Investigating Nutritional Literacy of Male Student Athletes Contributed in 2018 Iran University Games

ABSTRACT

Background and Objective: Nutritional literacy is the athlete's capability for obtaining, understanding and evaluating nutritional information that can affect athletic nutritional status. Therefore, the purpose of this study was to assess nutritional literacy of male athlete participating in the 2018 Iran University Games.

Materials and Methods: In this study, 340 student athletes (age 22.3 ± 4.23 years, height 179.21 ± 10.12 cm, weight 75.23 ± 13.16 kg, body mass index 23.47 ± 3.13 kg/m^2) in 14 sports (futsal, handball, volleyball, basketball, table tennis, badminton, track and field, chess, karate, taekwondo, swimming, judo, freestyle wrestling and Greco Roman wrestling) were selected by available targeted sampling method. Data analysis was carried out by using one sample t-test, one-way ANOVA and Pearson's correlation coefficient.

Results: The results of the present study showed that 42.44%, 32.17% and 25.39% of students had poor, moderate and good nutritional literacy, respectively. Students with more sports precedent and higher education had a higher level of nutritional literacy. The lowest percentage of correct responses was related to nutritional comprehension, food groups, doing the calculations, and reading food labels.

Conclusion: This study showed that the nutritional literacy of male student athletes participated in the Iran university games is poor and that they need more theoretical and applied nutrition educations irrespective of their sports fields and academic levels.

Paper Type: Research Article

Keywords: Nutritional Literacy, Athletes, Iran University Games

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Introduction

Today in the sport world, practice and frequent use is not considered as the only key factor in the success and achievement of predetermined goals; other factors such as: psychological factors, talents, physiological factors and nutrition are determinant of success (1). Nutritional status is one of the most important determinants of fitness, athletic performance and health and at high levels of sports, the boundary between success and failure is a very narrow boundary in which nutrition is a very important factor in achieving the result (2, 3).

Athletes like the general public may consume a lot of food but lack essential nutrients like vitamins and minerals (3). These food deficiencies may be more common in athletes than in other people. Meanwhile, one of the most important reasons for diet imbalance is the consumption of processed foods and supplements by athletes (4); the consequence is that excessive calorie intake along with low levels of nutrients is necessary. In the meantime, while many athletes had inadequate and undesirable feed, low nutritional literacy in the athlete group is felt (2, 3). Having a healthy, adequate and desirable diet in athletes and active individuals will preserve and develop the fitness and good performance of athletics (5).`

Considering the increasing number of athletes and coaches in the field of physiology and sports nutrition, the development of nutritional literacy is essential in order to create a healthy diet and prevent the consequences of its failure to comply (1, 5). In this regard, Dunn et al. reported that coaches and practitioners with parents have a great influence on the attitude and attention of young athletes to the consumption of food and supplements (6).

Petróczi et al. showed that professional athletes suffer from lack of awareness of their nutritional status. For this reason, athletes may not have the basics of choosing and preparing nutritious foods (7). Spronk et al. reported in their study that there is a significant relationship between dietary knowledge and dietary quality (8). Trakman et al. in a systematic review of the nutritional knowledge of athletes and coaches reported that their nutritional information was inadequate; one of the reasons for this was the inappropriateness of nutrition questions with the level of understanding of the target group (9).

Therefore, the disparity between the level of audience perception and proper nutrition leads to the lack of effectiveness of the designers of these interventions (such as nutritional training courses) (8). In recent years, this has been discussed as nutritional literacy that includes the skill and the degree of individuals' capacity to acquire, process, and understand nutrition information with the goal of making appropriate nutrition decisions [10]. Despite the emphasis of the Ministry of Health and Medical Education on increasing nutritional literacy in different groups and the need to design and implement appropriate interventions to increase nutritional literacy, few studies have been done in this regard. Accordingly, investigating nutritional literacy can play a key role in choosing the type of training and establishing coordination between athletes in adapting nutritional behaviors. To this end, firstly necessary and basic information about the factors affecting nutritional behaviors such as nutritional literacy of athletes should be obtained and appropriate programs for

proper nutrition education should be done.

In general, nutrition plays an important role in athletes, especially at the championship and in the professional world, so that lack of proper nutrition can reduce the ability and performance of athletes. The academic field of study in majority of male athlete students participating is not physical education. According to the results of the studies, their nutritional information is lower due to the lack of specialized courses, such as sports nutrition, from undergraduate students. Therefore, studying nutritional literacy among these people can help to change the quality of nutrition and improve it in order to increase the performance of the sport. Therefore, the purpose of this study was to assess nutritional literacy of male athlete participating in the 2018 Iran University Games.

