

**Original empirical article**

## **NUTRITION KNOWLEDGE, THE ATTITUDE AND PRACTICES OF COLLEGE STUDENTS**

*UDC 351.778.2:796.071*

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**Abstract.** *This study was designed to help researchers understand the nutrition knowledge, attitude and practices of college's students of the Azad University of Gourgan. The target population consisted entirely of the college students of Azad University. A standard questionnaire (K. Parmenter and J. Wardle, 1999) which was developed to measure the participant's nutrition knowledge, attitude and practices was randomly distributed among 360 students. After the translation, the questionnaires were evaluated by the faculty members of the Physical Education and Sport Sciences department. The reliability analysis yielded Cronbach Alpha values of 0.80 for the knowledge and 0.81 for the attitude scales. The collected data were analyzed by the t-test, Pearson correlation coefficient and one-way ANOVA ( $P < 0.05$ ).*

*The results show that the nutrition knowledge score were the highest in the nursing students and were the lowest in business management students. The ANOVA shows that there were significant differences among the nutrition knowledge of all the majors. In addition, the nutrition attitude scores were the highest for physical education and were the lowest for business management; and the differences between nutrition attitudes among all of the majors were significant. Furthermore, there was a positive and significant correlation between the nutrition knowledge and attitude of the female ( $r = 0.001$ ;  $sig = 0.03$ ) and male ( $r = 0.30$ ;  $sig = 0.03$ ) students; and a positive and significant correlation between the nutrition attitude and practices of male and female students ( $r = 0.18$ ;  $sig = 0.000$ ).*

*According to our results, we suggest that students should pay more attention to nutrition. The time they spend at college is a golden period for learning, and can promote nutrition*

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Received November 06, 2011 / Accepted December 04, 2011

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*knowledge, the attitude and practices of students; therefore, the importance of nutrition in various college curriculums and an improvement in the learning environment related to nutrition, need to be emphasized on college campuses.*

**Key words:** *Nutrition knowledge, Attitudes and Practices, Azad University, students of Golestan.*

## INTRODUCTION

There have been considerable changes in human lifestyle all over the world and Iran in the recent decades. Especially in recent years, the Iranian lifestyle has rapidly been industrialized. This has caused changes in diet, types of food, cooking time, etc. (Amamoto et al., 2004). Nowadays processed foods are rapidly replacing organic food. Another change is the rapid increase in the number of restaurants and in the people's tendency to eat fast food (Margetts et al., 1998; Stampfer et al., 2000). Many studies have shown that not keeping a healthy diet and not having sufficient nutrition knowledge lead to issues such as health problems, overweight and obesity (Harvey-Berino et al., 1997). Obesity itself leads to cardiovascular disease, high blood pressure, an increase in blood cholesterol and diabetes (Amamoto et al., 2004; Harvey-Berino et al., 1997).

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; O'Dea, 2004). 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).

On the other hand, Gates showed that students with normal weight have a more healthy diet and better points in terms of nutrition knowledge and attitudes compared the others (Gates & De Lucia, 1998).

There is no significant difference between knowledge and attitude between overweight and normal weight women. In normal weight women, the body mass index and body fat percentage were related to their attitude to nutrition (Lowry et al., 2000; Mitchell et al., 1999).

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 non-physical 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).

Unfortunately, in Iran there are no adequate studies about student nutrition, and sufficient information is not available. Therefore, knowing the students' knowledge, attitude and nutrition habits helps us find ways to enhance the nutrition of this community, which will consequently lead to a healthier society, as this group will form the main body of families and professionals. Therefore, the purpose of this study was to evaluate nutrition knowledge, the attitude and practices of students of the Azad University of Golestan.

