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Knowlege, Attitudes and Practices of Athlets Related to Dietary Supplements in Gym Club in Iran

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ABSTRACT

Objective: Objective: There is limited number of study on dietary supplements use in most gyms clubs. The aims of current study were to assess supplement intake in athletes who exercise regularly in gyms in the city of Qom, Iran, and to determine the knowledge, attitude, and practice regarding dietary supplement.

Methods: We conducted a cross-sectional study among 300 athletes who were randomly selected from 18 sport clubs of Qom city between November 2015 and March 2016. A self-administered questionnaire containing 34 questions was used to evaluate the socio-demographic characteristic, knowledge, attitude, and practices of athletes on dietary supplements. Validity and reliability of questionnaire determined through panel of experts and Cronbach's alpha (N=24, α=0.79) respectively.

Results: Our results showed that 28% of women, and 62% of men had the history of supplement usage (42 percent of all participants). Male were more likely to take supplements than females ($p<0.01$). The results of knowledge questions showed that more than half of the questions (56.3%) were answered correctly. Although, coaches was the main source of information on dietary supplements (43%), but significant difference was shown between men and women.

Conclusion: The results of this study were reported that nearly half (42%) of athletes used dietary supplement. The overall scores indicated that dietary supplements knowledge of these athletes is not enough for healthy decision making. The source of information and dietary supplement practices of athletes were strongly affected by gender.

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Introduction

Nutrition and dietary habits play an important role in athletic performance (1), and scientific evidence that shows the effects of nutritional recommendations on exercise performance in competitive sports and elite athletes (2). A sports dietitian should design athlete's diet to supply the energy, nutrients and fluids of athletes (3). Today, based on numerous

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scientific papers that have been published, although our information about the impact of nutrition on health and athletic performance has been increased substantially, and access to this information is easier for athletes, but the available evidence indicates that athletes do not comply the principles of proper diets (4). In addition there are some reports that showed nutrition inadequacy and malnutrition in athletes (2). These nutritional insufficiencies can reduce performance of athletes and lead them to use prohibited and doping substances. In recent years, considerable efforts has been done by the World Anti-Doping Agency (WADA) to detect performance-enhancing drugs and steroids in athlete's population. Accordingly, athletes have turn to take various dietary supplements (DS) as an alternative solution (5).

Dietary supplements (DS) are commercially available and contain a variety of nutrients, botanicals and some other similar products (6). In recent years several studies are done and published on the prevalence of dietary supplements use in athletes (4, 7-9). These studies have reported prevalence of dietary supplements use in athletes between 32 to 90 percent, and the annual sales of these products in 2013 reached more than one hundred billion dollars (6). Previous studies showed that around half of Iranian athletes in different sport fields use dietary supplements (7, 10). Several concerns such as attempted use by an athlete of a Prohibited substance (11) or the use of ergogenic aids supplements by individuals younger than 18 years old need to be considered (12).

A study on 11-25 years old Canadian athletes showed that 98% of participants used at least one supplement to promote health and/or improve their performance. However, their information about supplements was not always reliable and accurate (13).

Despite the increase use of dietary supplements among athletes, there are few studies on knowledge, attitude, and practice (KAP) related to dietary supplements, and source of information. Therefore, the aims of our study were to 1) evaluate the dietary supplement usage in athletes, 2) assess knowledge, attitude, and practice of athletes in selection and consumption of a DS, and 3) determine the main factors and sources of information were affect the DS selection and compare data between men and women of participating in the study.

Methods:

2-1. Study design and population

In this cross-sectional study, we randomly selected 18 gym clubs (a total of 84 clubs) in four area of Qom city near to the capital city of Iran. In the next step by simple random sampling methods, we randomly select 15 athletes from each club. Among the 270 distributed questionnaires to the athletes of selected club in various fields of sports (15 questionnaire for each club), 223 of them were completed (Response rate of 83%). The study was approved by the ethics committee of Qom University of Medical Sciences.

