Bölüm 6

The Nutritional Habits of Nursing Students and Their Obesity and Diabetes Risk Statuses

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Abstract

A sufficient and balanced diet, not using tobacco or alcohol, and adopting a healthy lifestyle by exercising have all been shown to decrease the risk of obesity and many chronic diseases such as cardiovascular diseases, diabetes, and hypertension, even becoming part of their treatment. For this reason, this study was planned to determine the nutritional habits, obesity statuses, and future diabetes risks of students. This study was planned with 392 nursing students in 2021-2022 academic year. Data was collected using an identification form including socio demographic characteristics, questions on nutritional habits, the Obesity Awareness Scale, and the FINDRISC scale. The mean FINDRISC score of all of the participants was found to be in the low risk group with a value of 4,74±3.35, exhibiting significant difference according to BMI. Their OAS mean score was found to be on a good level with a value of 57.75±10.31. In the regression analysis of nutritional habits and BMI, which showed correlation with FINDRISC risk status, those variables were found to have to strength to predict future diabetes risk with a rate of 22%. As a result, it was seen that the students were in the normal weight group, in the low risk group for type 2 diabetes. However, their awareness on obesity was found to be on a medium level. In this context, we think that the information the students have on nutritional habits, diabetes, and obesity should be increased, and that awareness should be raised by giving contemporary issues a place in their courses and arranging panels and conferences.

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1. INTRODUCTION

Nutrition refers to taking all the nutritional factors needed for the protection and improvement of health and improvement of quality of life sufficiently and in a balanced and responsible manner (1,2). In the university period, which is the last phase of growth and development, an individual who has a sufficient and balanced diet ensures body resistance against diseases and sufficient physiological development as well as contributing to an increase in cognitive capability and school performance (3). With the habit of eating fast becoming a lifestyle and the intense class periods increasing the inclination for a sedentary lifestyle in the university period, it was stated that decreased physical activity can cause obesity and many accompanying chronic diseases (1-3). Obesity is accepted as a complicated chronic disease with serious biological, social, and psychological effects, and it negatively affects quality of life as well as increasing morbidity and mortality rates. Thus, it is seen as one of the most important public health problems of the developing world and the younger generation (3). In the 2016 Turkish Ministry of Health Survey, the rate of obese individuals of 15 years of age or older was found to be 19.6% while it was 19.9% in 2014.[4] In studies, habits of healthy nutrition and activity were stated to be sufficient in treatment of obesity without a need for an aggressive exercise and diet program (2). Nutrition plays an active role in the development or prevention of many diseases and affects the general health condition of a person. Nurses, who play an effective role in the society in terms of gaining healthy behaviors, need to become examples to the society with regard to nutritional behavior (5,6). Thus, we think that it would be important for nursing students to have behaviors that affect general health positively such as healthy nutrition with regard to public health since they will become examples to the public as healthcare professionals (5).

2. METHODS

This study was planned to determine the nutritional habits, obesity statuses and future diabetes risks of nursing students who are in the process of their university education. The universe of the study consisted of 798 students actively studying at the nursing department of the health sciences faculty of a university in the fall semester of the 2021-2022 academic year. The data were collected during the weekdays and at working hours in the classroom environment outside of course hours. Since everyone who accepted to participate in the study in the classrooms that were selected were included in the study (49%), the study was conducted with 392 students.

Before the study, written permission was obtained from the institution. After the study was approved by the institution, the students in the sample were explained the aim of the study and what was expected of them, upholding the principles of willingness and voluntary participation. After the necessary permissions were taken from Kafkas and Özen to use OAS.

Compliance with Ethical Statement: Approval for this study was obtained from Sakarya University Ethics Committee (10.12.2021/578).

The data were collected using the following instruments:

Information Form: The information form consisted of two sections. The first section, including the socio demographic characteristics of the participants, consisted of 24 items, while the second section, including the nutritional habits of the students, was prepared by the researchers according to the information available in the literature (2,3) and consisted of 9 items, constituting a total of 33 items for the entire form.

The Obesity Awareness Scale (OAS): The scale, which was developed in 2011 by Allen, was adapted into Turkish by Kafkas and Özen (7). The 4-point Likert-type scale consists of 20 items and 3 factors. The scale was developed to determine the obesity awareness levels of individuals, their nutritional habits, their thoughts on physical activity and the effects of obesity training on individuals. In our study, the Cronbach's alpha value of the scale was found to be 0.73, indicating a reliable scale.