#### METHOD

The population selected for this research consisted of all Azad University students (male and female) of Iran. Then, according to the Odinsky table, the acceptable numbers of samples were determined and 360 questionnaires were distributed, filled out by the students and collected. After the translation of the standard questionnaire to suit the Iranian' food and nutrition culture, consulting some experts to obtain validity and the alpha Cronbach method were used to obtain reliability. The reliability analysis yielded Cronbach Alpha values of 0.80 for the knowledge test and 0.81 for the attitude scale. An institutional ethics review board at the University of Razi - Iran approved this study.

For the pilot study, the questionnaire was distributed between 31 students and the necessary modifications were made. The questionnaire consisted of five parts. The first part consisted of personal information about the students and their body composition. The second part consisted of some questions which measured the amount of the students' knowledge about food groups and materials. The third part posed some questions about the students' attitudes toward nutrition and related diseases. The fourth part posed some questions about choosing foods, and the last part collected the students' recommendations.

#### STATISTICAL ANALYSIS

Means, standard deviation and percents were calculated for the scores from the nutrition knowledge, attitude and food habits sections. Pearson's correlation coefficient were used to assess the correlation between nutrition knowledge, the attitude and practices of college athletes; and analysis of variations (ANOVA) was used to evaluate nutrition knowledge and the attitude between majors, and an independent t-test was used to compare the nutrition knowledge and attitude between males and females. Statistical results were considered to be significant at  $p \leq 0.05$ .

#### RESULTS

The mean values and standard deviation for age, height, weight and the Body Mass Index (BMI) of the participants are shown in Tables 1 & 2. The results show that the knowledge level of the nursing discipline with a grade of 60.08 out of 100 is by a large margin the highest compared to the other disciplines. Business Administration with a grade of 46.73 out of 100 is the lowest. Using the one-way ANOVA, it transpired that there was a significant differences in the knowledge level between students of different disciplines ( $F=4.05$ ;  $p<0.001$ ) (Figure 1). In addition, the knowledge level of the male participants (55.76 out of

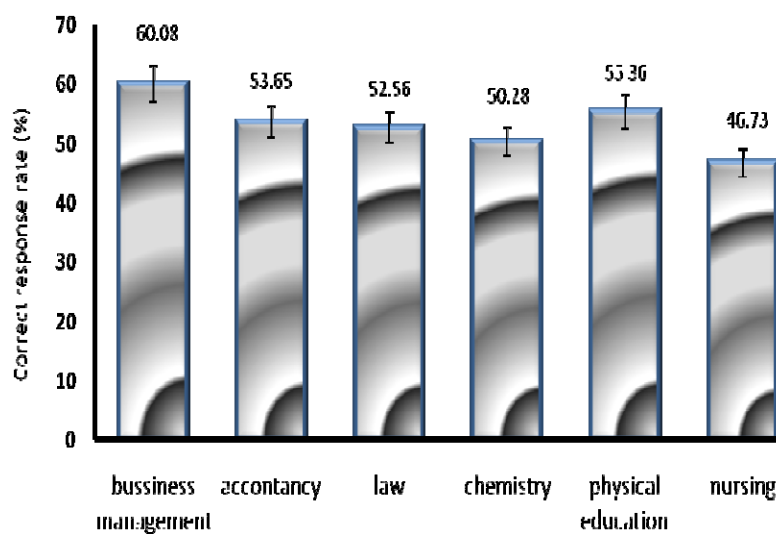
100) was significantly higher than that of the female participants (53 out of 100). The one-way ANOVA also showed that there is a significant difference in the nutrition attitude between the different disciplines ( $F=3.68$ ;  $p<0.003$ ) (Figure 2).