Materials and methods

The present study was a descriptive-survey research to assess the nutritional literacy of male student athletes contributed in the 2018 Iran sport University Games. According to the surveys, the athletes number was 2,500 individuals from 120 universities in 14 sports fields (futsal, handball, volleyball, basketball, table tennis, badminton, track and field, chess, karate, taekwondo, swimming, judo, freestyle wrestling and Greco Roman wrestling), Of which 340 were selected based on Morgan's table.

The instrument used was Nutrition Literacy Questionnaire (Cesur et al., 2015) (10); its validity and reliability were assessed in the study of Hemati et al. after translating the questionnaire and asking for nutritional experts ideas and modifying some questions with respect to Food habits in Iranian culture and Cronbach's alpha test result was obtained as 0.73 (11). Nutrition literacy questionnaire included two sections and completed by interview. The first section contained demographic information of the students and the second section consisted of 35 items in six parts: nutrition information (ten items), ability to read and understand the nutritional content (six items), determining food groups (five items), nutritional knowledge (five items), calculations of food units (three items), nutritional calculations and reading food labels (six items). The cut-off point in this questionnaire is 24; therefore, those who score less than 24 would receive inadequate nutritional literacy and a score of 24 or higher was considered as adequate nutritional literacy.

The researcher asked the supervisors of the sports teams to provide the researcher with the appropriate time to distribute the questionnaires by forming a meeting. Then the researcher attended the athletic location to provide explanations about the purpose of the research and how to answer the questions. Participants were assured that the information received was used only for research purposes and remained completely confidential.

After obtaining their consent to participate in the study and complete the consent form, a total of 340 standard nutrition literacy questionnaires were collected by the researcher and used for data extraction and statistical analysis.

In the data analysis section, data distribution was firstly assessed by Kolmogorov-Smirnov test. Then, to determine the nutritional literacy status of academic athletes, the answers to each section's questions were scored and the subjects'

scores were analyzed in each section to determine their level of desirability by using One-Sample T Test. Also, Pearson correlation test was used to examine the relationship between variables and one-way ANOVA was used for comparing data at different levels. All statistical calculations were performed at the significance level of P <0.05 using SPSS software version 24.

Results

The mean and standard deviation of the demographic characteristics of the subjects is reported in Table 1. The mean score of nutrition literacy was 19.17 ± 4.3 (the accessible range of score by respondents was 0 to 35). The relationship between demographic variables and nutritional literacy level showed that there is a significant relationship between the mean of nutritional literacy scores in the study group in terms of body mass index, sport precedent and education level (Table 1). In other words, with the increase in the BMI, the mean of nutritional literacy decreased significantly (r =-0.64, P = 0.34); whereas, with increasing sport precedent and education level, nutritional literacy was significantly Increased (r = 0.71, P = 0.028, r = 0.83, P = 0.011, respectively). As noted above, the mean score of less than 24 is considered as inadequate nutritional literacy. Accordingly, the results

Table 1: Nutritional literacy scores differentiated by demographic characteristics in the subjects

Variables	Levels	Number	Mean nutritional literacy scores	ANOVA test
Body Mass Index (Kg on the square of height)	Less than 20	39	20.76	p=0.001
	20-24.99	250	22.24	
	25-29.99	40	17.33	
	Higher or equal 30	11	16.35	
Education Level	Associate	74	7.35	p=0.001
	Bachelor	146	21.76	
	Masters	95	27.94	
	Ph.D.	25	42.95	
Sport Precedent (Year)	1-3	85	16.42	p=0.001
	3-6	132	19.06	
	More than 6 years	123	22.03	

Table 2: Mean scores of Nutritional literacy components in subjects participating in the study

Variables	Mean and standard deviation of nutritional literacy scores
Reading Comprehension	1.17 ± 0.21
Computational Literacy	1.26 ± 0.43
Food label	2.34 ± 1.11
Food groups	6.13 ± 1.16
Nutrition Knowledge	7.23 ± 2.14
Food units	10.23 ± 3.12
Nutritional literacy	19.17 ± 4.3

of the present study showed that 42.44%, 32.17% and 25.39% of the students had inadequate, moderate and good nutritional literacy. The results of this study showed that the lowest percentage of correct responses were related to nutritional comprehension section, determining food groups, nutritional calculations and reading food labels (Table 2).