The FINDRISC Type 2 Diabetes Prediction Scale: The scale, which was developed in 2003 by Tuomilehto and Lindström and approved by the Finn Diabetes Association evaluates the risk level of adults with regard to type 2 diabetes development within the next 10 years using the total of the scores obtained from answering the items. The 10-year risk of type 2 diabetes can be predicted with a power of 85% by this method (8). In this study, the Cronbach's alpha value of the scale was calculated to be reliable (0.63).

Statistical Analysis

While evaluating the findings obtained from the study, beside descriptive statistical methods (frequencies, percentages, mean values, standard deviation), one way analysis of variance (ANOVA) for data comparison, Pearson's correlation analysis for the level of relationship between dependent and independent variables and regression analysis for relationship explanation were utilized. To determine effect size, Cohen's f and R^2 were calculated.

Using the IBM SPSS Statistics 21.0 program, the data were evaluated at a 95% confidence interval and a significance level of $p<0.05$.

3. RESULTS

The mean age of the students was 20.52±2.35 (min=17, max=36), 16.8% were female, and the mothers (56.9%) and fathers (43.1%) of most were elementary school graduates. It was found that 39.0% of the students resided in state dormitories, 85.7% did not have an obese individual in their family, 90.4% did not have any chronic diseases, 80.1% did not smoke, 92.1% did not use alcohol, the mean daily sleep duration of the students was 7 hours, and only 14.0% participated in regular physical activity. The mean FINDRISC score of all of the participants was found to be in the low risk group with a value of 4.74±3.35, and their OAS mean score was found to be on a good level with a value of 57.75±10.31. When their 10-year diabetes risk levels were examined, 70.4% (n=276) were in the low-risk group, 25.0% (n=98) were in the mild-risk group, 3.6% (n=14) were in the medium-risk group, and 1.0%(n=4) were in the high-risk group. According to the results of the one-way analysis of variance (ANOVA) between the future diabetes risk statuses of the students and their BMI values, there was a statistically significant relationship (F= 38.892, p=0.000). It was observed that there was a significant difference in diabetes risk based on increasing BMI, with especially obese individuals being under higher risk in comparison to normally weighted and overweight individuals (Table 2). The effect size of the difference was calculated through eta squared and Cohen's f in the study (Cohen's f=0.53). This finding showed that the difference between the two mean values was significant (large effect size) (Cohen's f = .10 small, .25 medium, .40 large). Similarly, according to the results of the analysis between OAS mean scores and BMI groups, no significant difference was found between the groups (F=0.726; p=0.537) (Table I).

Table I The results of the ANOVA tests for the OAS and FINDRISC scores of the students based on their BMI groups (N=392)

	Body mass index	Mean	F	p	significant difference
FINDRISC	Underweight	3.79	38.892	<0.001 **	Obese -Overweight*
	Normal	4.17			Obese -Overweight*
	Overweight	6.84			Underweight-Normal- Obese*
	Obese	12.00			Underweight-Normal-Overweight*
OAS	Underweight	58.75	0.726	>0.05	
	Normal	57.28			
	Overweight	58.53			
	Obese	60.42			

* ANOVA test **Effect size Cohen's f: 0.53

(BMI: Underweight: <18.50, Normal: 18.5-24.99, Overweight: 25.00-29.99, Obese: ≥30.00)

The relationships between the total diabetes risk scores of the students and their nutritional habits and BMI were examined using Pearson's Moment Multiplication Correlation Analysis. According to the results of this statistical analysis, positive low level relationships were found between the nutritional habits and nutritional consumption concerns of the students and their diabetes risk scores (r=0.200, p=0.000; r=0.167, p=0.001), with the diabetes risk of those who had a regular diet and took care for their nutrition to be healthy being lower. Similarly, negative low level relationships with skipping meals and nutritional choices during stressful situations and diabetes risk (r=-0.185, p=0.000; r=-0.159, p=0.002; r=-0.123, p=0.004) and a negative medium level relationship between BMI and diabetes risk (r=0.418, p=0.000) were observed. The diabetes risk of students who did not skip meals, who did not resort to nutritional intake during stressful situations, and those who had a lower BMI was lower. A low-level relationship between OAS and nutritional habits was observed, with no statistically significant difference (Table II).

