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The Assessment of Nutritional and Physical Activity Statuses in Nutrition and Dietetics and Physiotherapy and Rehabilitation Students

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ABSTRACT

Purpose: The aim of this research was to assess the nutritional and physical activity statuses of nutrition and dietetics (ND) and physiotherapy and rehabilitation students at Bezmialem Vakif University Faculty of Health Sciences. **Materials and Methods:** A questionnaire with sociodemographic characteristics, 24-h dietary recall and national food frequency scales were used to determine nutrition and physical status of the students. Body mass index (BMI), waist circumference, and body fat ratio were calculated using the bioelectric impedance analyzer. **Results:** A total of 209 students, 125 of them were ND students and 84 of them were physiotherapy and rehabilitation students, were participate the study. Average BMI of ND students and physiotherapy and rehabilitation students are similar and calculated as 21.6 kg/m² and 22.1 kg/m² respectively. At the same time, nearly half of the students in both departments were physically active. However, daily average energy intake was found different for each department and it was 1400.31 kcal and 1609.63 kcal, respectively ($P < 0.05$). When compared food group consumption for every day, it was determined that ND students consumed more fruits and vegetables group ($P < 0.05$). **Conclusion:** Eventually, the results of the study were evaluated; it was found that ND students had a healthier diet than the physiotherapy and rehabilitation students.

Key words: Nutrition, physical activity, university students

INTRODUCTION

According to the World Health Organization (WHO), health is a state of complete physical, mental, and social well-being (WHO constitution, 2005). Adequate, balanced, and healthy nutrition and regular physical activity are essential for health protection and promotion.[1] Lifestyle changes in eating and physical activity habits, causing a significant increase in the prevalence of obesity and it is accepted as a serious public health threat in Turkey.[2] Increased production and availability of processed foods, rapid urbanization and the development of technology have altered nutrition and lifestyle, and in this context, the prevalence of obesity has also increased.[3] Turkish Statistical Institute published results from Turkey Health Survey, 15 years and older; 30.1% of women are obese and 30.1% are obese; 38.6% of males were obese and 15.2% were obese in Turkey. When the obesity prevalence results were examined, most affected generation by this change is young generation. Many young people base their habits on this new lifestyle. The university term is a stressful period for many students in which they take on new responsibilities.[4,5] In this period, inadequate and unbalanced eating habits increase. At the same time, it is seen that food preferences are affected by independent living, academic pressures, and financial problems.[6] Most of the students consume less vegetables

and fruits, while they consume foods rich in fat and energy. In a study, it has been shown that the tendency of university students toward unhealthy foods causes overweight and obesity.[7] In another study, the lack of time and the lack of healthy food alternatives in canteens were shown as unhealthy eating reasons of university students.[8] On the other hand, in a study on physical activity, it was found that 44.9% of medical students were doing insufficient physical activity in their daily life.[9] Nutritional status of individuals should be determined in order to find solutions to prevent health problems (cardiovascular diseases, cancer, metabolic diseases, etc.) that may arise at later and to change habits that will adversely affect health.[7,10] It may be useful to determine the nutritional status of the students by investigating reasons in the nutritional habits changes. As a result of the evaluation of the data obtained, it is necessary to determine health strategies to promote healthy nutrition in the university environment. Changes in the obesogenic environment, increasing healthy food alternatives in university canteens, and nutrition education for students will help develop healthy habits to reduce the prevalence of obesity.[11] It has been reported in many studies that changes in nutritional preferences are made by the students who have taken nutrition courses in the university education because they are aware of the impact of nutrition on health.[12-15] The number of studies comparing the students of another department within the Faculty of Health Sciences and Nutrition and Dietetics (ND) students is insufficient.[15] In addition, there is no study in literature that identifies and compares the nutritional and physical activity status of the students of the department of physiotherapy and rehabilitation (PHR) and ND. The aim of this study was to determine and compare the nutritional and physical activity status of the ND students and PHR students studying at the Faculty of Health Sciences of Bezmialem Vakif University.

MATERIALS AND METHODS

The study was planned as a descriptive study and it was carried out with students of ND and PHR departments in Bezmialem Vakif University, Faculty of Health Sciences, during 2017–2018 academic years. The number of samples was determined to include all students of PHR ($n = 229$) and ND ($n = 149$).

