

A Study of Nutrition Knowledge, Food Habits and Ergogenic Aids Levels of Physical Education and Sport Science Students in Different Countries

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Abstract: A survey was used to examine high school students' nutrition confidence in their Knowledge, Food Habits and Ergogenic Aids levels. Subjects from Two different countries situated in Turkey and Iran were selected. A total number of 300 subjects belongs to in faculty of physical education and sport science (PESS). The Knowledge, Food Habits and Ergogenic Aids questionnaire contained 18 questions about nutrition knowledge, 29 questions about food habits, and 13 questions about ergogenic aids were collected from the selected students. Demographic of the subjects is also assessed. The collected data was coded and used for evaluation. The results showed that there is significant relationship between nutrition knowledge and food habits level of physical education and sport science students in Turkey and Iran ($p < 0.05$). But, no significant differences were observed according to gender in two countries of nutrition knowledge ($p > 0.05$); Also, no significant differences were observed according to gender in two countries of food habits ($p > 0.05$). In this study showed that the percent of used ergogenic aids in Turkey of PESS students was higher than Iran PESS students ($P < 0.05$). Interestingly, nutrition knowledge was associated with food habits. A nutrition education intervention, 'Eat to Compete,' was developed to fill gaps in nutrition knowledge regarding fluids/dehydration, training diets, and dietary supplements. With the advancements in nutrition and exercise physiology, the effect of nutrition on sports performance has become more apparent. The overall scores indicate that most PESS students of different countries had good knowledge of nutrition and supplements.

Keywords: Knowledge, Food Habits, Ergogenic Aids

I. Introduction

Nutrition is an important component of any physical fitness program. The main dietary goal for active individuals is to obtain adequate nutrition to optimize health and fitness or sports performance (Berning, 2000). This is not only important to help to improve performance but also to promote healthy dietary practices in the long term (Jonnalagadda et al., 2001). So, a reasonable strength and condition program and a well balance diet must be presented as a sensible alternative to a riskier, shortcut mindset (Weber.et al., 2004).

Coaches and physical education researchers have a responsibility to understand basic nutrition principles and practices and then convey them to their athletes. Yet, studies that have examined nutrition knowledge of coaches indicate that most coaches are not always accurate sources of nutrition information (Smith-Rockwell et al., 2001). High school coaches lack knowledge about nutrition needs specific to adolescents and weight control methods. Many high school coaches believe that optimal performance is possible only when athletes reach very low body weight (Sossin et al., 1997). Adolescents from low income communities receive less educational resources and may possess insufficient knowledge of nutrition and sports supplements to make health conscious decisions. Their study also indicated that a short – term nutritional education program can significantly improve supplementations knowledge (Little et al., 2002).

The main goal of nutrition plans is to obtain the appropriate and necessary nutrition to remain healthy, to be physically prepared and to lead a healthy life. For this reason to promote the health level of a society, and the attitudes of its people, must be taken into account. Given that one of the main goals of universities is to broaden the knowledge of the people in a society, the enhancement of the nutrition attitudes, knowledge and practices of its students is of high importance, as this will subsequently lead to a more food conscious society and more healthy people. Some studies have shown that most students are not familiar with the healthy foods needed for their body in different conditions (Cotugna et al., 2005). Ruka's research showed that the majority of students (83.6%) eat three meals during the day regularly and no difference was found between men and women (Ruka et al., 2005). O'Dea showed that 85% of men and 87% of women, who are overweight, decide to go on a diet to lose weight; also 13% of men and 20% of women refuse to eat breakfast. He also reported that students do not have the necessary information and training regarding weight control, nutrition needs and diets (O'Dea & Abraham, 2001).

