

ORIGINAL ARTICLE

The Prevalence of Sport Dietary Supplements Consumption among Male Athlete Students in Shiraz University of Medical Sciences, Shiraz, Iran

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ABSTRACT

Background: A dietary supplement which also called “sports supplement” refers to substances that are used by athletes to eliminate their nutritional deficiencies. The aim of this study was to determine the prevalence of dietary supplements use among male athlete students residing in Shahid Dastgheib Dormitory of Shiraz University of Medical Sciences.

Methods: Ninety-seven athletes from different sport fields participated in the study. A questionnaire with 17 questions was used to investigate the field of sports, history of exercise, and the reasons for consuming supplements and the source of information about supplements and the providing centers.

Results: At the time of the implementation of the study, 15.3% of the athletes were taking supplements and 29.6% had a history of consuming supplements. The most commonly used supplements were keratin, ginseng and protein supplements. Wellness and health promotion were the main reasons for the use of supplements and 31.9% of the participants considered club coaches as the best source of information on supplements. Most of these athletes introduced coaches and clubs as the center of providing the supplements and 23% of the athletes were aware of the side effects of the supplements, mainly via the internet.

Conclusion: Our findings showed that the prevalence of consuming dietary supplements among male athletes was not high.

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Introduction

Nutrition has always been a major factor in the performance of athletes and has a special place in their daily exercise program (1). Diet and special

nutrient intake also have a positive effect on the function of the muscles (2). A dietary supplement which also called “sports supplement” refers to substances that are used by athletes to eliminate their

nutritional deficiencies (for example, iron deficiency) or to increase their sport performance (e.g. keratin). Therefore, in practice, nutritional supplements are compounds that are commonly found in a diet and do not have doping properties (1).

A food supplement is a term that includes a variety of products such as vitamins, minerals, herbal compounds, and many other active ingredients (3). In one category, nutritional supplements can be divided into three subgroups: (i) dietary supplements, (ii) ergogenic aids, and (iii) sports food (4). In recent decades, the high level of attention of authorities, coaches and athletes to the results of sport competitions and marginal issues has led to the prevalence of nutritional disorders, the habits of the use of nutrients and sports supplements among the youth and adolescents (5).

With the growing number of sports clubs for body building, drug abuse has become particularly dangerous. The desire to improve fitness, build up and volume of muscles, increase in strength, easy access to medications and false advertisements, and unproven claims are among the most important reasons for using these products (6). Although unheard-of dietary supplements are used among athletes who do not need to take these drugs, the effectiveness of some supplements has not been established, consumption of contrary to the claims made by their manufacturer, and their high consumption has led to complications such as gout, dehydration and reduced bone mass (1, 7, 8).

On the other hand, smuggling supplements (made and supplied unlawfully and with poor quality raw materials) or prohibited materials (containing the energizing drugs), as well as some food supplements that contains non-food substances including pro-hormones and stimulants which are not declared on the label are among existing problems and each has its own side effects (1). The most important energizing products include: anabolic steroids, corticosteroids, stimulants and hormones, each of which can produce very dangerous and serious side effects (9).

Considering the widespread distribution of these supplements in body building clubs and the recommendations made by non-specialists, determining the factors influencing the selection of these supplements in athletes, the source of the required supplements and the source of information on dietary supplements use become one of the health priorities in sports nutrition field (9). Thus, it can be said that study on the prevalence of supplements and the reasons for using them as well as the attitudes of athletes towards the use of these food supplements in our country is especially important.

The aim of this study was to investigate the prevalence of dietary supplements consumption and the factors affecting the selection of these materials in male athlete students in Dastgheib Dormitory of Shiraz University of Medical Sciences, Shiraz, Iran.

Materials and Methods

This descriptive study was conducted to determine the status of nutritional supplements consumption and some factors affecting the consumption of these supplements. It was carried out in Shiraz and during the summer of 1395. For the purpose of this study, a questionnaire with 17 questions that was used in previous studies (10) was used. It was intended to collect relevant information about the participants' background as well as questions about their exercise history, history of supplementary use, reasons for the use of supplements and the source to buy these products and source of information about supplements.

The questionnaire was consisted of a set of close questions (Yes/No questions), and open-ended questions. Mentioning the name was optional for the respondents and their willingness to participate in the study was asked by a written consent. The participants were assured that their information would be reviewed confidentially. In this study, according to the sample size formula, (95% confidence level $z=1.96$) and 46% prevalence based on the previous study (11) and the accuracy of 20%, the obtained sample size was 112. Then the male athlete students in Shahid Dastgheib Dormitory of Shiraz University of Medical Sciences in Shiraz, southern Iran were selected as the research population.