Table II The relationship between the nutritional habits of the students and their OAS and FINDRISC scores (N=392)

Eating Habits		OAS Score FINDRISC			
		n	%	p	p
Eating habits	Regular	176	44.9	0.205	<0.001
	İrregular	216	55.1		
Which kind of nutrition	Vegetable	36	9.2	0.343	0.479
	Animal Products	31	7.9		
	Vegetable-animal products	325	82.9		
	No	229	58.5		
Would you skip the main course	Yes	228	58.2	0.850	<0.001
	No	164	41.9		
Which meal do you usually skip	Morning	176	44.9	0.318	0.991
	Noon	201	51.3		
	Evening	15	3.9		
Eating frequently in stressful situations such as exams	Yes	175	44.7	0.161	<0.05
	No	217	55.4		
What to pay attention to when consuming foods	To be healthy	116	29.6	0.340	<0.05
	Favorite foods	250	63.8		
	Inexpensive foods	26	6.6		
Daily average fluid consumption	Under 2 liters	223	56.9	0.599	0.863
	Over 2 liters	169	43.1		
Body mass index	Underweight <18.5	52	13.3	0.662	<0.001
	Normal 18.5-24.9	271	69.1		
	Overweight 25.0-29.9	57	14.5		
	Obese>30.0	12	3.1		

Lastly, to determine the FINDRISC future diabetes risk prediction status and independent variables with significant relationships, a multiple linear regression analysis was performed. Stepwise, where the variables were modeled separately, 3 independent variables were examined in the 3rd model,

and interpretations were made. The results of the ANOVA were found to be significant (F= 82.354) on a level of p<0.001, the relationship between the dependent and independent variables was found to be linear, and the most significant independent variable was found to be BMI (β=.414). Nutritional habits and BMI had a large effect size of 22% in predicting future diabetes risk (R= 0.470 / R^2= 0.221 / Corrected R^2= 0.215) [(R^2): .0196 small; .1300 medium; .2600 large effect size]. A 1 unit increase in nutritional habits, nutritional concerns and BMI respectively caused increases of 0.144, 0.159 and 0.396 units in FINDRISC. The most significant independent variable may be stated as BMI (Table III).

Table III The multiple regression analysis regarding the future diabetes risk prediction power of FINDRISC and the nutritional habits of the students (N=392)

Dependent variable: The Future Diabetes Risk Prediction Power of FINDRISC		
İndependent variable	F	p
Constant	82,354	p<0.001
Eating Habits		p<0.001
Factors to be considered when consuming food		p<0.001
Body mass index		p<0.001

R = 0.470 / R^2 = 0.221 / corrected R^2 = 0.215

4. DISCUSSION

In the literature, it was reported that both genetic and environmental factors play roles in development of diabetes, with the most important risk factors for type 2 diabetes being excessive weight and a sedentary lifestyle. Thus, obesity becoming more widespread in recent years is thought to be directly related to the increase in diabetes rates (9). The mean FINDRISC scores of the students involved in the study (4.74±3.35) indicated a low-risk group, and the 10-year DM risk of 70.4% of the students were found to be very low. This result shown by the study was in parallel to those reported in the literature. 62.5% of the participants were stated to be in a low future DM risk group in a study by Doğan et al. (2017), while this rate was 67.1% in a study by Gezer (2017) (9). Even though the results indicated low risk groups, it should not be forgotten that the International Diabetes Federation predicts that one in every ten adults will have diabetes by the year 2040 (10).

Although an insufficient and unbalanced nutrition is an important public health problem, it was stated in the results of the 2016 Turkey Health Survey that the rate of obese individuals in Turkey of 15 years of age or older fell to 19.6% in 2016 from a rate of 19.9% in 2014, which was a very small decrease (4). Alongside this, it has been stressed that one of the groups where nutritional problems are seen the most is university students (11-13). In recent years, plans have been made to measure obesity awareness to prevent the rise in obesity frequency, raise awareness and make precautionary efforts for the public based on the results of these measurements (7,14,15). The finding that the mean OAS score of the students (57.75±10.31) was on a good level was evaluated as a positive result in this study. Fahlman et al. (2008) examined the feeding habits and eating behaviors in students after applying a Michigan Model training program, and they showed that the training program provided positive results (14). In a similar study with nurses, contrary to our findings, the long working hours, shift style working and stressful working environment caused higher meal skipping, high-calorie snack consumption and irregular eating behaviors, hence increasing obesity (16). Mass communication tools are widely used in prevention of increasing obesity in the younger age groups. In a study by Kahraman et al. (2015), the importance of using television programs, commercials and realistic policies in raising awareness on healthy nutrition and motivating overweight and obese individuals to develop healthy behaviors was stressed. In the literature, it has been stressed that students usually do not mind meal times, prefer fast food and have insufficient and unbalanced nutrition, which causes obesity to increase faster in the younger age group in comparison to other age groups (12,13,17). Similarly, in a study examining Factors Related to being Overweight/Obese among University Students from 22 countries, a high prevalence of being overweight/obese was found among university students, and a need for encouragement of diets, physical activity and healthy lifestyles was pointed out [18]. In the study, the risk from FINDRISC was found to be higher among obese individuals ($p=0.001$). The facts that obesity causes many chronic diseases such as diabetes and that behavior change needs to be enacted for prevention of obesity have also been stressed in the literature (13,19,20). In a study by Cadier et al. (2017), the importance of non-pharmacological methods in type 2 diabetes treatment especially including healthy lifestyle behaviors such as physical activity and healthy nutrition was emphasized. While it was found in our study that 55.1% of the students had an unbalanced diet, 58.2% skipped meals and that 51.3% among those skipped lunch, 32.5% of nursing students were found to skip meals in a study by Yılmaz and Ayhan (2017), with lunch being skipped the most

