

Evaluation of the Prevalence of Dietary Supplements and Weight Loss Drugs Usage by Recreational Athletes in Fars, Iran

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Abstract

Background: Several studies have investigated supplement and drug use prevalence among elite athletes. However, non-elite athletes who exercise in gyms to improve their health and appearance have received less attention. The present study aimed to evaluate the prevalence of supplement use in recreational athletes in Fars, Iran.

Methods: In this cross-sectional study, 256 recreational athletes (165 men and 91 women, mean age 28.67 ± 7.28) completed the questionnaire (researcher-made), and the differential validity was estimated by the comparison of novice and elite athletes using the Kruskal-Wallis test. Moreover, the reliability of the instrument was confirmed based on internal consistency (Cronbach's alpha) and stability (repeatability) using test-retest (correlation-coefficient of the test scores). Data analysis was performed using descriptive statistics.

Results: In this study, 84% of the participants used various supplements, and 54% consumed performance-enhancing and occasional drugs. The most common supplements were multivitamins (77.7%), protein powders (69.1%), fish oil (47.9%), and vitamin D (39.9%). According to the findings, 46.8% of the subjects consumed supplements to improve their physical appearance, while 21.8% used these substances to enhance their health. Meanwhile, 62.2% of the athletes considered themselves fit (not obese/lean), while 31.1% and 33.3% tended to lose weight and slightly gain weight, respectively.

Conclusion: According to the results, the rate of consuming supplements, weight loss drugs, occasional drugs, and performance-enhancing drugs was high in the recreational athletes in Fars province, which indicated the necessity of more control and attention to the prevention of excess supplement use and raising awareness in this regard.

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Introduction

Recent advancement in the fields of medicine, pharmacology, and physiology has resulted in changes in dietary intakes in athletes depending on their sports

activities and physical needs. Physical appearance and functions could be altered by a wide range of products.¹

In this respect, international studies have shown the high prevalence of supplement and drug use among the athletes in the world.² Not only elite athletes use these

supplements as ergogenic aids, but also recreational and novice athletes³ and even junior-high and high-school students consume these substances.⁴ In general, supplements include various types of vitamins, minerals, and amino acids.⁵ Meanwhile, there have been reports on the use of some drugs, such as medicinal plants, fat burners, and even those listed as doping drugs (e.g., anabolic steroids, stimulants, narcotics).⁴ Studies also demonstrate that among recreational athletes, the consumption of drugs, supplements, and unauthorized ergogenic aids is mostly recommended by friends, sellers, and Internet sites rather than valid specialists.⁶

According to clinical guidelines, weight loss and maintenance require lifestyle changes, such as the reducing energy intake and increasing physical activity.⁷ Nevertheless, most people seek shortcuts to avoid the difficulties of these changes. However, these drugs have ephemeral effects and may cause irreversible toxicity and a wide range of complications, such as hormonal disorders (hormonal substances), central nervous system disorders, sexual dysfunction, cardiovascular diseases, hearing disorders, infertility, hair loss, acne, behavioral disorders, liver cancer, and increased level of liver enzymes.⁸

A study on recreational athletes showed a relatively high consumption of banned substances by recreational athletes in Canada. In addition, athletes in their 20s and those who were not satisfied with their physical appearance were reported to use these banned substances more frequently.⁹ In a cross-sectional research, a questionnaire of knowledge and attitude toward the prevalence of supplement consumption was designed in the United Arab Emirates. According to their findings, the users of supplements believed that supplements were essentially harmless, and the majority had become familiar with these products through their coaches and were unaware of their possible risks.¹⁰

In Iran, recent research shows a high prevalence (64.8 overall) of supplement consumption in athletes.¹¹ Also, in the non-professional women in Ardabil (2018), the prevalence of supplement use was 31.3%.¹² Regarding the use in bodybuilders, 51% in Jahrom,¹³ 18.8% in Kerman (2009),¹⁴ and 32.6% in Sanandaj (2015)¹⁵ were reported. Given the scarcity of data in this regard, the present study aimed to evaluate the prevalence of supplement and weight loss drug use of recreational athletes in Fars province.

Methods

Initially, we translated and assessed several foreign questionnaires designed on the research subjects.^{9, 10} Afterwards, we decided to develop a new questionnaire due to the lack of compatibility of the available questionnaire with the Iranian food culture, especially regarding traditional supplements and herbal drugs used

for weight loss. The designed questionnaire consisted of 45 items in six domains of demographic characteristics (4 items), sports habits (5 items), self-concept (4 items), frequency of use (9 items), knowledge (9 items), and attitude (14 items).

