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Assessing the Level of Nutrition Knowledge and Its Association with Dietary Intake in University Students

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ABSTRACT

Objective: This cross-sectional study was conducted to assess the level of nutrition knowledge and examine the relationship between nutrition knowledge and dietary intake in university students. **Materials and Methods:** The sample consisted of 300 students, aged 18-35 years old from different academic departments (males: 138, 46%; females: 162, 54%). The student's general characteristics were asked by using a questionnaire, and anthropometric measurements were taken. Energy, macronutrient, and food consumption were estimated through 24-hour dietary recall. **Results:** The means body mass index of the participants was $22.4 \pm 3.1 \text{ kg/m}^2$. The total score of nutrition knowledge for all sections was 56.5 ± 13.2 points out of 110. In comparison with males, score for nutrition knowledge was higher in females (54.1 ± 13.3 , and 58.6 ± 12.8 , respectively) ($p < 0.01$). It was shown that students with higher scores had lower energy, carbohydrate, and sugar intakes ($p < 0.05$). There were no significant differences between nutrition knowledge and protein and fat intake. Also, a significant relationship between nutrition knowledge level and food group consumption was not found. **Conclusion:** We suggest that training programs and policies should be planned and implemented for university students to improve their nutrition knowledge. Enhancing nutrition knowledge of students can help to promote healthy eating in a community.

Keywords: Nutrition Knowledge, Dietary Intake, University Students.

Üniversite Öğrencilerinde Beslenme Bilgi Düzeyinin İncelenmesi ve Besin Alımı ile İlişkisinin Değerlendirilmesi

ÖZ

Amaç: Bu araştırma, üniversite öğrencilerinde beslenme bilgi düzeyini değerlendirmek ve beslenme bilgisi ile diyet alımı arasındaki ilişkiyi incelemek amacıyla yürütülmüş kesitsel bir çalışmadır. **Gereç ve Yöntem:** Çalışmaya, farklı akademik bölümlerden 18-35 yaş arası gönüllü 300 üniversite öğrencisi (erkek: 138, %46; kadın: 162, %54) katılmıştır. Soru kâğıdı kullanılarak öğrencilere ilişkin genel özellikleri sorulmuş ve antropometrik ölçümleri alınmıştır. Enerji, makro besin ve besin tüketimi ise, 24 saatlik besin tüketim kaydı ile saptanmıştır. **Bulgular:** Öğrencilerin ortalama beden kütle indeksi $22.4 \pm 3.1 \text{ kg/m}^2$ olarak bulunmuştur. Öğrencilerin ortalama toplam beslenme bilgi puanı (110 üzerinden) 56.5 ± 13.2 olup, kadınların aldıkları puanın erkeklerden daha fazla olduğu saptanmıştır (58.6 ± 12.8 , 54.1 ± 13.3 , sırasıyla) ($p < 0.01$). Beslenme bilgi düzeyi daha yüksek olan öğrencilerin, günlük ortalama enerji, karbonhidrat ve şeker alım miktarlarının, beslenme bilgi düzeyi düşük olan öğrencilere kıyasla, daha az olduğu bulunmuştur ($p < 0.05$). Öğrencilerin beslenme bilgi düzeyi ile protein ve yağ alımı arasında önemli bir fark bulunmamıştır. Ayrıca, beslenme bilgi düzeyi ile besin grubu tüketimi arasında anlamlı bir ilişki bulunamamıştır. **Sonuç:** Bu çalışmada, öğrencilerin beslenme bilgilerinin geliştirilmesi toplumun sağlıklı beslenmeye teşvik etmesi sebebiyle, üniversite öğrencilerinin beslenme bilgisinin artırılmasına yönelik eğitim programlarının düzenlenmesi, program ve politikalar geliştirilmesi ve uygulanması gerektiği sonucuna varılmıştır.

Anahtar Kelimeler: Beslenme Bilgisi, Diyet Alımı, Üniversite Öğrencileri.