(55.2%). In another study, it was found that 85.1% of students skipped meals, with the meals most frequently skipped being breakfast (44.9%) and lunch (35.4%) (17). When the BMIs were calculated, the BMI of 69.1% of the students were found to be within normal limits. The fact that the students were receiving education in health sciences was thought to have an effect in this result. In previous studies, the results reported by other researchers were found to be similar to ours, with most of the students having normal BMI. For example, Doğan *et al.,* (58%), Aktaş *et al.,* (62.3%), Dülger and Mayda (69,7%), Usta *et al.,* (74.8%), Avşar *et al.,* (76.5%) and Yılmaz and Ayhan (76,9%) all found in their studies that students had normal BMI (21,22). Contrary to our findings, in a study by Gaviria et al. (2017), 32% of nursing students were found to be overweight or obese, with this result reportedly being related to the prevalence of the female sex in their study. According to another result of our study, while no relationship was observed between the nutritional habits of students and their OAS scores, a significant relationship and difference with the mean FINDRISC scores were found. In the relevant literature, not many studies were found to examine the relationship between FINDRISC scores and nutritional habits, feeding concerns and BMI. However, there are certain results indicating that BMI is a strong predictor of FINDRISC scores and the largest risk factor for diabetes (20,23,24). On the other hand, there are also studies predicting the relationship between nutritional habits and diabetes (10,23). The results of our study have shown that nutritional habits and BMI have the strength to predict FINDRISC scores with a rate of 22%. In our study, the results indicating that the nutritional habits of the students were on a bad level with their BMI and obesity awareness remaining mostly on good levels were evaluated as positive results. However, it should be considered that nutrition and obesity alone have a large role in risk of diabetes development. For this reason, it may be stated that there is a need to examine diabetes in students in different contexts. The fact that the sample consisted of health students was thought to have an effect on this result.

5. CONCLUSION

As a result, it was seen that the students were in the normal weight group, in the low risk group for type 2 diabetes, and their awareness on obesity was on a good level. It was also found that the 10-year type 2 diabetes development risks of the students increased with increasing BMI, and nutritional habits and BMI had a high power to predict the risk of diabetes. It is believed that providing students with trainings, seminars and panels to raise awareness on healthy lifestyle behaviors starting from the

beginning of their education and planning projects in this context would provide them with healthy nutritional habits and thus have benefits with regard to preventions of chronic diseases such as obesity and diabetes.

