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Araştırma Makalesi / Research Article

## Examination of The Relation Between The Physical Activity Level and Nutritional Habits of The Students of Vocational School of Health Services

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### Abstract

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. Promoting physical activity and healthy nutrition has the potential to significantly reduce the burden of disease and improve quality of life. However, in the studies conducted with the university students, it is seen that students have malnutrition habits and low level of activity. This study was planned to determine whether there is a relation between the physical activity level and the nutritional habits of the students of vocational school of health services. This study is in the cross-sectional descriptive type. The IPAQ total score average of the students was found to be  $2399.34 \pm 1966.95$  MET-min/week. It was determined that the IPAQ total score average of male students was higher than the IPAQ total score average of female students. It was determined that the total mean score of TFEQ was  $41.66 \pm 7.59$ . The physical activity level of the students of vocational school health services is low. Proper nutritional habits are moderate.

**Keywords:** Physical activity, nutrition, university students

## INTRODUCTION

The World Health Organization (WHO) describes the Physical Activity (PA) as any body movement requiring the energy expenditure and produced by skeletal muscles. PA refers to all activities performed to arrive somewhere or as part of a person's work, including free times. Both moderate and heavy physical activity improves the health (WHO, 2020). At least 150-300 minutes of moderate aerobic physical activity or at least 75-150 minutes of heavy aerobic PA, or an equivalent combination of moderate as well as heavy activity throughout the week are recommended by WHO for the adult individuals whose ages are between 18 and 64 years (WHO, 2020). Nutrition and PA are major determinants of the health and the disease. The risk of premature death, hypertension, coronary heart disease, osteoporosis, type 2 diabetes, colon cancer, and gaining weight are associated with both nutrition and physical activity. Promoting PA and healthy nutrition has the potential to significantly reduce the burden of disease and improve quality of life (Bazzano, 2006; Hallal et al., 2006; McNaughton et al., 2012). However, in the studies conducted with the university students, it is seen that students have malnutrition habits and low level of activity (Franko et al., 2008). Consumption of fast food is high among the university students (Larson et al., 2006). Such negative behaviors result in health problems such as weight gain and increased risk of chronic diseases (Sajwani et al., 2009; Bataineh and Attlee, 2020). No study has been found in the literature examining the relation between the students' physical activity level and nutrition habits who study at vocational school of health services. This study was planned to determine whether there is a relation between the students' physical activity level and nutritional habits at vocational school of health services.

## MATERIAL and METHODS

### Study design

This study is in the cross-sectional descriptive type.

### Population and Sample Used for the Study

The population used for the study consisted of 1088 students studying in the first and second classes of the Department of First and Immediate Aid, Pharmacy Services, Child Development and Medical Documentation and Secretary in the spring semester of the 2021-2022 academic year at the Gölhisar Vocational School of Health Services of Burdur Mehmet Akif Ersoy University. The sampling method whose population is known was used to determine the sample size. In the study of Ghrouz et al., 11% of the students were reported to have a low level of physical activity (Ghrouz et al., 2019). According to this ratio, the number of samples was calculated as 325. The lost data ratio was taken as 20% and the sample size was determined as 390. In the study, it was reached to 406 students.

### Collection of Data

The collection of the data regarding the study was made online between 05.06.2022 and 20.06.2022 by sharing the link that includes the Student Introduction Form, IPAQ and TFEQ created via Google Forms with the students studying in the First and Immediate Aid Program, Pharmacy Services, Child Development and Medical Documentation and Secretary Program at Gölhisar Vocational School of Health Services.

### Data Collection Tools

#### Student Introduction Form

The researchers created this form by means of literature scanning (Craig et al., 2013; Öztürk, 2005) to determine the age, gender, department, weight, height, chronic disease, regular exercise and the status of receiving nutritional consultancy of the students.

### **International Physical Activity Questionnaire (IPAQ)**

In this study, the IPAQ short form will be used to determine the levels of the physical activity of the individuals. International studies regarding the validity and reliability for this questionnaire were conducted by Craig et al. (2003), the validity and reliability studies in Turkey were conducted by Öztürk (2005) on the university students. This questionnaire gives information on time spent for sitting, walking, moderate activities and heavy activities. When evaluating all activities, the fact that each activity is done for at least 10 minutes at one time is taken as criterion. By multiplying the minute, day and MET value (multiples of the consumption of resting oxygen), the score is acquired as “MET-minute/week”. The classification for PA levels were made as physically inactive (<600 MET min/week), minimum active PA level (600–3000 MET min/week), and very active PA (beneficial for health) (>3000 MET min/week)(10).