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INTRODUCTION

In recent years, the importance of proper nutrition as one of the main ingredients of healthy lifestyle has been emphasized (Barzegari et al., 2011). Also, the relationship between nutrition and better health outcomes have been documented. Ameliorating nutrition knowledge is a way to promote healthy eating practices, thus preventing the development of chronic diseases such as cancer, type 2 diabetes, obesity, stroke, and cardiovascular diseases (CVD) (Dalrymple, 2016). In Turkey, CVD, cancer, chronic respiratory diseases, and diabetes are major causes of death: these conditions were responsible for 87.5% of deaths in the country (National Household Health Survey in Turkey, 2017). In a study conducted in Turkey, it was shown that 80.9% of teachers had insufficient nutrition knowledge and needed to receive nutritional education (Elmas and Arslan, 2020). Also, studies emphasized that the lack of nutrition knowledge is an important factor that prevents people from making healthy food choices (Alsaffar, 2012; Okoro and Musonda et al., 2017). Morbidity and mortality associated with lifestyle diseases could be reduced by satisfactory nutritional educations in early life that have a direct impact in the long term (Sichert-Hellert et al., 2011). Studies have connected nutritional problems which constitute major health problem with lack of education and nutrition knowledge (Vardanjani, Reisi et al., 2015; Ghoochani, Torabi et al., 2018). Therefore, it is necessary to raise the awareness of the individual and the community about nutrition for reducing the incidence of nutritional health problems. Students entering college are beginning to live independently. In a transition from a family dynamic to college life, students have freedom of choosing healthy and unhealthy food options. Poor nutritional knowledge of students tends them to have unhealthy eating habits like skipping meals, overconsumption of fast-foods and lower consumption of vegetables and fruits. Poor eating habits deprive students of the opportunity to eat highly nutritious foods, and lead them to intake more salt, sugar, and fat, which can cause chronic diseases and health problems in later years of the life (Dalrymple, 2016; Unsworth, 2012). Nutritional knowledge programs can provide students the ability to select healthier food choices and understanding of food labels or healthier option selections from a range of foods available. Increasing the nutrition knowledge level of society should be considered one of the main goals of universities. Therefore, it is critical to improving the nutrition knowledge, attitude, and practices of university students for promoting healthy diet behaviors in society (Yahia et al., 2016). Although numerous studies have assessed nutrition knowledge in adolescents and young adults, results are difficult to compare to different measurement instruments and definitions that have been used (Sichert-Hellert et al., 2011; Trakman et al., 2016; Yuen, Thomson, and Gardiner, 2018). Also, factors including age, sex, level of education, and socio-economic status influence nutrition knowledge (Spronk et al., 2014). Despite the key importance of nutrition knowledge in establishing better dietary habits and health, further studies are still necessary. The aim of this study was to determine the level of nutrition knowledge

and examine the relationship between nutrition knowledge and dietary intake in university students.

MATERIALS AND METHODS

Subjects and data collection

This cross-sectional study was conducted on Faculty of Economics and Administrative Sciences and Faculty of Engineering at Hacettepe University, during the fall of 2014 and spring 2015 semesters (October 2014-February 2015) to assess the level of nutrition knowledge and examine the relationship between nutrition knowledge and dietary intake. The sample size was calculated by G-Power analysis program and determined as at least 270 students with $\beta=0.3$ and $\alpha=0.05$ and 80% power. Three hundred students (male: 138, 46%; female: 162, 54%), aged 18-35 years, who volunteered to participate in the study. The inclusion criteria for the participants were to be healthy students and not to be following a special diet. Participants with any chronic diseases and eating disorders were excluded. Also, pregnant women were excluded. Data were collected through face-to-face interviews. General characteristics, eating habits and 24-hour dietary recall of the students were recorded using the questionnaire. Some anthropometric measurements were taken. The body weights of participants wearing minimal clothing without shoes were measured to the nearest 0.5 kg with a portable scale. Height, waist, and hip circumferences to the nearest 0.1 cm were measured with a fiber-glass tape. All measurements were obtained as described previously (Lohman, Roche, and Martorell 1988). Body mass index (BMI; kg/m^2) was calculated for each subject. The cut-off points for BMI were defined by the World Health Organization's (WHO) standards as 18.5–24.9 kg/m^2 for normal weight and 25–29.9 kg/m^2 for overweight (WHO, 2021). According to WHO recommendation optimal cut-off points for waist circumference were 94 for men and 80 for women; 94–102 cm in men and 80–88 cm in women is associated with an increased risk of metabolic complications and the risk is significantly increase with ≥ 102 cm in men and ≥ 88 for women. Also, the waist-hip ratio cut-off points recommended by WHO expert consultation to detect obesity were ≥ 0.9 and ≥ 0.85 for men and women, respectively. (WHO, 2011). The cut-off points for waist to height ratio according to Ashwell et al, were defined as; <0.4 'take care', $0.4 - 0.5$ 'no increased risk', ≥ 0.5 and <0.6 'increased risk' and ≥ 0.6 'very high risk' (Ashwell and Hsieh, 2005).

