school education (Bailey *et al.*, 2010).<sup>[9]</sup> NHANES 1999–2000 showed supplement usage by 62% of those with more than a high school education, 48% of those with a high-school education, and only 35% of those with less than high-school education.<sup>[4]</sup>

Our study showed that (94.3%) of dietary supplements users have never smoked which was a healthy habit that tends to be somewhat more common among supplement users. In NHANES 1999–2000, supplement use was reported by 61% of former smokers and 52% of people who had never smoked, compared to 43% of current smokers.<sup>[4]</sup> In the Multiethnic cohort study, current smokers were also found to be less likely to report supplement use.<sup>[13]</sup>

People who use dietary supplements were more likely to pay attention to their diet and to make an effort to improve dietary habits. Our study showed that 33.5% of users were eating healthy diet and 58.8% tried to eat healthy diet. In people over 50, in the Continuing Survey of Food Intakes by Individuals (CSFII) 1994–96, the perceived importance of consuming a healthy diet was “a significant predictor of supplement use”.<sup>[34]</sup> Our results showed that 30% of dietary supplement users were exercised regularly which was consistent with previous studies.<sup>[4,13]</sup>

This study showed that the use of dietary supplements among our representative sample of health sciences students is 53%. Thus, it can be considered as a common practice. This was higher than the supplement use among Malaysia University students

**Table 7: Opinion of health sciences students concerning dietary supplements versus other individuals**

| Question  | Health sciences students (n=138)<br>% of the right answer | Other Individuals (n=213)<br>% of the right answer | X2   | P       |
|---|---|--|------|---------|
| 1. Diet only is sufficient for good health in all individuals | 55.8%   | 37.1%  | 11.9 | 0.001*  |
| 2. Dietary supplements are necessary for all ages             | 33.3%   | 20.7%  | 7.1  | 0.008*  |
| 3. Dietary supplements can prevent chronic diseases           | 33.3%   | 17.8%  | 11.0 | 0.001*  |
| 4. Dietary supplements can prevent cancer                     | 45.7%   | 22.1%  | 21.7 | ≤0.001* |
| 5. Dietary supplements are completely safe                    | 72.5%   | 49.8%  | 17.8 | ≤0.001* |

\*Significant

which is 43%,<sup>[15]</sup> Korean students which is 31.3%<sup>[35]</sup> and South African University students which is 42%.<sup>[20]</sup> The greater use of supplements by university students might be explained by the fact that the students often feel fatigued and had intense study levels. The relatively high prevalence of dietary intake may also due to beliefs concerning need for supplement use. Similar prevalence was reported in the United States university students with the rate varying from 47% to 74%.<sup>[19,36]</sup>

In this study, the majority of the users tended to take multivitamins, vitamin D, iron, calcium, omega-3, vitamin B, and folate. Similar finding was reported by previous studies.<sup>[1,15,37,38]</sup> Most users of dietary supplements take multivitamins, whether or not they also take other products. NHANES 1999–2000, showed that among supplement users, 67% took multivitamins (Radimer *et al.*, 2004).<sup>[4]</sup> In NHANES 2003–2006, 74% of supplement users took multivitamins<sup>[9]</sup> which was consistent with our study in which 49% of the supplement users took multivitamins.

Regarding reasons for consuming dietary supplements among participants, the respondents provided almost similar reasons for taking supplements. The most popular reasons were to maintain good health and ensure adequate nutrition. Similar findings were reported by several studies.<sup>[14-17,37]</sup> In an American study on graduate students, the two main reasons indicated for taking supplements were to prevent disease and to supplement the diet.<sup>[39]</sup> Dundas *et al.* also reported that students took supplements mainly to improve their health, to prevent colds and flu, and for increased energy.<sup>[40]</sup> A study on South African students who used dietary supplements regularly found that they used supplements mostly for maintaining physical health, body conditioning, and for dietary reasons.<sup>[20]</sup> Other studies showed similar finding that health and illness prevention are the main reasons for taking supplements.<sup>[41]</sup>

The various sources of information regarding supplements in our study were doctors, pharmacists, and internet, which is in concordance with findings in other studies.<sup>[1,12]</sup> Rozga *et al.*, found that doctors were the most common source for dietary supplements information among participants.<sup>[42]</sup> This should be encouraged, as doctors may be more reputable sources of scientific information compared with media, family, or friends. The results of this study supported a need for training concerning dietary supplements among health care providers, as patients expected physicians to have the best information. Our results

were in disagreement with other studies examining healthy participants. A 2004 study described health care providers as among the least common sources of information.<sup>[43]</sup>

Our results showed the internet as the most common source of information regarding supplements among health sciences students and other people as well. Consumers can easily find information about dietary supplement over the internet and on sites of social network such as Twitter and Facebook, but its veracity is sometimes questionable. This is of concern because with the high prevalence of dietary supplement use and easy access to information on the internet, it is not surprising that many individuals may circumvent health professionals as a source of information and go directly to the web for help.<sup>[44]</sup>

It is important that accurate and scientifically based nutritional information is brought to the public via accessible sources,<sup>[20]</sup> but information from internet is not always be correct or reliable.

The study showed that both health sciences students and other people (43% vs 38%) suggested specific stages like pregnancy or recovery from diseases as the most stages in which people need dietary supplements. In cohort study presenting data on maternal dietary supplement use found high prevalence of dietary supplement, ranging from 87% in Finland to 96% in the USA.<sup>[45]</sup> The need for micronutrient supplementation during pregnancy in developing countries is likely to be great because of widespread maternal malnutrition. Current evidence showed that some micronutrients, such as folate and iron can reduce the risk of adverse pregnancy outcomes. Others, such as calcium, vitamin A, and zinc, may reduce the incidence of ill health and some life-threatening complications of pregnancy that are still common in many developing countries.<sup>[46]</sup>

The health sciences students and other individuals were asked about their opinions and beliefs regarding supplements. Right answer for all questions was no. Despite the higher knowledge concerning dietary supplements of health sciences students compared to others, the percentage of right answers was generally low. We are not sure about the reasons for this ambiguity. Similar findings were seen in the study conducted by Teng *et al.*, 2008<sup>[38]</sup> and Sharma *et al.* 2014.<sup>[11]</sup> These findings suggested that there is a deficiency in the knowledge of health sciences students pertaining to the health benefits of supplements.

## Conclusion

The study showed that almost half of participants were using dietary supplements. Dietary supplement use is prevalent among adults and is often associated with the adoption of other healthy habits that are generally encouraged as part of a healthier lifestyle. These healthy habits include efforts to consume a better diet, efforts to participate in physical exercise, avoidance of obesity, and avoidance of smoking. The evidence indicates that users of dietary supplements tend to incorporate these products into their lifestyles as part of a broader focus on healthy living.

Although the prevalence of supplement uses among health science students, many of them do not have accurate information about dietary supplements. Therefore, there is an urgent need to provide these students with education and access to scientific and unbiased information. It is important to strengthen the health science curriculum with the aim of producing better-informed future professionals.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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