REFERENCES

1. Vassigh, G. Evaluation of physical activity levels and healthy nutrition al ındex of university students. Hacettepe University Institute of Health Sciences, MSc Thesis in Nutritional Sciences Program, Ankara, 2012
2. Dülger H, Mayda AS. Nutritional Habits and Obesity Prevalence of Students at Bartin University Vocational School of Health Services. Journal of Duzce Unıversıty Health Sciences Instiute/J DU Health Sci Inst 2016; 6(3):173-77.
3. Avşar P, Kazan EE, Pınar G. Research on eating habits of university students with risk factors related to obesity and chronic diseases. Yıldırım Beyazıt Unıversity Health Faculty E-Journal 2013;1:38-46.
4. TSI. Turkey Statistical Institute. Turkey Health Survey 2016. Available from:http://www.tuik.gov.tr/PreHaberBultenleri.do?id=24573
5. Yılmaz HÖ, Ayhan NY. Examination of Nursing Students' Nutritional Habits GÜSBD 2017; 6(1):17-24
6. Doğan B, Yörük N, Öner C, et al. Evaluation of diabetes risk and eating habits of university students and personnel Turkish Association of Family Physicians 2017; 21 (2): 50-55.
7. Kafkas, M.E., Özen, G. (2014).Obezite Farkındalık Ölçeği'nin (OFÖ) Türkçeye Uyarlanması: Bir Geçerlik Ve Güvenirlik Çalışması. Inonu University, Journal of Physical Education and Sport Sciences, 2014, 1(2), 1-15
8. Lindstrom J., Tuomilehto J. (2003) The Diabetes Risk Score: A Practical Tool to Predict Type 2 Diabetes Risk. Diabetes Care; 26: 725–731.
9. Gezer C. The Assesment of Relatıon Between Waıst/Heıght Ratıo and Type 2 Dıabetes Rısk Among Nursıng Students. Journal of Food and Health Science 2017; 3(4): 141-49.
10. IDF. Turkish Diabetes Association. Diabetes Statistics. International Diabetes Federation (IDF) 7. Diabetes Atlas 2015.
11. Ermiş E, Doğan E, Erilli NA, Satıcı A. (2015). An Examınatıon Of Nutrıtıonal Habıts Of Unıversıty Students: The Model Of Ondokuz Mayıs Unıversıty Journal of Sports and Performance Researches 2015;6(1)30-40
12. Magallanes M, Gallegos EC, Carrillo AL, et al. Sobrepeso, obesidad y dislipidemias en población universitaria del noreste de México. Investig. Educ. Enferm 2010; 28(1):101–7.
13. Gaviria HAM, Blandón DAS, Durango MPP, Yepes TA. Overweight and Obesity Conditions: Prevalence and Associated Risk Factors in Nursing Students in a Public University in Medellín, Colombia. Invest Educ Enferm 2017; 35(2) DOI: 10.17533/udea.iee.v35n2a08
14. Fahlman M, Dake J, Mc Caughtry N, et al. A Pilot Study to Examine the Effects of a Nutrition Intervention on Nutrition Knowledge, Behaviors, and

Efficacy Expecations İn Middle School Children. Journal of School Health 2008; 78(4), 216-22.

15. Allen A. Effects of educational ıntervention on children's knowledge of obesity risk factors. Phd Thesis, Carroll College 2011.
16. Nicholls R, Perry L, Duffield C, et al. Barriers and facilitators to healthy eating for nurses in the workplace: an integrative review. Journal of Advanced Nursing 2017; 73(5), 1051–1065. doi: 10.1111/jan.13185.
17. Zileli R, Cumhur Ö, Özkamçı H, et al. Obesity Prevalence and Eating Habits in University Students. Conscious Healthy Life Journal 2016; 12: 549-62.
18. Peltzer K, Pengpid S, Samuels TA, et al. Prevalence of Overweight/Obesity and Its Associated Factors among University Students from 22 Countries. Int. J. Environ. Res. Public Health 2014; 11(7):7425-41.
19. Kahraman G, Baş T, Akbolat M. The Effect of Health Programs on the Development of Attıtudes and Belıefs ın Obesıty Acıbadem University Health Sciences Journal 2015; 6(2):89-98.
20. Uçkun Kitapçı A, Teziç T, Fırat S, et al. Obesity and Type 2 Diabetes Mellitus: A Population-based Study of Adolescents. Journal of Pediatric Endocrinology & Metabolism 2004; 17:1633-640.
21. Aktaş D, Öztürk FN, Kapan Y. Determination of the obesity prevalence and affecting risk factors, of eating habits among adolescents. *TAF Preventive Medicine Bulletin* 2015; 14(5):406-12.
22. Usta E, Acar K, Aygin D. The Attitudes of Students towards Obesity ın the Vocational College of Health Services. *Electronic Journal of Vocational Colleges* 2015; 4. UMYOS Special Issue: 46-53.
23. Cadier F, Jallow Göransson I, Rosengren K. Nursing Students' Experiences With Type 2 Diabetes in Jordan: A Qualitative Content Analysis. *Home Health Care Management & Practice* 2017; 29(2) 103–10.
24. Wing RR. Long-term effects of a lifestyle intervention on weight and cardiovascular risk factors in individuals with type 2 diabetes mellitus: four-year results of the Look AHEAD trial. *Arch Intern Med* 2010; 170:1566-75.