Nutrition Knowledge Questionnaire

Nutrition knowledge was assessed by a translated form of Parmenter and Wardle's questionnaire (Parmenter and Wardle, 1999) which has been tested for reliability and validity in Turkey (Alsaffar, 2012). The questionnaire contained a total of 110 items in four sections: (1) awareness of dietary recommendations (like recommendations about increasing and decreasing intake of food groups) (11 items), (2) sources of nutrient (knowledge of food sources related to the advice, that is, which foods contain which nutrients) (69 items), (3) practical food choice (using the information to make dietary choices) (10 items), (4) awareness of diet-disease relationships (20 items).

Statistical analysis

Each participant's responses were coded numerically. The answers to questions were converted to 1 and 0 for correct and incorrect answers, respectively. Correct responses from each section were added to give a section score and the four section scores were summed up to give an overall knowledge score out of 110. The amount of energy and macronutrients of foods and food group intake were analyzed by the BEBIS software. Data were entered and analyzed using IBM SPSS 22 software. We use score percentiles (33th, 66th) for comparing student's energy, macronutrients, and food group intake according to their overall nutrition knowledge. In current study, the overall nutrition knowledge score less than or equal to the 33th percentile (10-52 points) was evaluated as "low", the score between 33th and 66th percentiles (53-63 points) was evaluated as "medium", and the score equal or greater than the 66th percentile (64-87 points) was evaluated as "high". The Kolmogorov-Smirnov test was used to determine whether outcome variables were normally distributed. Students' results on the t-test and Chi-square test for independence were used to examine differences in the anthropometric characteristics between male and female students. Mann-Whitney U test results were used to examine differences in nutrition score by gender. Kruskal Wallis was used to test differences in energy, macronutrients, and food group intake for nutrition score groups.

Ethical approval

Before the study was started, written permissions were obtained from Hacettepe University Ethics Committee with B.30.2.HAC.016969557-238 number on 10.03.2014. All study participants signed the Informed Consent Form.

RESULTS

The general characteristics of the subjects demonstrated in Table 1. The average age of the subject was 21.5 ± 2.6 years. According to table 1, 69.6% of women and 71.6% of men had a normal BMI (18.5-24.99 kg/m²). We found that the proportion of obese males (BMI ≥ 30 kg/m²) more than females (2.9% and 0.6%, respectively). But generally, the obesity rate among students was low. Incidence of underweight (BMI < 18.5 kg/m²) was higher in females (17.9%) in comparison with males (0.7%). The waist circumference (WC) of male (86.2%) and female (79.6%) were under the risk criteria. The waist to height ratio (WHtR) in 92.6% of women was under the risk criteria (< 0.85) and in 13.8% of males was over the risk criteria (≥ 0.90). 65.9% of males and 77.8% of females have normal WHtR (0.4-0.5) (Table 1).

In this study, 52.9% of men and 63.0% of women stated that they got their nutritional information from television and internet. Table 2 presented the mean, SD, min, and max of scores of correct responses for all sections and the whole questionnaire. In the first section; out of 11 points, the mean score was 5.4 ± 1.9 points. In this section; more than 70 percent of participants were aware of the recommendations to reduce sugar, salt, and fat intake. The students who were aware of the recommendations about decreasing meat intake were 5.7%. Only 2% of the students knew about the number of recommended daily

portions for fruits and vegetables. In the second section; the students had 25.8 ± 9.4 points out of 69 points.

The majority of the students (87.3%) knew about the high amounts of added sugar in market fruit juices but the minority of students (15.3% and 23%) knew about the low amounts of added sugar in ice-cream and ketchup, respectively.

Table 1. General characteristics and distribution of anthropometric measurement of subjects.