2-2. Measuring tools: validity and reliability

We used a researcher-made questionnaire (34 questions) to collect

self-reported data on demographic data, and knowledge, attitude, and practice of athletes about dietary supplements. To verify the face and the content validity, the questionnaire were reviewed by a panel of experts of faculty members of Qom University of Medical Sciences; then, we modify the questionnaire according to their comments. Before the final version, internal consistency (reliability) of questionnaire was assessed by Cronbach's alpha coefficient using a sample consisted of 24 randomly selected athletes. Cronbach's alpha for Athlete's responses to the questionnaire was 0.79.

2-3. Exclusion and Inclusion criteria

Inclusion criteria included healthy, and a completed informed consent form. Also, prior to the study, subjects has averaged 6 hours per week training for the past 6 months. Exclusion criteria included inability to complete questionnaire.

2-4. Ethical consideration

Before the study, we briefly explained the aim of study to athletes of each club. With full informed consent, 270 athletes have been entered to study and answered to questionnaire.

2-5. Data Analysis

Data were analyzed with SPSS version 18 (SPSS for windows, Version 18.0. Chicago, SPSS Inc.). The statistical methods used in this study were the frequency distribution, mean and standard deviation.

4. Results:

4.1. Demographic data

Two hundred twenty three athletes from 18 clubs completed the supplement KAP questionnaire. 57% (n=127) of subjects were males and 43% (n=96) were females. The baseline characteristics of subjects are presented in Table 1. The classification fields of subject's training are shown in Table 2.

Table 1: Profile of the subjects (n = 223).

No	Variables	Mean± S.D.
1	Age (years)	27 ± 7
2	Weight (KG)	74 ± 10.5
3	Height (CM)	171 ± 15
4	Training History (months)	46 ± 59
5	Current Time of training per week (Hours)	7 ± 5.5

Table 2: Subjects sport discipline.

No	Sport	Number (percent)
1	Aerobic and fitness sport	74 (35%)
2	Body Building	78 (37%)
3	Soccer	21 (10)
4	Military arts	24 (11)
5	Volleyball, Basketball, and Handball	15 (7%)

Dietary supplement usage was reported by Ninety-seven subjects (42%) of participants. 28% (n = 25) of women and 62% (n = 67) of men was reported the history of dietary supplements usage. Participants mentioned the source of their information about supplements, and the results of this question are shown in Table 3.

Table 3: Source of subject's information about dietary supplements.

	Number (percent)		
Source of information	All athletes (n=197)	Male (n=108)	Female (89)
Coaches	95 (43%)	71 (56.3%)	24 (24.7%)
Dietitians	51 (23%)	16 (12.7%)	35 (36.1%)
Physician	18 (8%)	5 (4%)	13 (13.4%)
Friends	14 (6.3%)	10 (7.9%)	4 (4.1%)
Media	12 (5.4%)	3 (2.4%)	9 (9.3%)
Printed Media	7 (3.1%)	3 (2.4%)	4 (4.2%)

Knowledge of study subjects about dietary supplements is shown in Table 4.

Table 4: Question of knowledge assessment of dietary supplement (n = 223).

No	Questions	Number (percent)		
		All athletes	Male	Female
1	**Dietary Supplements are a compact source of nutrients.**			
	Correct	85(38%)	52 (42%)	33 (34%)
	Incorrect	131(59%)	73 (58%)	58 (60%)
2	**How and when taking a supplement has no effect on its efficacy.**			
	Correct	57 (26%)	36 (29%)	21 (22%)
	Incorrect	156 (70%)	87 (69%)	69 (71%)
3	**Efficacy of all supplements and offered products in the market has been evaluated by accurate clinical trials.**			
	Correct	48 (22%)	19 (15%)	29 (30%)
	Incorrect	162 (73%)	105 (83%)	57 (60%)
4	**Health claims and phrases that mentioned in dietary supplement labels are accurate and controlled by the regulatory institute.**			
	Correct	33 (15%)	17 (14%)	16 (17%)
	Incorrect	172 (71%)	103 (82%)	69 (71%)
5	**Hologram is a definitive diagnostic tool to recognition of faked dietary supplements.**			
	Correct	53 (24%)	24 (19%)	29 (30%)
	Incorrect	152 (69%)	95 (75%)	57 (59%)
6	**Creatine supplementation could increase the power of athletes.**			
	Correct	140 (63%)	86 (68%)	54 (56%)
	Incorrect	66 (36%)	35 (28%)	31 (32%)
7	**Amino acids are the building block of proteins.**			
	Correct	174 (84%)	106 (87%)	68 (88%)
	Incorrect	26 (13%)	16 (13%)	10 (12%)
8	**Which Certificate is necessary to sale of dietary supplement in Iran?**			
	Correct response	60(27%)	38 (30%)	22 (23%)
	Wrong response	172 (71%)	67 (54%)	75 (77%)
9	**While athlete takes a protein supplement, they should drink more water.**			
	Correct	168 (77%)	98 (78%)	76 (78%)
	Incorrect	50 (23%)	28 (22%)	21 (22%)
10	**During exercise is the best time to take protein supplements.**			
	Correct	112 (50%)	73 (58%)	45 (47%)
	Incorrect	111 (50%)	53 (42%)	52 (53%)