For content validity, we received and applied feedback from nine experts regarding the necessity of its items, grammar, appropriate vocabulary use, and comprehensiveness. In addition, the reliability was assessed based on internal consistency and stability. Internal consistency was determined by calculating the Cronbach's alpha coefficient. The questionnaire was completed by 256 recreational athletes (165 men and 91 women, mean age 28.67 ± 7.28) in the form of Google Forms (41 athletes did not use supplements). Moreover, stability was determined using the test-retest method, and the questionnaire was completed by 20 athletes (13 males and 7 females) twice at the intervals of 2-3 weeks. The correlation-coefficient between the scores obtained in the two tests was calculated and determined as the coefficient of stability (repeatability). Finally, two groups of novice and elite athletes (based on athletic background) were compared to determine the differential validity of the tool. Mann-Whitney U test was also applied, and data analysis was performed in SPSS version 25 using descriptive statistics.

Results

The internal consistency of the questionnaire was confirmed with a Cronbach's alpha of 0.83. In addition, the internal consistency of consumption prevalence, knowledge, and attitude was confirmed with a Cronbach's alpha of 0.79, 0.83, and 0.81, respectively ($\alpha > 0.7$).

A significant difference was observed between the novice and elite athletes regarding differential validity ($P=0.001$). In the test-retest process, the correlation-coefficient was estimated at 0.89, 0.87, 0.81, and 0.85 for the knowledge, attitude, consumption frequency, and the entire questionnaire, respectively.

In total, 165 male and 91 female subjects with a mean age of 28.71 and 28.59 years (respectively) were enrolled in the study. 68.8% had a BSc or a higher academic degree. The main goal of joining a gym was improving health (31%), building muscle (31%), and enhancing their physical appearance (22%) (Figure 1).

84.2% of the subjects consumed supplements, and 15.8% used no supplements. As shown in Figure 2, the most common supplements included multivitamins (77.7%), protein powders (69.1%), fish oil (47.9%), and vitamin D (39.9%) (total percentages higher than 100% since some participants used supplements simultaneously).

For weight loss, high-fiber diets (35.8%), and green tea (25.7%) were the common supplements used (Figure 3).

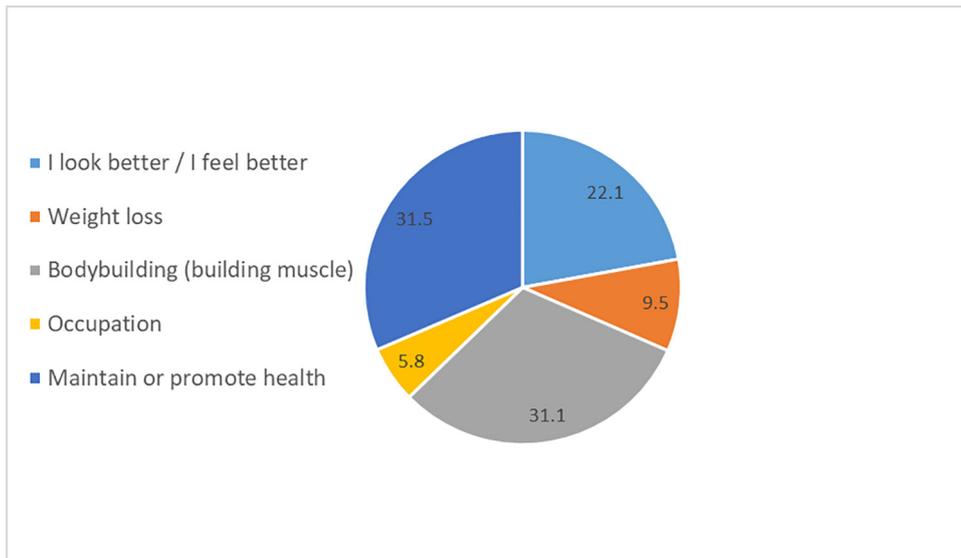


Figure 1: Purpose of exercise.