From 150 distributed questionnaires, 97 questionnaires were completed and used in statistical analysis. By referring to the clubs on consecutive days and using classified sampling, athletes were asked to complete the questionnaire. Prior to inviting the athletes to complete the questionnaire, the research objectives were explained and informed consent was obtained. On average, the completion of each questionnaire lasted about 5 to 8 minutes. Statistical analysis was performed by SPSS software (version 20, Chicago, IL, USA). Sample size formula was.

$$n = \frac{z^2 \times [p(1-p)]}{d^2}$$

Results

Data on the underlying variables and individual characteristics of athletes were presented in Table 1. As shown in Table 2 the prevalence of supplements use among athletes of different disciplines at the

Table 1: Individual characteristics and underlying variables

Variable	
Age (year)	33.83±2.23
Weight (Kg)	74.95±6.72
Height (cm)	178.41±4.73
BMI	23.52±1.64*
Level of education	
College degrees or lower	19 (19.4)
Bachelor's degree and higher	78 (79.6)
Marital status	
Single	80 (81.6)
Married	17 (17.3)
Residence status	
Urban	79 (80)
Rural	18 (18.4)
Sport field	
Body Building	26 (26.8)
Other fields	71 (73.2)

*Mean±standard deviation is expressed for data with, The data with is expressed in Percentages format. BMI: Body mass index.

time of the study was only 15.3%. Also from all the participants, only 29.6% had the history of taking supplements before the study in the past. Table 3 indicates the commonly used supplements consumed by athletes as percentages. It shows that the highest intake was related to keratin and ginseng. The athletes' reasons for consuming the dietary supplements were shown in Table 4. Supplying and promoting health is one of the main reasons for using supplements among athletes. The best sources of information on supplements that were reported by athletes were listed in Table 5.

The richest source of information on supplements has been the coaches of the clubs. One of the questions in this research was asked about the location or the center where the athletes got their required products. The results showed that the most common place for buying these supplements was primarily the club coaches, (61.1%), and 16.7% from pharmacies, and the representation of the manufacturing companies 22.2%, respectively. According to the participants' response, only 23% of the athletes were aware of the side effects of supplements, and the remaining 77% had no information on the complications of these supplements. With regard to gathering the information about the side effects of the supplements, the main source that was reported by

these athletes was the internet. Clubs coaches (25%) and nutritionists (12.5%) were the next sources of information, respectively.

Discussion

The results of this study showed that 15.3 percent of the population of male athlete students residing in Shahid Dastgheib Dormitory of Shiraz University of Medical Science consumed supplements which, of course, were not high. The results of this study were slightly different from the results of previous studies, and the prevalence of consuming supplements among our research case athletes was

Table 3: Supplements taken and have been reported by athletes

Supplement Name	Percentage
Vitamin E	8.5
Vitamin C	8.6
Combined carbohydrate protein-supplement	8.7
Amino capsules	8.7
Calcium-D supplements	11.6
Multivitamins	12
Protein supplements	12.9
keratin	14.5
Ginseng	14.5

Table 4: Reasons for using supplements by athletes

Reasons for using supplements	Percentage
Supply the body needs	9
Weight loss or weight gain	11.6
Increased muscle mass	16
Enhancing athletic ability	17.4
Success in the competition	22.8
Health and wellness promotion	23.2

Table 5: The required information resources about supplements

Information source about supplements	Percentage
Supplements sellers	2.9
Internet	5.8
Brochures of manufacturers	8.7
Nutritionists	13.3
Friends and teammates	17.4
Physicians	20
Coaches	31.9

Table 2: Prevalence of supplements consumption in athletes

Total	Supplementary intake during the study			
	Yes		No	
	Percentage	Number	Percentage	Number
97	15.3	15	84.7	82

much lower. The reason for this may be related to the distribution of various sports in previous research, because there is a significant relationship between different sport fields and dietary supplements based on previous findings, and in some fields of sport there was an increasing tendency towards supplementation (11, 12).

In addition, according to previous study (12), there was a significant relationship between the family income and the dietary supplement intake of athletes. Accordingly, the observed difference in dietary supplement intakes in our research may be due to income differences in the student population compared to previous research populations. The income level was not studied in our study, and this is a weakness in the present study. Of course, it should be noted that not reporting the consumption of these products is due to some negative attitudes towards the use of these products in our country and because of this, some people may report false non-consumption.

The study of Hozoori *et al.* in Tabriz indicated that at the time of the research, 45% of the athletes consumed at least one supplement and 21% had an experience of dietary supplementation use in the past (11), which was high compared to the findings of the present study. Another study which was conducted in Kerman showed that 48.7% of men and 4.6% of women had a history of dietary supplements use, and consumption of food supplements was observed in areas where socioeconomic status was higher (12). In another study on male body builders in Karaj, the prevalence of the use of supplements and performance enhancing drugs was 88.2%, which was very high (13).