Of 2128 questions, the average number of correct answers about dietary supplement was 1198 (43.7%). There was no significant difference between the sexes ($P<0.05$).

Table 5- Practices to dietary supplements (n = 223).

No	Question and responses	Number (percent)		
		All athletes	Male	Female
1	**Have you ever use ergogenic supplements?**			
	Yes	63 (29%)	56 (46%)	7 (7%)
	No	155 (71%)	67 (54%)	88 (93%)
2	**At what age did you first attempt to use ergogenic supplements?**			
	12-15 years old	2 (3%)	2 (3%)	0
	15-18 years old	15 (24%)	15 (27%)	0
	Over 18 years old	46 (73%)	39 (70%)	7 (100%)
3	**If you want to buy a supplement, how and where you buy supplement?**			
	Sales representative store	36 (19%)	18 (17%)	18 (21%)
	Pharmacy	16 (8%)	4 (4%)	12 (14%)
	Supplement Store	44 (23%)	22 (21%)	21 (25%)
	My friends	4 (2%)	3 (3%)	1 (1%)
	Club coach	90 (47%)	59 (56%)	31 (37%)
4	**If you want to consume a dietary supplement, who do you consult?**			
	My Friends	15 (8%)	11 (10%)	4 (5%)
	Coach	46 (23%)	26 (23%)	20 (23%)
	Nutritionist & Sport physician	119 (59%)	64 (56%)	55 (64%)
	Supplement seller	21 (10%)	13 (11%)	7 (8%)
5	**How do you determine the dosage and usage of your bought dietary supplement?**			
	Ask a person who has already used that supplement.	42 (21%)	26 (23%)	16 (19%)
	I use it according to mentioned information on product labels.	32 (16%)	17 (15%)	15 (18%)
	Consultations with specialists	122 (62%)	69 (61%)	53 (63%)

Discussion:

The findings reveal that nearly half of men and a quarter of women in the time of study were taking food supplements. These findings were similar to previous studies in Iran (7, 14) and also same as the Goston in Brazil that indicating a higher consumption of dietary supplements in men (15).

In the present study as well as in previous studies the coaches with 43% are the most important source of information for athletes about nutrition (16) or dietary supplements (7, 10). These findings were opposite of some other studies such as Aljaloud in Saudi Arabia (17), but it is similar with another study (18). The source of information on food supplements in both sexes were significantly different from each other whereby the men depending to what the coaches and friends are telling while women are more willing to learn from nutritionists or doctors and digital media in the provision of food supplements for women was three times more important. It is very similar to the result of study of Jacobson et al. (19). In fact, the women learn about food sources is much better and is with guide from the experts but in more than half of men, coaches are the

source of information about nutritional supplements.

It should be noted that in one study, the knowledge of coaches was inadequate knowledge about nutrition, Unfortunately, some of the advice provided by them about diet, nutritional supplements or weight control, could have a negative impact on athletic performance (20). As sports physicians has the main role in case of doping, banned and illegal substances (12), in terms of sports nutrition and supplements, expert who has been successfully completed nutritionists training courses should have a main role to play in prescribing and use of dietary supplements (8). These experts should have a closer relationship with coaches and athletes to share their knowledge with them in order to enable them to select proper food supplements (18). It is noteworthy that in one study, 24 % of athletes said that they don't know how to access to nutritionist (18). Therefore, it seems the sport organizations have to document and identify the qualified individuals in the field of sports nutrition for presenting scientific information to athletes and notification should be sent to them. In addition, since previous studies showed, an increase in the awareness of coaches are through education courses (21), and considering this point that Iranian athletes have trust and reliance to receive information from coaches, systematic and regular training for trainers should be one of the first priorities of sports institutions.