The questionnaire used in the study was modified from the study of Gunes-Bayir et al. in 2015.[16] The questionnaire was performed as face-to-face interviews with the participants and visual materials were used during nutritional assessment (MyPlate Food Replica; Nasco, Wisconsin; USA). In the first part of the questionnaire, sociodemographic data of the students were taken. In the second part, anthropometric measurements of the students including height which was measured with wall-mount measuring tape (ADE; Tarti medical, Istanbul, Turkey); weight which was measured

with bioelectric impedance analyzer (Tanita MC 780; Tarti medical, Istanbul, Turkey); and waist circumference which was measured with tape were recorded. Anthropometric measurements using the same instruments were taken by the dietitian. Measurement standards were applied such as with bare feet, without any metal accessory, at least 2 h before the meal and fluid intake.[17] Body mass index (BMI) values were calculated by weight (kg)/height (m²) formula. Obtained data were classified according to the WHO's BMI standards.[18] In this classification, BMI ≤18.5 kg/m²: Underweight; 18.5–24.9 kg/m²: Normal; 25–29.9 kg/m²: Pre-obese; 30.0–34.9 kg/m²: (1) Obese; 35.0–39.9 kg/m²: (2) Obese; and >40.0 kg/m²: (3) Obese. In the third part of the survey, questions about eating habits such as main dishes and snacks, the frequency of eating outside, daily water consumption, smoking, and alcohol habits were asked. In the fourth part, there were 24-h dietary recall, food consumption, and food frequency questionnaire (FFQ).[19] The fifth part included questions about physical activity type, frequency and duration, and physical activity status of the students.

Data were presented as mean, median, standard deviation, and minimum-maximum values obtained from descriptive analysis. Chi-square, Mann–Whitney, and Student-t were used for comparison of the groups. The results were considered statistically significant when $P \leq 0.05$. FFQ and 24-h dietary recalls were analyzed by Nutrition Information System (BeBİS; Pacific Electrical, Electronic and Environmental Technology Products Industry and Trade Limited Co., Istanbul, Turkey).
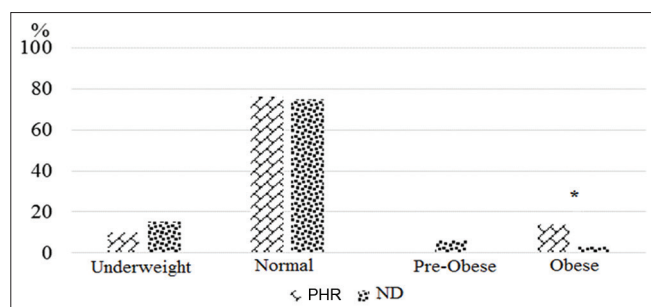
RESULTS

A total of 209 (76%) students from the Faculty of Health Sciences of Bezmialem Vakıf University participated in the study, 84 students were studying PHR (36.7%) and 125 students were studying ND (83.9%). Sociodemographic characteristics of the students are given separately for the departments in Table 1. The ages of all the students who participated in the research ranged between 17 and 23 and the average age was 19 years.

Data obtained from anthropometric measurements were evaluated separately for both departments as BMI, fat percentage, and waist circumference. The average BMI of ND students was 21.6 kg/m², while the average BMI of PHR students was 22.1 kg/m². Figure 1 shows the comparison of the BMI values of the students. About 10% ($n = 8$) of PHR students were underweight, 76% ($n = 64$) were normal, 13% ($n = 11$) were (1) obese, and 1% ($n = 1$) were (2) obese. About 50% ($n = 19$) of the ND students were underweight, 75% ($n = 94$) were normal, 6% ($n = 8$) were pre-obese, 2% ($n = 3$) were (1) obese, and 1% ($n = 1$) (2) obese. When the obese classification was evaluated together as in

Characteristics	Physiotherapy and rehabilitation		Nutrition and dietetics	
	n	%	*n*	%
Class years				
First	49	58	53	42
Second	13	15	39	31
Third	21	25	28	22
Fourth	1	1	5	4
Years (minimum-maximum) mean	(17–23) 19		(18–23) 19	
Gender				
Female	71	85	117	94
Male	13	15	8	6
City				
Istanbul	71	85	107	86
Others	13	15	18	14
Total	84		125	

n: Number of the students, %: Percentage

Figure 1: Comparison of the body mass index values of the students (*$P < 0.05$)

Figure 1, a significant difference was found between PHR and ND ($P < 0.05$).