Variables	Male (n=138)	Female (n=162)
	Mean \pm SD or n (%)	Mean \pm SD or N (%)
Age (year)	21.9 \pm 3.0	21 \pm 2.2
Height (cm)	177.2 \pm 6.0	163.7 \pm 5.9
Weight (kg)	74.5 \pm 10.6	57.3 \pm 9.2
BMI (kg/m ²)	23.9 \pm 3.0	21.3 \pm 2.8
<18.5	1 (0.7)	29 (17.9)
18.5-24.99	96 (69.6)	116 (71.6)
25.0-29.9	37 (26.8)	16 (9.9)
≥ 30	4 (2.9)	1 (0.6)
WC (cm)	84.8 \pm 9.4	74.2 \pm 9.0
<94	119 (86.2)	-
94-102	13 (9.4)	-
≥ 102	6 (4.3)	-
<80	-	129 (79.6)
80-88	-	21 (13.0)
≥ 88	-	12 (7.4)
WHR	0.86 \pm 0.05	0.77 \pm 0.05
<0.9	119 (86.2)	-
≥ 0.9	19 (13.8)	-
<0.85	-	150 (92.6)
≥ 0.85	-	12 (7.4)
WHtR	0.48 \pm 0.05	0.45 \pm 0.05
<0.4	4 (2.9)	15 (9.3)
0.4-0.5	91 (65.9)	126 (77.8)
0.5-0.6	40 (29.0)	18 (11.1)
>0.6	3 (2.2)	3 (1.9)

When asked to categorize foods either high or low in fat, starch, and salt; 41.3- 88.7% of students provided correct answers. There was some confusion on the categorized foods that were high or low in proteins, dietary fiber, and saturated fat. For instance, only 37% of students knew that baked beans have high amounts of proteins. 81.7% of students believed that brown sugar was a healthier alternative to white sugar. In the third section, out of 10 points mean score was 5.0 ± 1.7 points. In this section, seven items were answered correctly by more than half of the students. Only, 24.7% of students knew that baked apple has lower calories in comparison with other foods. In the last section of the questionnaire, the students had 10.4 ± 4.3 points out of 20 points. More than 70% of students knew that eating less sugar, salt, and preservatives/additives and 59% of students knew that eating more fiber, fruits, and vegetables helps to reduce the chances of getting certain kinds of cancer. Only 49% of the students were aware of

the consumption of more fiber has a preventive effect against heart disease. 83.7% of the students were able to identify that reduction in salt intake help prevent heart disease. Only 49.7% of the students knew that saturated fats are more likely to raise blood cholesterol level. The items which had the least correct answers were about the

antioxidant activity of vitamins. The percentages of students who knew the antioxidant properties of vitamin A, C, and E, were 14.7, 21.7, and 22%, respectively. The mean of total nutrition knowledge of students was 56.5 ± 13.2 points out of 110 points and scores in females were higher than males.

Table 2. Nutrition knowledge scores of subjects.

Nutrition knowledge scores	Male (n=138)				Female (n=162)				Total (n=300)				
	X	SD	min	max	X	SD	min	max	X	SD	min	max	p
Dietary recommendations (11)	5.3	2.1	0	10	5.5	1.7	1	9	5.4	1.9	0	10	0.564
Sources of nutrients (69)	34.7	9.1	0	50	36.7	9.5	4	55	35.8	9.4	0	55	0.067
Choosing everyday foods (10)	4.7	1.8	1	8	5.2	1.5	2	10	5.0	1.7	1	10	0.004*
Diet-disease relationships (20)	9.4	4.3	0	20	11.2	4.0	0	19	10.4	4.3	0	20	0.001*
Total (110)	54.1	13.3	10	78	58.6	12.8	17	87	56.5	13.2	10	87	0.003*

Mann-Whitney U test was performed. *p<0.05 considered as statistically significant.

According to the nutrition knowledge levels, the average amounts of energy, protein, carbohydrate, and fat intake of the students shown in Table 3. Significant differences assessed in our sample among the overall score and the average daily energy, carbohydrate, and sugar intakes (p<0.05). We observed that the average daily energy,

carbohydrate, and sugar intakes of the students who had good nutrition knowledge were lower when compared with students who had low and medium scores. There were not any significant differences between protein and fat intakes and nutrition knowledge status (p>0.05).

Table 3. Energy, and macronutrient intake according to the nutrition knowledge scores of subjects.