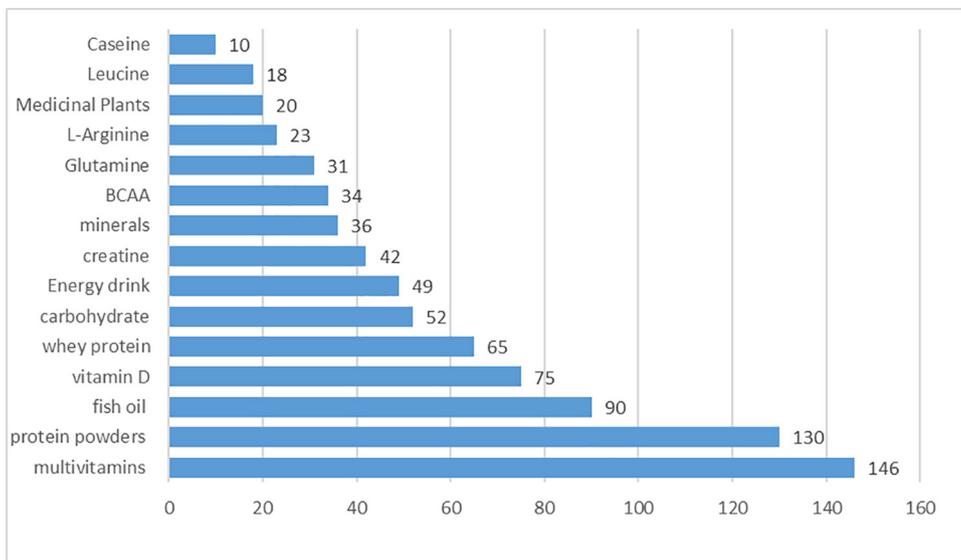


Figure 2: Consumption of supplements (number of consumers).

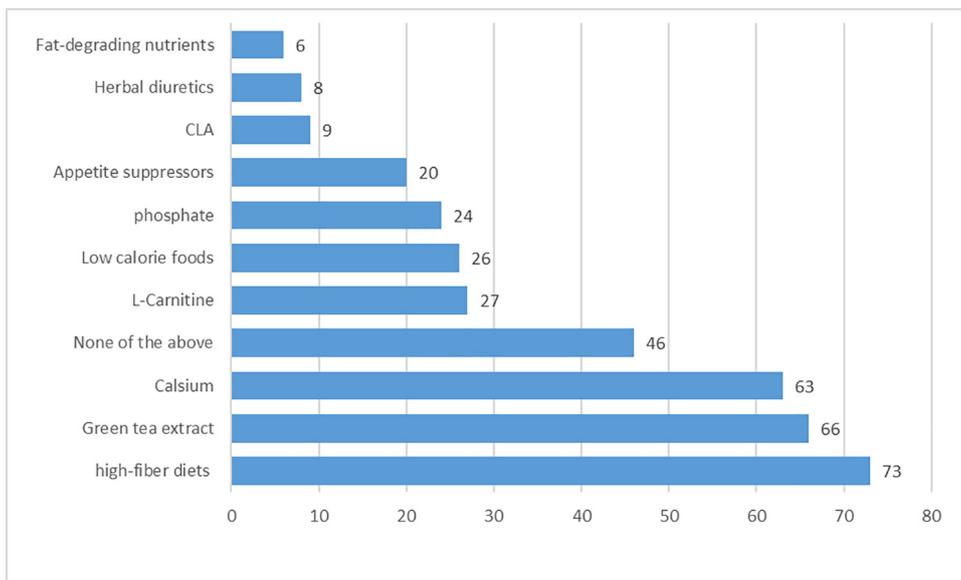


Figure 3: Consumption of weight loss supplements (number of consumers).

Table 1: The Most Commonly Used Resources to Acquire Knowledge about Sport Supplement and Drug Use Instructions

	Friends and Others Exercising at Gym	Coach	Online Sources
Familiarization	28.8%	22.1%	32.4%
Use	21.4%	30.4%	23.2%

Table 2: Pearson correlations between the education level, supplement consumption history, knowledge, attitude, and income

		Education level	Income	Supplement consumption history	Attitude	Knowledge
Education level	Pearson Correlation	1	0.364	0.265	0.386	0.550
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	256	256	256	256	195
Income	Pearson Correlation	0.364	1	0.204	0.112	0.384
	Sig. (2-tailed)	0.000		0.001	0.073	0.000
	N	256	256	256	256	195
Supplement consumption history	Pearson Correlation	0.265	0.204	1	0.252	0.413
	Sig. (2-tailed)	0.000	0.001		0.000	0.000
	N	256	256	256	256	195
Attitude	Pearson Correlation	0.386	0.112	0.252	1	0.625
	Sig. (2-tailed)	0.000	0.073	0.000		0.000
	N	256	256	256	256	195
Knowledge	Pearson Correlation	0.550	0.384	0.413	0.625	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	195	195	195	195	195

Only 15% of the athletes used supplements based on a physician's or nutritionist's prescription. In most of the cases, supplements were consumed based on the recommendations of others exercising in the gym, as well as sports coaches and online sources (Table 1). In addition, only 40% of the participants purchased supplements from pharmacies, whereas 23% and 22% bought these products from their coaches and online shops. The rest of the participants had access to supplements in other ways.