Findings of this study showed that the scores of the participants about supplements awareness was less than 50% and it reflects the inadequacy of their information about dietary supplements. For example, today observing the "Nutrient timing" for food intake is known and accepted as a principle of the effectiveness of a dietary supplement. However, only 29% of men and 22% of women believed that when and how taking a dietary supplement can affect its effectiveness. They also said that the best time to take protein supplements is during exercise!! Further, only 30% of men and 23% of the women knew the original license to supply a complementary food product in the country. So the provided trainings should be more effective. These results are consistent with findings of Jessri et al. (16) that indicates insufficient awareness of Iranian athletes in the field of nutrition. The findings also showed, about the awareness, there is no difference between the sexes. But these findings are inconsistent the study by Heaney et al. (2). However, in his study, Heaney was reported that the awareness of female athletes in principal of sports nutrition are more than men's (2).

The results showed some interesting findings related to attitudes to dietary supplements. Among them may be noted that 52% of people (63% of men and 41% of women) thought that the dietary supplements that imported from outside of Iran are more effective than domestic products. In the other hand, in response to a question about possible side effects of food supplements (no 10 of attitude questions) 7% of the participants (8% of men and 5% of women) believed that dietary supplements have no side effects and their consumption has no limits. Based on the result, while 30% of men have experience using ergogenic supplements before the age of 18, none of the female athletes use this supplements before the age of 18. A few studies have reported that the use of supplements have relation with age or gender (12). Also, the age of first use dietary supplements have not been evaluated in studies. In Iran according to law of the Ministry of Health, the supply of dietary

supplements to athletes should be made only through authorized and licensed pharmacies. But based on the findings of this study, only 8% of participants (4% of men and 14% women) were willing to buy these products from pharmacies. In fact, among men, club coaches with 56%, dietary supplement stores and dealers with 21% and companies with 17% are the main shopping and providing food supplements and in women, club coaches with 37%, dietary supplement stores and dealers with 25% and companies with 21% are the main.

Nutritional awareness is known as one of the most important factors in determining behavior and feeding habits. Previous studies indicate that from coach's point of view, athlete's nutritional knowledge play a main role in eating behaviors (22). Thus providing training and education to raise awareness, empower athletes to follow a meal plan and consult with registered dietitian and experts to select dietary supplements is really essential (22). According to a study, 8-week training program on nutrition, in addition to increased nutritional awareness and improved food selections and increase the athlete's efficacy (23). But the training program also has its own challenges. Previous training in the field of nutrition to athletes mostly discussed about elementary and basic content and in some cases specific points about sports are added (2). On the other hand, the training has changed by the attitude and the approach of coaches and financial factors(13). Increased awareness through education programs are a continuous and time consuming process that takes time to make change (19).

The monitoring of the impact of the education program on awareness and behavioral changes of athletes are very important (2), because the study results showed that a slight change in the awareness of athletes that receiving education after a period of 6 years (19). In addition, many factors affect the selecting of a product by athletes (12) that understanding these factors could be the basis for determining the educational content and involving effective people, especially coach. So, it is recommended to accomplish some studies to identifying and determining the effective factors on knowledge, attitude, and behavior of athletes about dietary supplements. It should be noted that there was an inverse association between the number of dietary supplements used in female athletes and their nutritional knowledge (24).

This study was not without limitations. Two main limitations were sample size and self-reported bias that need to be addressed. Also, the validation of questionnaire as an instrument for assessing the knowledge, should be well done (2).

Conclusion:

Our results showed that nearly half athletes were consumed dietary supplements and DS usage in male athletes was more than female. Meanwhile, knowledge was not enough to influence the behaviors.

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