Discussion and Conclusion

In this study, the nutritional literacy of male athlete participating in the 2018 Iran University Games was assessed. The results of this study showed that the nutritional literacy level measured by the native instrument based on adult nutrition literacy tool among the athletes participating in the sport Olympiad was at a low level. In line with the present study, Lee et al. at South Korea's Sangji University studied health-related factors, nutrition knowledge and food habits of athletic students. The results showed that their nutrition knowledge and practice are at the moderate and low levels; therefore, they sought nutrition education to improve their nutritional performance and needs (12). Basami et al. (2016) in their study on the nutritional knowledge, attitude and practice of male students' athletes in 2014 IR- university games reported that athlete students had a poor nutritional knowledge and attitude but their nutritional practice was moderate (13). Contrary to these results, Hemati et al. (2017) reported that most of the teachers had adequate nutritional literacy (11). the possible reasons for the high level of nutritional literacy among teachers as compared to athlete students probably due to teachers¢ moderate and high socioeconomic level, the availability of various and varied resources for gaining nutrition information, low mass body index among athletes, non-physical education university degree programs (lack of sports nutrition, physiology and sports nutrition courses, etc.).

Also, the results of the present study showed a reverse and significant relationship between the mean of nutritional literacy and BMI. In other words, with the increase in BMI, the mean nutritional literacy decreased significantly. Although, considering the age range and high physical activity of this group, they had a natural body mass index; but this finding indicates the importance of nutrition literacy as one of the important factors in maintaining, developing and improving the body composition that besides disturbing factors such as genetics and exercise are also the basics of improving exercise performance.

In addition, the results of this study showed that the mean nutritional literacy rate increased significantly with increasing education level. Consistent with the findings of this study, Amir Sasan et al. (2013) reported that nutrition awareness and performance increased with increasing levels of education. They indicated that athletes with under diploma- diploma degree had the lowest level of nutrition knowledge and practice, but there was only a significant difference between the knowledge and the nutritional status of athletes with under diploma- diploma degree and athletes with a bachelor's degree (14). Also, there is a direct correlation between higher education level and nutritional literacy level with the findings of other studies (15, 16). However, contrary to the results of the present study, Gilis et al. reported that there is no significant relationship between nutrition knowledge, attitude and practice with the athletic student's education level (17). It seems that

the most important factor in the difference between the results of this research and the present study is to look at the subjects and the level of education of the subjects; The subjects of the present study consisted of university athletes with associate, bachelor, masters, and Ph.D. degrees and Gilis et al. subjects were elite athlete with high school diploma degree.

The reverse relationship between nutritional literacy score with sport precedent was one of the important findings in this study. Athletes with higher sport precedent may be more aware of the important role of nutrition in improving their athletic performance which has led to an increase in their nutritional literacy (16). The results of many studies indicate the relationship between nutrition and exercise performance. For example, an inappropriate diet will certainly have a negative effect on exercise, even if it's not professional; while having a proper diet that contains enough calories, vitamins, minerals and proteins, may provide the necessary energy to perform a match or a recreational exercise and will increase the performance of athletes. Other results of this study were low nutritional comprehension level, determining food groups, nutritional calculations and reading food labels. This important finding suggests that by designing specific interventions to increase these skills, instead of generic nutrition education, nutritional literacy can be increased among athletes.

In general, the findings of the present study conclude that although most athletes are aware of the importance of nutrition and diet and its place in health and fitness, the nutritional literacy of university athletes is moderate or poor. One of the possible reasons for a low level of nutritional literacy among subjects is the relationship of nutritional literacy and field of study. Since most subjects had non-physical education and nutrition academic degrees, so they had no nutritional literacy courses such as general nutrition, exercise nutrition, physiology and low exercise knowledge can justify their poor nutritional literacy level. Accordingly, increasing nutritional literacy in university athletes is more necessary. In this regard, participation in nutrition education classes, consultation with sports nutritionists and athletic physiologists, increasing studies and obtaining nutritional information, and so on can be effective in promoting the nutritional knowledge of university athletes and will have beneficial results in increasing the performance and gaining pride for these athletes. Finally, it can be said that conducting similar research can be the first step in national studies to measure and promote nutritional literacy of university athletes. Of the limitations of this study are the lack of an examination for field of sport type effect, the impact of the culture of each sport field, the attitude of the instructors and the motivation of the students.

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