Energy and Macronutrients	Nutrition Knowledge Score						p
	Low (10-52) (n=104)		Medium (52-63) (n=102)		Good (64-87) (n=94)		
	X	SD	X	SD	X	SD	
Energy	2,237.2	775.7	2,013.9	768.3	1,990.4	680.6	0.019*
Protein	74.9	27.7	71.7	29.5	70.8	26.3	0.453
Carbohydrates	271.2	107.8	236.9	106.5	225.0	96.7	0.001*
Fat	90.2	33.4	82.3	34.9	85.9	31.5	0.072
Sugar	35.7	40.2	24.3	31.6	24.8	35.4	0.014*

Comparison of mean intakes of energy and macronutrients with nutrition knowledge level using Kruskal-Wallis test. *p<0.05 considered as statistically significant.

Although the students who had higher nutrition knowledge consumed higher amount of dairy and lower amount of starch, there was no statistically significant relationship between nutrition knowledge level and consumption of these groups. It was not found any differences in the intake of the meat and fat group

amounts at different nutrition knowledge levels. The students who had lower scores consumed lower vegetables in comparison with the other group. It was observed that there were no significant differences between food group consumption and nutrition knowledge of students. Results shown in Table 4.

Table 4. Food group intake according to the nutrition knowledge scores of subjects.

Food groups	Nutrition Knowledge Score						p
	Low (10-52) (n=104)		Medium (52-63) (n=102)		Good (64-87) (n=94)		
	X	SD	X	SD	X	SD	
Dairy	108.6	180.3	179.4	218.9	204.4	162.9	0.380
Meat	178.3	107.1	169.4	94.3	172.2	99.4	0.262

Table 4. (Continue) Food group intake according to the nutrition knowledge scores of subjects.

Food groups	Nutrition Knowledge Score						p
	Low (10-52) (n=104)		Medium (52-63) (n=102)		Good (64-87) (n=94)		
	X	SD	X	SD	X	SD	
Starch	281.3	158.5	254.8	180.4	252.8	141.3	0.373
Vegetables	196.2	140.2	228.0	161.5	207.8	136.7	0.303
Fruits	121.6	172.7	121.8	184.6	145.7	196.7	0.570
Fats	37.6	20.4	34.1	21.6	36.6	20.3	0.469

Comparison of mean intakes of food groups with nutrition knowledge level using Kruskal-Wallis test. *p<0.05 considered as statistically significant.

DISCUSSION

The purpose of this study was to assess the nutrition knowledge of students and its association with dietary intakes among a sample of university students in Ankara, Turkey. In the current study, although the students knew some basic recommendations with regards to dietary intake, they did not have in-dept information about them. For instance, even though the survey shows that the students were aware of the benefits of decreasing the intake of sugar, fat, and salt, and increasing the consumption of fruits and vegetables in their diets, 98% of them failed to know the recommended daily amounts of fruits and vegetables were. Consistent with the current study, in another study in Turkey, only 1% of the university staff knew how many portions they need to consume daily (Alsaffar, 2014). The scores obtained from the Turkish students (Alsaffar, 2012) were similar to our findings in the first section of the questionnaire, while the results shown in Australia (Hendrie, Cox, and Coveney, 2008) and UK (Parmenter and Wardle, 1999) were higher, and the results in Syria (Labban, 2015) were lower than our findings in this survey. In the second section; while other studies had shown higher scores (Alsaffar, 2012; Parmenter and Wardle, 1999; Hendrie, Cox, and Coveney, 2008), Syrian students obtained lower scores in comparison with our points in this section (Labban, 2015). In the third section, the mean score was 5.0 ± 1.7 , and a statistically difference was found between males and females. In a study evaluating the nutrition knowledge of Belgian women, most women scored best on sections one and three. According to the study, it was shown that women were well aware of the dietary recommendations in Belgium and knew how to implement these recommendations by choosing healthy foods (Vriendt et al., 2009). In this study, the mean score was found to be lower than the scores obtained in studies conducted in Scotland (McPherson and Turnbull, 2000) and England (Parmenter and Wardle, 1999), but higher than the scores of the study conducted in Syria (Labban, 2015). In the section of diet-disease relationships which provides a direct link between food selection and general health level; it observed that 43% of the students were aware of the diseases related to the