**Table 1.** Anthropometric characteristics of the participants

Gender	Height (cm)	Weight (kg)	Age (yr)
Male	176 ± 5	74.8 ± 0.97	23.1 ± 3.5
Female	164 ± 6.2	59.05 ± 9.4	23.1 ± 4.1

**Table 2.** Body mass index of the students

	Males		Females	
	Number	Percentage	Number	Percentage
Lean (less than 20 kg/m <sup>2</sup> )	24	12.9	39	22.2
Normal weight (20-25 kg/m <sup>2</sup> )	99	53.5	97	55.4
Overweight (25-30 kg/m <sup>2</sup> )	47	25.4	22	12.5
Obese (More than 30 kg/m <sup>2</sup> )	10	5.4	3	1.7
No reply	8	2.7	14	8
<b>Total</b>	<b>185</b>	<b>100</b>	<b>175</b>	<b>100</b>



**Fig. 1.** Nutrition knowledge percentage of college students

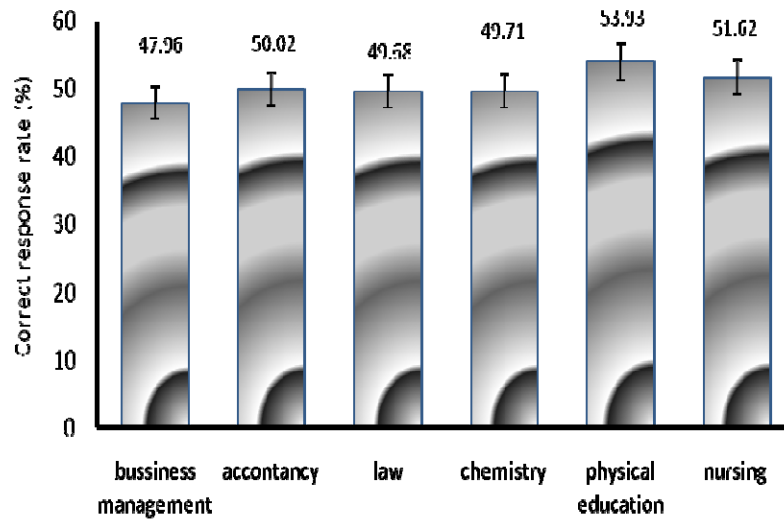


Fig. 2. Nutrition attitude percentage of college students

The results showed that there was a positive and significant correlation between the knowledge and attitude level of both genders (Females:  $r=0.41$ ;  $\text{sig}=0.001$ ), (Males:  $r=0.30$ ;  $\text{sig}=0.03$ ). There was also a positive and significant correlation between the nutrition attitude and practice ( $r=.18$ ;  $\text{sig}=0.000$ ). The results concerning nutrition practices also showed that 47.2 % of the participants eat fish once or twice a month. In addition, 40.3 % of the participants eat breakfast every day and 51.9 % of the participants eat fruit every day, while 10% eat fruit only once or twice a week. Also only 30% of the participants drink milk every day. Only 9.4% of the participants said yes to the question of "Do you have a nutrition license?" The factors of low nutrition information from the participants' perspective are shown in table 3, and the results of a survey about how to increase the nutrition knowledge of the students are shown in table 4.

Table 3. Main cause of low nutritional awareness

	Factors	Frequency	Percent
1	Carelessness to nutrition	100	33.3
2	Lack of information	60	20
3	Family	36	12
4	Finance	28	9.3
5	Lack of interest	20	6.6
6	Lack of nutrition congress	15	5
7	Culture	10	3.3
8	Lack of nutrition instruction	10	3.3
9	Education	9	3
10	Fast food	7	2.3
11	Lack of time	5	1.6
	<b>Total</b>	<b>300</b>	<b>100</b>

**Table 4.** Survey results concerning the strategies to increase the nutrition knowledge of students

Strategy	Priority
Designing a nutrition <u>website</u> on a university scale	First Priority
Through the media such as <u>TV</u>	Second Priority
Trough students <u>periodicals</u>	Third Priority
Students in universities: the establishment of <u>nutrition councils</u>	Forth Priority
Nutrition training through holding <u>workshops and seminars</u>	Fifth Priority
Through the media such as <u>newspapers</u>	Sixth Priority
Distribution of <u>brochures</u> containing nutrition information	Seventh Priority
Making <u>nutrition courses</u> compulsory	Eighth Priority

## DISCUSSION

Some previous studies have shown that students are only slightly aware of nutrition issues and that their knowledge and attitude are average (Sakamaki et al., 2005). In this research, the average knowledge of the male students was 57.76% and that of the female students was 53%, which indicates that the students have average nutrition knowledge. This replicates the results of previous studies (Chang, 1987; Wong et al., 1999).