According to a study conducted in Lorestan, 32.5% of athletes reported using at least one performance enhancing drugs (12). In another study, which was done among male athletes in Gonabad, 86.3% of the participants used at least one performance enhancing drugs (14). In other study in Semnan, which was performed among male athletes, 27.3% used performance enhancing drugs (15). A study conducted in Hamadan among body builders showed that the frequency of consuming androgenic anabolic steroids was 28.8% (16).

In a study conducted on 139 young athletes in the United States, it was found that 22 percent of people consumed supplements at the time of the study (17). Another study in 2008 on middle-aged English athletes also reported that 62% of the participants were taking supplements (3). In a study in 2009 on student athletes in Singapore, 76.8% of the participants reported use of dietary supplements (4). In the present study, Table 3 indicates the dietary supplements used by athletes. Based on

these findings, keratin and ginseng were the main supplements consumed by these athletes with 14.5% of frequency.

Protein supplements, multivitamins and calcium supplements have the next rank for most widely used supplements. In the case of keratin and protein supplements, these findings were to some extent similar to the findings of previous researches (3, 11). Of course, there is concern about the lack of awareness of how and how much to take dietary supplements. For instance, In the case of keratin, it should be noted that the beneficial effects of this supplement can be observed in controlled conditions and based on the consumption of appropriate and recommended amounts (7).

High intake of multivitamins in the findings of most studies was the same (3, 4, 11, 18). The findings of the current study on the reasons for the use of supplements have indicated remarkable noteworthy results. Based on the findings of the study, the priority of athletes were promotion of health, success in the competition, and enhancing athletic ability, respectively, (Table 4). In Hozoori *et al.*'s study, the first priority of the athletes was supplying the needs of body and the next priorities were similar with the findings of the present study (11).

This finding was in contrast with many of the previous studies which suggested changes in body composition and success in competition as the main reasons for the use of supplements. This might be a positive sign of a change in the knowledge of athletes of this study. According to Table 5, although a number of athletes reported physicians, nutritionists, and teammates as the sources of information about dietary supplements, it should not be ignored that the findings of this study were similar to the results of other studies and the clubs coaches with 31.9% still having a special place in choosing nutritional supplements in athletes.

Secondarily, physicians and, in the third place, friends and teammates, played a major role in the transfer of information and the introducing of sports supplements. This point reflects the need for this group of people to receive the necessary training to have the correct choices and provide appropriate guidance for other athletes (11). The other points of interest in this study are that in contrast to the findings of other studies, the athletes were less willing (5.8%) to search the internet for more information on dietary supplements. The results of this study indicated that more than half of the athletes were willing to provide their required supplements from the clubs coaches. In the present study, the second source for obtaining these supplements was the representatives of the manufacturers companies and, finally, the pharmacy.

Therefore, based on the obtained results, the coaches play an important and effective role in providing the athletes' needs to supplements. This evidence suggests the need for ongoing training to club coaches about the sports supplements. In addition, with the help of sports institutions; the club coaches should be omitted from the cycle of supplying and distributing the sports supplements and the process should be managed by the specialists in this field and also the pharmacies (11). It should be noted that the results of the present study were not in the same line with the findings of previous studies (11, 18).

Hozoori *et al.* conducted a study in Tabriz and found that almost half of the athletes got their required supplements from the pharmacies (11). In 2009, research on young German athletes, showed that roughly half of the athletes introduced pharmacies as the center where they achieve their required supplements (18). In addition, in the applied questionnaire, some items aimed to collect information about the side effects of the supplements from the athletes.

According to the participants' responses, only 23% of the athletes were informed of the complications of the supplements and the remaining 77% had no information on these side effects. Based on the findings of this study, the main sources of information for athletes were the internet, the next was the clubs coaches, and in the final grade the nutritionists. These results indicated the need for training athletes about the complications of supplementation through reliable sources and specialized teams.

It also highlighted the role of related institutions such as the Ministry of Health and the Food and Drug Administration to launch scientific and documentary information systems in cyberspace (11). One of the most important problems in gathering information about the prevalence of intake of supplements in our country was the athlete's concern about the use of food supplementation. In the present study, despite a lot of efforts, a number of questionnaires delivered to the research group lacked information on the use of supplements. However, it was recommended that further research should apply other methods to obtain more complete and detailed information.

The findings of this study are limited due to the low sample size and the age limit of the participants. Considering the increasing prevalence of supplements consumption, it seems that there is a need for more studies on the normal population of the community with the aim of assessing the athletes' knowledge on supplements, how they are consumed and their benefits, their possible side effects, and the

impact of this knowledge on the athletes' attitudes as well as their behaviors.

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Conflict of Interest

None declared.

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