According to the results of the bioelectrical impedance analysis scale, the fat percentage is 23% and 24% for PHR and ND students, respectively. For PHR and ND students, the waist circumference of 15% ($n = 11$) and 11% ($n = 13$) of the students was >88 cm in females and in men the waist circumference of 0 ($n = 0$) and 25% ($n = 2$) of the students was >102 cm ($P = 0.730$).

When the nutritional habits of the students are examined, 96% ($n = 81$) of PHR students stated that they skipped meals and the most skipped meal was the breakfast meal with 35%. On the other hand, 91% ($n = 111$) of the ND students stated that they skipped meals and 33% ($n = 35$) stated that lunch was the most skipped meal. The lack of time was found to be the highest skipped meals reason with 54% ($n = 26$) in the PHR students and 43% ($n = 31$) in the ND students. The lack of time (36%) is the main reason for skipping meals for both

sections. About 14% ($n = 16$) of ND students stated that they skipped meals due to economic reasons.

While the proportion of students consuming fast food once or more frequently a week is 73% in the PHR department ($n = 61$), it is 43% in the ND department ($n = 54$). It was proved with high significance that ND students consumed fast food less frequently than PHR ($P < 0.001$). Daily water consumptions (PHR = 1400 ml and ND = 1375 ml) were similar between the two groups. While 65% of ND students prefer healthy cooking methods such as boiling, steaming, baking, and grilling; 42% of PHR students prefer unhealthy cooking methods such as frying and roasting ($P = 0.384$). Table 2 shows the energy and nutrient intake of all students from the 24-h dietary recalls.

DISCUSSION

It is considered departments with healthy lifestyle-related subjects which have courses that encourage healthy-adequate-balanced nutrition and regular physical activity in universities.

In our study, the average daily energy intake of PHR students was 1609.63 kcal, while the average daily energy intake of ND students was 1400.31 kcal ($P < 0.05$). As a result of calculating the daily intake of PHR and ND students, daily fat consumption was calculated as 73.70 g and 62.98 g, respectively, and there was a significant difference between the departments ($P < 0.05$). In a study investigating the effect of taking nutrition courses in the university on daily fat consumption, it was proved that the students taking the nutrition course received less total fat and saturated fat.[14]

Energy and nutrients	Physiotherapy and rehabilitation	Nutrition and dietetics	*P*-value
Energy (kcal)	1609.63	1400.31	<0.05*
Carbohydrate (g)	171.02	146.44	0.054
%[1]	43	43	0.943
Protein (g)	61.15	57.61	0.802
%	16	17	<0.05*
Fat (g)	73.70	62.98	<0.05*
%[1]	41	40	0.249
Polyunsaturated fatty acid (g)	20.13	14.55	<0.001**
Monounsaturated fatty acid (g)	23.94	20.36	<0.05*
Cholesterol (mg)	232.67	240.25	0.452
Linolenic acid (g)	1.32	1.24	0.851
Saturated fatty acid (g)	24.24	23.15	0.530
Fiber (g)	17.97	17.25	0.472
Alcohol (g)	0.06	0.01	0.065
%	0.04	0.00	<0.05*
Vitamin A (µg)	1370.95	965.23	0.127
Vitamin E (mg)	18.66	13.13	<0.001**
Vitamin B1 (mg)	0.64	0.64	0.517
Vitamin B2 (mg)	1.11	1.08	0.445
Vitamin B5 (mg)	3.63	3.57	0.336
Vitamin B6 (mg)	1.14	1.08	0.721
Total folic acid (µg)	220.90	212.20	0.728
Vitamin B12 (µg)	3.99	3.46	0.934
Vitamin C (mg)	75.21	77.07	0.996
Sodium (mg)	3533.58	2954.39	<0.001**
Potassium (mg)	1873.38	1896.11	0.646
Calcium (mg)	604.77	570.12	0.719
Magnesium (mg)	227.66	216.35	0.588
Phosphor (mg)	946.06	926.01	0.916
Iron (mg)	10.01	9.23	0.241
Zinco (mg)	8.56	7.94	0.426
Table salt (g)	8.41	6.69	<0.001**

Table 2: Energy and nutrient intake of all students from the 24-h dietary recalls

*P<0.05, **P<0.001. Mann–Whitney tests, [1]t-test

When energy and nutrients intake of students evaluated according to Turkey National Diet Guideline, it was found inadequate dietary and/or unbalanced (Turkey Nutrition Guide/TUBER, 2015).