It has been observed in this research that the nutrition knowledge of nursing students (60.08%) and P.E students (55.36%) is the highest among the disciplines. This is consistent with previous studies which showed that nutrition knowledge is related with the field of study (Azizi et al., 2010; Georgia et al., 1993). With regard to the fact that nutrition, physiology and exercise science are the subjects of physical education courses, it can be said that the reason for the increase in the nutrition knowledge of these students in comparison to other students is the fact that they have attended such courses.

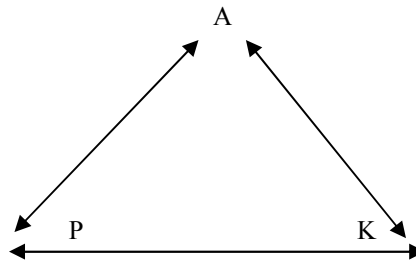
It has also been observed in this article that the attitudes of nursing students and physical education students are respectively first and second (53.93% and 51.62%, correct response rate). These results were expected because of their nutrition knowledge. Their high attitude scores can also be attributed to their having attended the above mentioned course. Williams et al. (2008) showed that 16% of the samples had sufficient nutrition knowledge, 34% had a positive attitude and 18% had a healthy diet. Nutrition knowledge had a meaningful relationship with attitude and diet. Wong et al. (1999) showed that there is a positive correlation between attitude and diet (Wong et al., 1999). A total of 42% of the students were aware of the nutrition importance and were willing to learn, but did not know where to begin. Their results showed that students need to enhance their knowledge, attitude and diet. The importance of nutrition in this period and the importance of a suitable environment for nutrition needs must be emphasized (Wong et al., 1999).

Previous studies have shown that nutrition knowledge has a positive and meaningful correlation with attitude (Azizi et al., 2010; Schwartz, 1976). In this current research, there is positive and meaningful correlation between nutrition attitude and knowledge of male students ( $r=0.30$ ) and female students (0.41). This has also been reported in the studies of Lewis, Stansfiels and Schwartz (Lewis et al., 1989; Schwartz, 1976; Stansfield & Fox, 1977). There is also a positive and meaningful correlation between nutrition attitude and practice ( $r=0.18$ ). These findings are consistent with those of Wong et al. (1999).

Sharma et al. (2008) also reported that nutritional knowledge is significantly related to dietary habits (including consumption of meat, dairy, grains and water) (Sharma et al., 2008). The findings of these studies show that educational interference leads to an increase in nutrition knowledge and the enhancement of people's attitudes. Maybe in this research, higher attitude and knowledge of physical education students also verify this.

Sakamaky's study showed that most students regularly eat three meals (Sakamaki et al., 2005), while in the research conducted in Japan only a few students eat three meals regularly (Ministry of Health, Labor and Welfare, 2002). In the current research, 40.30 % of the students eat breakfast every day. This is not consistent with the findings of Wong et al. who reported that 81% of the participants agree with the necessity of eating breakfast (Wong et al., 1999). This shows that the participants in this research pay little attention to breakfast, compared to those of Wong et al. Wong et al.'s study (1999) showed that 45.5% of the participants do not drink milk regularly. In the current research, only 30% of the students drink milk every day. This shows that milk consumption is lower than among the Taiwanese students.

This research was conducted according to the knowledge-attitude-practice model based on the cognitive-affective-behavior theory in the area social psychology (Figure 1) and this model suggests that an increase in knowledge affects attitude and consequently changes the diet.