Cupisti et al. (2004), by comparing the nutrition habits and nutrition knowledge of female students in both physical education and non-physical education, found that the consumption of carbohydrate in physical education students was greater than in nonphysical education students, and the consumption of fat in non-physical education students was greater (Cupisti et al., 2004). Physical education students consumed large amounts of fiber, iron, and vitamin, but the consumption of iron and calcium in both groups was smaller than the required daily amounts (Cupisti et al., 2004; O’Dea & Abraham, 2001).

Given the lack of knowledge, prevalence of misconceptions, and marginal nutritional practices of athletes, it is apparent that nutrition education programs based on research and scientific principles are needed. There is a lack of research examining the effectiveness of nutrition education provided to coaches and high school athletes. The effectiveness of nutrition education is based on how well the recipients receive, understand, and use the nutrition information provided to them. An important outcome of nutrition education should be the attainment of a variety of cognitive and affective skills that help individuals become nutritionally literate consumers. Thus, the purpose of this study was to assess the nutrition knowledge, food habits and ergogenic aids levels of physical education and sport science students in two different countries.

II. Materials And Methods

In the present cross-sectional study, 300 subjects of physical education and sport science were selected randomly from Turkey and Iran (Gazi, Ankara, Tehran and Beheshti Universities). To determine nutrition knowledge, food habits and ergogenic aids levels of physical education and sport science students, we used demographic, nutritional knowledge, food habits and ergogenic aids questions. This question was developed from a similar study evaluating the nutritional knowledge of athletes by Mitchell (Mitchell, 2004). Questionnaires were distributed to the selected athletes. A cover letter was included to explain the purposes of the study to the participants and to indicate their rights as participants. The demographic questions, nutritional knowledge questionnaire and diet recall were distributed to the athletes on an assigned day. The cover letter and directions were read aloud while the participants read along. After the direction was read, time was allotted for the participants to complete the study. Face and content validity of the questionnaire was established in the study. The knowledge, food habits and ergogenic aids questionnaire contained 18 questions about nutrition knowledge, 29 questions about food habits, and 13 questions about ergogenic aids were collected from the selected students. The developed interview scheduled was coded and used for evaluation. Means, standard deviation and percent were calculated for the scores from the nutrition knowledge, food habits and ergogenic aids sections. Pearson's correlation coefficient were used to assess the correlation between nutrition knowledge and the food habits of physical education and sport science students; and Percentage distribution was used to evaluate ergogenic aids, and an independent U-Man Whitney statistical test was used to compare the nutrition knowledge and food habits between countries. Statistical results were considered to be significant at $p < 0.05$.

III. Results

The results showed that 66% of the selected subjects of Gazi & Ankara Universities were in the age group of 20 ± 3 years and 14% of them belongs to the age group of 26 ± 2.6 years. Also, the results showed that 87.3 the selected subjects of Tehran & Beheshti Universities were in the age group of 21 ± 3 years and 12.7% of them belongs to the age group of 25 ± 2.6 years. The participants of Turkey countries were 99 males and 51 women. About 55.3% of the participants were in individual sports and 44.7% of the participants were doing team sports. The participants of Iran countries were 89 males and 61 women. About 65.3% of the participants were in individual sports and 35.7% of the participants were doing team sports. The characteristics of the subjects are shown in Table 1.

Table 1. Demographic Characteristics of Study Participants

	Tehran & Beheshti Universities				Gazi & Ankara Universities			
	(N=300)							
	Min	Max	Mean	SD	Min	Max	Mean	SD
Height (cm)	153	186	173.56	7.81	150	200	174.71	0.08
Weight (kg)	43	100	67.02	10.89	45	130	68.90	13.23
How many years have you been doing sports?	2	18	9.13	3.68	1	21	8.49	4.65
How many hours a week do you exercise?	3	30	12.56	5.33	4	26	11.54	4.60

Table 2 shows information on PESS students of Turkey and Iran general nutrition knowledge in the area of macronutrients, micronutrients, water intake, diet and disease using a multiple choice answers. Each question had one mark for every correct response chosen. An additional question was incorporated to establish the main source of nutrition information. Using a marking scheme for nutritional knowledge test the scores were rated on score percentages using five cut off points and respondents were graded according to their responses. The five cut off points used are in the table below;