Another remarkable point is consumption of table salt. While the mean daily sodium intake of PHR students was 3533.58 mg, it was 2954.39 mg for ND students and there was a statistically significant difference between the departments ($P < 0.001$). While the limit recommended by the WHO as daily salt consumption is 5 g, the students of the two departments exceed this recommendation.[20] Similarly, when daily average consumption of table salt was investigated, it was calculated as 8.41 g in PHR students and 6.69 g in ND students, and a statistically significant difference was found between the departments ($P < 0.001$).

FFQ data from the questionnaire were interpreted according to four-leaf clover (four food group) model.[21] According to this model, the foods included in the FFQ questionnaire were collected in 4 groups: (1) Milk and milk products, (2) meat and meat products, eggs and legumes, and oilseeds, (3) vegetables and fruits, and (4) bread and grains. The comparison of PHR and ND students is shown in
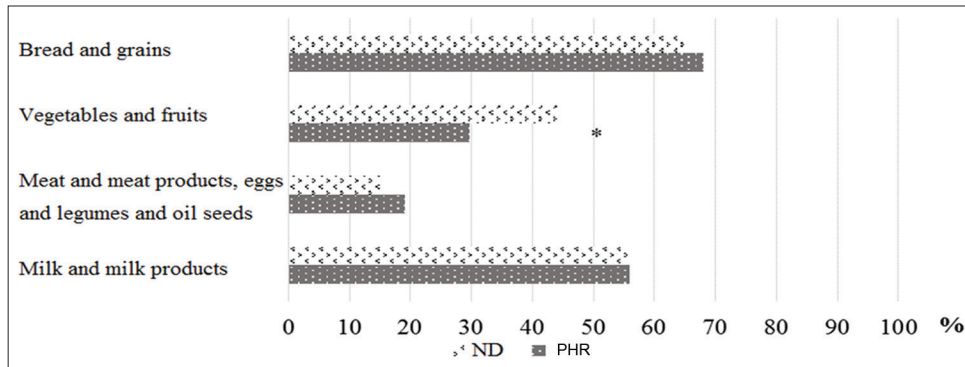
Figure 2: Students' daily consumption status of food groups. (*$P < 0.05$)

Figure 2 as the food groups that should be consumed every day. The students of PHR department and ND department consume milk and milk products (56%, 56% $P = 1$), meat and meat products, eggs and legumes, and oilseeds (19%, 15% $P = 0.465$), and bread and grains (68%, 65%, $P = 0.659$), respectively, in similar portions. Although, it was found that ND students consumed more fresh fruits and vegetables than PHR students ($P < 0.05$).

In the recent study, 44% ($n = 37$) of PHR students and 45% ($n = 64$) of ND students stated that they do physical activity regularly ($P = 0.326$). Three most preferred exercise types for PHR students were walking (30%, $n = 25$), cardio (10%, $n = 8$), and aerobic exercises (4%, $n = 3$). It was found that 61% ($n = 39$) of the students of ND department performed walking, 19% ($n = 12$) cardio, and 9% ($n = 6$) of them performing aerobic exercises. It is well known that physical activity has important benefits in terms of preventing and treating diseases.[22] The WHO recommends moderate aerobic exercise at least 150 min/week or at least 75 min/week for adults aged 18–64, provided that the duration of activity is at least 10 min at a time.[23] Although it is thought that students who are educated in the field of health care are aware of the importance of physical activity, it is seen that students do not spare enough time for physical activity in their own lives.[9,24]

CONCLUSION

When the results of the study were evaluated, it was found that ND students had a healthier diet compared to PHR students. However, all students had unhealthy, insufficient, and unbalanced eating patterns. As a result, it is important to raise awareness about healthy eating and regular physical activity and to determine nutritional and physical activity status to develop efficient public health strategies for health promotion in the future.

It may beneficial to give nutrition-related courses in universities for promoting healthy-adequate-balanced nutrition and regular physical activity. However, even if it is thought that nutrition-related courses may create awareness

and habits for healthy eating in university students; further research is needed both for health sciences students and other departments.

ETHICAL STANDARDS DISCLOSURE

This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the Bezmialem University Ethics Committee for non-interventional studies (Number: 54022451–050.05.04–9). Written informed consent was obtained from all subjects. Before the application, the purpose of the research and the necessary information were given to the participants and informed consent of the participants was obtained.

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