**Fig. 1.** knowledge-attitude-practice model (Schwartz, 1976)

In the current research the knowledge and nutrition attitude of the students were average and the students' diet needed improvement. According to the above mentioned model, it can be hypothesized that the diet is related to the nutrition attitude and knowledge and subsequently nutrition practices. Then we can come to the conclusion that the promotion of knowledge leads to the promotion of their attitude and subsequently to the improvement of their diet. In fact, this research suggests the importance of nutrition knowledge and its influence on nutrition attitude and diet.

An appropriate diet has a considerable effect on the improvement of a society's health. Therefore, the results of this research suggest that students should pay more attention to nutrition issues, with regard to the fact high nutrition knowledge and attitude of nursing and physical education students are related to their nutrition courses. Only 9.4 % of the participants have a nutrition license; therefore, holding nutrition workshops and courses in college and even including nutrition courses in the curriculum can enhance their attitudes and nutrition behavior and have a positive effect on them.

In addition, owing to the limited number of nutrition studies in Iran and the importance of the promotion of nutrition knowledge and attitude for keeping the society healthy, further studies in this area seem necessary.

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## POZNAVANJE NUTRITIVNIH VREDNOSTI, STAV I NAVIKE UNIVERZITETSKIH STUDENATA

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Ovo istraživanje je kao cilj imalo da pomogne naučnicima da razumeju poznavanje nutritivnih vrednosti, stavove i navike univerzitetskih studenata sa Azad univerziteta u Gourganu. Ciljnu populaciju činili su samo studenti Azad univerziteta. Standardni upitnik (K. Parmenter and J. Wardle, 1999) koji je razvijen da bi merio znanje koje student imaju o nutritivnoj vrednosti, njihove stavove i navike, metodom slučajnog uzorka je distribuiran među 360 studenata. Nakon prevoda, upitnike je pregledalo nastavno osoblje Departmana za fizičku kulturu i sport. Analiza valjanosti je dala vrednost Kronbah-alfa testa od 0.80 za poznavanje i 0.81 na skali za merenje stava. Prikupljeni podaci su analizirani uz pomoć t-testa, Pirsonovog koeficijenta i jednosmerne ANOVA analize ( $P < 0.05$ ).

Rezultati pokazuju da su skorovi poznavanja nutritivne vrednosti bili najveći među studentima medicine, a najniži među studentima menadžmenta u poslovanju. ANOVA pokazuje da su postojale značajne razlike između nivoa znanja svih studenata. Pored toga, vrednosti za stav prema poznavanju nutritivnih vrednosti bili su najveće za fizičko obrazovanje a najniže za menadžment u poslovanju; razlike među stavovima prema nutritivnim vrednostima kod svih studenata bile su značajne. Štaviše, postojala je pozitivna korelacija između poznavanja nutritivnih vrednosti i stavova prema tome na primeru ženske ( $r=0/001$ ;  $sig= 0/03$ ) i muške populacije ( $r= 0/30$ ;  $sig= 0/03$ ) studenata; kao I pozitivna i značajna korelacija među stavovima o nutritivnim vrednostima i navikama muških i ženskih studenata ( $r = 0/18$ ;  $sig = 0/000$ ).

Prema našim rezultatima, predlažemo da bi studenti trebalo da obraćaju više pažnje na nutritivne vrednosti. Vreme koje oni provedu na univerzitetu je odličan period za učenje, i može da poboljša poznavanje nutritivnih vrednosti, stavova prema tome i njihovih navika; dakle, značaj nutritivnih vrednosti u različitim nastavnim planovima i programima i poboljšanje u nastavnoj sredini je takođe povezano sa nutritivnim vrednostima, što se mora naglasiti na univerzitetima.

**Ključne reči:** poznavanje nutritivnih vrednosti, stavovi i navike, Azad univerzitet, studenti Golestana