Table 2. Nutrition knowledge score classification table

Classification	PESS of Turkey		PESS of Iran	
	Frequency	Percentage	Frequency	Percentage
Poor	3	2	2	1.3
Regular	10	6.7	8	5.3
Good	61	40.7	34	22.7
Very good	76	50.7	106	70.7
Sum	150	100	150	100

Table 3 shows the mean and standard deviation of the food habits and nutritional knowledge among physical education and sport science students of four different universities. Also, shows U-Man Whitney statistical test the dietary habits and nutritional knowledge difference in terms of male and female among physical education and sport science students.

Table 3. Shows the mean and standard deviation of the nutritional knowledge and the food habits among PESS students in Turkey and Iran countries

		N	Mean	Std. Deviation	P	
Turkey	Nutritional Knowledge	Male	51	85.90	11.85	0.458
		Female	99	84.50	10.38	
Iran	Nutritional Knowledge	Male	61	90.52	13.56	0.237
		Female	89	89.25	9.57	
Turkey	Food Habits	Male	51	46.52	5.02	0.937
		Female	99	47.02	6.89	
Iran	Food Habits	Male	61	43.52	5.50	0.191
		Female	89	42.64	5.90	

Table 4 shows results on the factors associated with the use of ergogenic aids in the past 24 months in PESS students in two different countries. The types of ergogenic aids commonly used by these students were vitamin C, multivitamins, vitamin A, vitamin B12 and vitamin B complex.

Table 4. Factors associated with dietary supplement use

		Ergogenic Aids users			
		Turkey		Iran	
		N	Percentage	N	Percentage
Primary reasons for dietary supplement	Good health	79.6	66.7	63.6	60.3
	Poor diet	32.5	35.2	31.5	33.2
	To boost immunity	45	42	29	21
	Energy	36	33	33	28.5
	Weight gain	50	57.3	42	48.3
	Doctor's prescription	29	31.2	34	36.2
Do you take prescription medication with dietary supplement	Yes	52	34.6	60	40
	No	98	65.4	90	60
Do you take over-the-counter medication with dietary supplement	Yes	38	25.3	46	30.6
	No	112	74.7	104	69.4
Is doctor aware of dietary supplement use	Yes	69	46	78	52
	No	81	54	72	48
Do you experience any side effect with dietary supplement use	Yes	25	16.6	53	35.3
	No	125	83.4	97	114.7
What are the side effects experienced	Bulimia	8	25.6	18	35.6
	GIT effects	10	35.7	6	15.7
	CNS effects	20	42.3	23	48.6
	Black stool	5	18.6	16	35.6
Frequency of use	Daily	25	26	36	45
	Weekly	64	48.3	50	42.3
	Occasionally	35	32.4	26	32.9
	Once in a while	12	13.1	18	20.8
Common types of dietary supplement used	Vitamin C	117	79.5	87	65.5
	Vitamin B complex	75	57.3	79	60.3
	Multivitamin	62	46	42	35
	Vitamin A	49	36.1	69	46.1
	Vitamin B12	32	24.2	21	20.1

IV. Discussion And Conclusion

Purpose of this study was to assess the nutrition knowledge, food habits and ergogenic aids levels of physical education and sport science students in two different countries. The result from finding was measure the level of food habits and level of nutritional knowledge among physical education and sport science (PESS)