According to the obtained results, the majority of the athletes were dissatisfied with their physical status, 33.3% intended to lose weight, and 31.1% attempted to slightly gain weight. The most important reason for supplement use was the improvement of physical appearance (46.8%). 75% of the subjects experienced no complications. 39.2% were unaware of the risks of supplements. Positive and significant correlations were found between the education level and supplement consumption history (+0.265; $P=0.000$), knowledge (+0.550; $P=0.000$), and attitude (+0.386; $P=0.000$). Positive and significant correlations were also observed between the income, supplement consumption history (+0.204; $P=0.001$), and knowledge (+0.384; $P=0.000$) (Table 2).

Discussion

Our findings indicated the high frequency of sports drug and supplement use by the non-elite athletes in Fars province as 84% consumed supplements and 54% used performance-enhancing and occasional drugs. Physical appearance was one of the main reasons for supplement use, and a large number of the participants intended to

gain or lose weight.

In a research conducted in Sharjah (United Arab Emirates), 49.5% and 12.4% of male and female subjects consumed supplements, respectively,¹⁰ which is lower compared to the results of the present study. In a similar research performed in Beirut, the frequency of sports supplement consumption was reported to be 36.3%.¹⁶ while this rate has been estimated at 41%, 43.8%, and 37.8% in Greece,¹⁷ Portugal,¹⁸ and Saudi Arabia,¹⁹ respectively. Notably, the aforementioned studies have been conducted on recreational athletes in gyms, and a higher rate of consumption was observed in the current research comparatively. In the present study, some of the participants used herbal medicines as well, which might have led to the higher consumption rate. These substances have not been documented in the questionnaire used in the aforementioned studies. On the other hand, consuming the appropriate dosage of some items such as multivitamins, fiber, and vitamin D is not harmless, but rather beneficial.

In the current research, 54% of the participants occasionally used performance-enhancing drugs, that was higher compared to the previous studies in this regard. Although some of the participants experienced no complications (self-report), some complications might not be detectable for participants and/or may appear at older ages. Given the low mean age of the users, the absence of some complications (e.g., renal disorders) might not signify the harmlessness of these products.

In few studies performed in this regard in Iran, nutritional supplement use was reported to be 31.3%

in the non-professional women who exercised for recreation and health promotion in gyms in Ardabil (2018).¹² In another study conducted in 2013, 51% of bodybuilders in Jahrom used different anabolic drugs.¹³ Similar studies have reported the consumption frequency of 18.8% in Kerman (2009) and 32.6% in Sanandaj (2015).^{14, 15} In addition to the geographical diversity of various cities, the time of the research might have affected the supplement use in different studies. These results show that not only supplements and drugs use in non-professional athletes is not less than professional athletes, but in some cases they use even more.

The results of the present study indicated positive and significant correlations between the education level, knowledge, attitude and consumption method of sports supplements. To justify this finding, it could be stated that higher academic levels are achieved with age, and increased age might be associated with the higher frequency of supplement use. Considering the positive, significant association between education level and income, as well as the positive, significant correlation between the income and supplement use frequency, this association could also be attributed to higher income level. The correlation between the income and consumption frequency might indicate an association between the possibility of spending and the frequency of consumption.

Regarding the source of the supplements, our findings raise concerns about the possibility of counterfeit supplements and drugs since 60% of these materials were supplied by other sources than pharmacies. Therefore, proper control of unauthorized sellers and raising awareness in this regard are recommended. The prescription of supplements has also raised concerns since only 15% of the supplement users consult specialists and nutritionists to prescribe these substances, and others mostly obtain information from invalid sources. Despite the importance of sufficient knowledge regarding the use of supplements and other performance-enhancing drugs and the direct monitoring of physicians in this regard, most recreational athletes lack adequate information about these substances and are unaware of their side-effects.

The leisure of the community (especially the youth) is an important issue in every country. Considering the individual and social benefits of sports and the role of sports in the prevention of social harms and physical and mental diseases, attempts have been made to formulate policies and programs to enable the community members to spend their leisure time actively and in the form of recreational sports. Nonetheless, inattention and lack of control over the use of supplements and drugs may overshadow the benefits of physical exercise.

Conclusion

According to the results, supplement use had a high frequency among the non-elite athletes, and special attention should be paid to this issue to ensure the community health. While our research was performed in one province, the findings could be generalized to other provinces in Iran. It seems that the gap between the national organizations responsible for public health and sports has led to the overlooking of this important issue. Therefore, it is recommended that further investigation should be conducted to meticulously assess this issue and adopt effective strategies in this regard. It is suggested that the sale of any supplements and weight loss drugs in sports clubs should be banned, and the athletes' awareness of side effects should be raised.

Conflicts of interest: None declared.

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