fat intake in the diet, in this study. However, only 16.7% of the students had information about the lower intake of fiber and related diseases. Of concern was their knowledge concerning the antioxidant activity of vitamins. This result was consistent with the findings of Wardle and colleagues (Parmenter and Wardle, 1999) and Alsaffar in Turkey (Alsaffar, 2014). These vitamins are mentioned in the Dietary Guidelines for Turkey (TÜBER, 2015), but possibly this publication has not received widespread publicity. The score of this section was higher in females than in males. The total scores obtained from the UK (Parmenter and Wardle, 1999), Syrian (Labban, 2015), Belgian (De Vriendt et al., 2009), and Scottish (McPherson and Turnbull, 2000) samples for the same sections were lower than in the current study. Similar to our study results, in another study conducted in Turkey, it was shown that the students had sufficient knowledge in the diet-disease section (Alsaffar, 2012). It may be due to awareness of Turkish people by programs like; "Healthy Nutrition and Active Life Program of Turkey" (T.C. Sağlık Bakanlığı, 2019) and "Eat Healthy, Protect Our Heart" (T.C. Sağlık Bakanlığı, 2004) campaign which initiated by the Ministry of Health in Turkey. Comparisons between the present study and previous studies revealed that the mean general nutrition knowledge score of this study was higher than Syrian student's score (Labban, 2015) and lower than the mean scores obtained with UK students (Parmenter and Wardle, 1999) and Belgian women (De Vriendt et al., 2009). The differences between scores in different countries may be due to the countries' plans and policies for increasing nutrition knowledge of the community. In the current study, the mean general score in females was higher than males. Similar results were also obtained in previous studies (De Vriendt et al., 2009; Labban, 2015; McPherson and Turnbull, 2000; Özcelik and Ucar, 2008; Hendrie, Cox, and Coveney, 2008; Bonaccio et al., 2013). However, in a previous study conducted in Turkey among employee of university, there were no differences between the general score of men and women (Alsaffar, 2014). The reason that women's scores were higher than men's in most studies, could be linked to the results of studies indicated that women were more interested in nutrition-related issues, diet and body weight than men (Yahia,

El-Ghazale et al., 2011; Livingston, Saafir et al. 2012; Yahia and Brown et al., 2016). In this study, it was observed that there was a relationship between the nutrition knowledge and energy and carbohydrate intake of the students, but no significant relationship was found between nutrition knowledge with the amount of protein and fat intake. Also, it was found that the students with higher nutrition knowledge score, had lower energy intake. Also, it was shown that the amount of carbohydrates and sugar intake of students with low nutrition knowledge score was higher than the students with good nutrition knowledge score.

According to the results, students with a high score believed that limiting carbohydrate and sugar can be effective in lowering energy intake to prevent obesity. As the level of nutrition knowledge of students increased, the mean consumption amount of the milk group increased and the cereal groups of food decreased, but differences were not statistically significant. In this study, the students with the lowest nutrition knowledge consumed the least amount of vegetables. It was observed that the number of fruits consumed by the students with low and medium levels of nutrition knowledge was almost the same, but slightly higher in the students with good nutrition knowledge despite not reaching statistical significance. In general, in the present study, we did not find a statistically significant relationship between the level of nutrition knowledge and food group intake. However, in the study of Wardle et al., a significant relationship was found between nutrition knowledge with fruit, vegetable, and fat intake. They reported that the association with nutrition knowledge was stronger for fruit and vegetable intake than for fat intake (Wardle, Parmenter, and Waller, 2000). In another study conducted in Belgium, a positive relationship was found between nutrition knowledge and fruit and vegetable intake (Vriendt et al., 2009). Beydoun et al., (Beydoun and Wang, 2008) reported that nutrition knowledge has a positive effect on vegetable and fruit intake as well as overall diet quality. In the study of Yahia et al., a significant relationship was observed between nutrition knowledge and fat consumption.

Results of this study showed students with greater nutrition knowledge consumed lower amounts of unhealthy fats and cholesterol (Yahia and Brown et al., 2016). In a recent study conducted in Turkey, a positive relationship was found between nutritional education and healthy diet practices which can increase satisfaction of life in university students (Türkmen and Sivrikaya 2020). These results suggest that nutrition knowledge is an important target for health education and has a strong potential to contribute to improving dietary quality. Nutrition education programs are necessary for young generation to attain correct nutrition knowledge, the skill to make healthy food choices and promote healthy eating to make healthy changes in dietary behaviour and lifestyle. For this reason, universities should provide different opportunities to enhance nutritional knowledge among

university students. For example, nutrition courses can be placed in the programs of universities and make a policy for it to provide its maintenance.

Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Plan, design: NR; **Material, methods and data collection:** NA, NR; **Data analysis and comments:** NA, NR; **Writing and corrections:** NA.

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