students by using mean and standard deviation. Based on the result, the level of food habits among the respondents is lower than the level of nutritional knowledge. This statements supported by Laura (2011), refer the previous study also prove the knowledge about food habits was recorded highest score compare to the score of health relief among the group of gender. Besides that, refer from the findings the mean score for male highest from female for food habits and nutritional knowledge in both countries. They had nutritional knowledge because course of physical education and sport science had subject about nutrition and also some respondents had previous nutritional knowledge from after the time. The mean score for level of nutritional knowledge for male higher compare with the female's score. According to Ali et al. (2011), that found the same finding which the physical education students were collected the highest score for level of nutritional knowledge where the male level higher than female's level. He also said that, this is due to the field of study, which affects the research result. The result shows that relation between food habits and nutritional knowledge is positive but very weak between both variables. However, there is statistically significant relationship between food habits and nutritional knowledge. This statement had been supported by Sarah (2010), found that the students who were involved in sport which better practice in dietary habits also have better in understanding of nutrition. The better practice in dietary habits means the correct in food choice and amount in daily eating intake. On the other hand, some study found the contrast result, which female students had higher score than male students (Azizi et al., 2010). This result contrast compare with the other study because the sample of size more too female students even though the researcher select sample randomly. Besides that, female note with their health issues rather than male and that is why got the better in nutritional knowledge. In addition, if poor level of nutritional knowledge will directly designate poor in dietary habits. Furthermore, according to Mohammad Azizi et al. (2010), nutrition knowledge also have positive correlated with nutrition attitude among the athletes. The attitude and nutritional knowledge among students who were participated in sport interrelated with each other. This result also supported by model from Schwartz (1976), which the nutrition attitude, knowledge and practice are strength relationship with each other. In conclusion, if the increase nutritional knowledge, the better in practice in dietary habits in daily life.

Based on the findings from information of PESS students in both countries, the researcher was used U Man Whitney statistical test to get the result. The result shows that no significant difference in food habits and nutritional knowledge that influence gender among PESS students. This statement supported by previous research by Amanda (2010), this research found the same result, which there was no significant effect either nutritional knowledge or eating habits influenced by male and female among the athletes. According Georgia et al. (1993) proved that male and female were not interrelated with the nutritional knowledge. Besides that, the result also shows the male and female among PESS students has no significant difference for both of food habits and nutritional knowledge. Some previous research from Ali et al. (2011), used univariate analysis of variance test (ANOVA) but shown the same result which the level of nutritional knowledge was no significant difference between the gender of college students.

On the other hand, some study also used multivariate analysis of variance test (MANOVA) but the result contrast which significant difference in food habits and nutritional knowledge in term of male and female. This study states that male athletes practice in healthier eating due to sport participation, which concern with weight. Female athletes knew more about nutrition but did not apply in their life because they addicted with their weight and they become eating disorder (Sarah, 2005).

Majority of the PESS students have heard of ergogenic aids. Most of the students have used ergogenic aids before but about half of them have used them in the past 24 months. Most of them were occasional users or once in a while users. Most of the students' doctors were not aware of their dietary supplement use and the students lack full and precise information concerning the side-effects of dietary supplement. Greater attention to experiential and procedural knowledge it is the 'how to' that is difficult, for example, how to reduce energy intake. Perhaps different kinds of nutrition knowledge are required, such as, an understanding of strategies to influence metabolic regulation, energy intake and expenditure. Finally, we need much more research into the ways people learn and use food-related knowledge in the form of systematic reviews, experimental interventions, path modelling studies, decision process studies and longitudinal studies. There are many effective dietary ergogenic aids; the most obvious examples are carbohydrate supplements and sports drinks. All essential dietary components, including protein, essential fatty acids, vitamins and minerals, might be considered to come into this category. These components, however, are essential for the maintenance of health and normal physiological function, and supplementation above the level required for maintenance of health is not likely to improve exercise performance. The ergogenic aids discussed here are only a few of those used by athletes, but represent those for which there is evidence of efficacy, or where there is much topical interest.

Acknowledgements

The authors would like to thanks Asst. Prof .Ibrahim Cicioglu and Asst. Prof. Nevin Gunduz for his kind assistance during this research. This study was supported by Gazi University, Department of Physical Education and Sports science, Ankara, Turkey.

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