### **Three-Factor Eating Questionnaire (TFEQ)**

The scale to be used in the study is a questionnaire consisting of 18 questions created to measure the nutritional levels of the individuals. It was translated by Kıraç et al. (2015) into Turkish. It was found to be very reliable as a result of validity and reliability analyzes. It was seen that the Three-Factor questionnaire determines the cognitive restriction behavior levels and uncontrolled and emotional nutrition habit levels of the individuals, and also that some of the questions in the questionnaire also measure the degree of sensitivity of individuals to hunger. For this reason, the questionnaire measures 4 different factors. High scores on each factor indicate that individuals have higher levels of cognitive restriction, emotional eating, uncontrolled eating, and sensitivity to hunger (Kıraç et al.,2015).

### **Questions of the Study**

1. Do the level of physical activity and the nutritional habits of the university studies have any relation?

#### **Dependent variables**

Level of physical activity, nutritional habits

#### **Independent variables**

Independent variables of the study are the age, gender, department, body mass index, chronic illness, regular exercise and the status of receiving nutritional consultancy of the students.

#### **Statistical analysis**

IBM SPSS 22 (Statistical Package for the Social Sciences) program was used for the analysis of the study data. Normal distribution was accepted as normal distribution based on skewness and kurtosis (skewness= 0, kurtosis=±2) (George and Mallery, 2010).In the analysis of data; percentage, mean, standard deviation, Independent-Samples t Test, Kruskal Wallis, Mann Whitney-U, One-Way ANOVA tests and Pearson Correlation Analysis have been used.

#### **Ethical considerations**

In our study, ethical principles in the Declaration of Helsinki were complied with and the information about the students was kept confidential. Ethics committee approval (Meeting Date: 01.06.2022, Decision No: GO 2022/781) from Burdur Mehmet Akif Ersoy University Non-Invasive Clinical Research Ethics Committee, written permission from institution where the study was conducted, and consent from the students were obtained to carry out the study. Written permissions were obtained from the researchers who conducted the validity and reliability of the scales.

#### **Limitations of the Study**

This study does not reflect all the students of vocational high school of health services in our country, and is limited to the students studying at the school where the study was conducted.

## RESULTS

The students' mean age who have participated in the study is  $20.78 \pm 1.92$  years, and the mean Body Mass Index (BMI) of them is  $22.45 \pm 3.36$ . It has been found that 74.6% (303) of the students were female, 25.4% (103) of them were male, 71.2% (22.89) of them were in normal

weight according to BMI classification, 69.0% of them do not smoke, 74.6% of them do not do regular exercise, 91.9% of them do not receive nutritional consultancy. Other findings related to the introductory characteristics of the students are given in Table 1.

**Table 1.** Sociodemographic characteristics of students (n=406)

Characteristic	n (406)	%
<b>Gender</b>		
Woman	303	74,6
Male	103	25,4
<b>Department</b>		
First and Emergency aid	110	27,1
Medical Documentation and Secretarial	98	24,1
Child Development		
Pharmacy Services	105	25,9
	93	22,9
<b>BMI Classification</b>		
Underweight	32	7,9
Normal	289	71,2
Overweight	74	18,2
Obese	11	3,4
<b>Smoking status</b>		
Yes	126	31,0
No	280	69,0
<b>Regular exercise status</b>		
Yes	103	25,4
No	303	74,6
<b>Receiving counseling about nutrition</b>		
Yes		
No	33	8,1
	373	91,9

BMI: Body Mass Index

When the students' mean scores who have participated in the study on the TFEQ were evaluated; The total mean score of TFEQ was defined as  $41.66 \pm 7.59$  (the lowest score: 23, the highest score: 64). When the sub-dimensions of TFEQ are examined, it was found that the mean score of the uncontrolled eating habit was

$11.66 \pm 3.32$ , the mean score of the emotional eating behavior sub-dimension was  $6.56 \pm 2.82$ , the mean score for hunger sensitivity behavior sub-dimension was  $8.88 \pm 3.27$ , and the mean score for cognitive restriction behavior sub-dimension was  $14.54 \pm 3.72$  (Table 2).

**Table 2.** Total and sub-dimensional scores of the students in the three-factor nutrition questionnaire and the international physical activity questionnaire (n=406)

	<b>X ± SD</b>	<b>Min-Max</b>
<b>Uncontrolled eating</b>	11.66±3.32	5.00-20.00
<b>Emotional eating</b>	6.56±2.82	3.00-12.00
<b>Sensitivity to hunger</b>	8.88±3.27	4.00-16.00
<b>Cognitive restraint</b>	14.54±3.72	6.00-24.00
<b>TFEQ total score</b>	41.66±7.59	23.00-64.00
<b>Vigorous MET</b>	610,02±1197,55	.00-6720.00
<b>Moderate MET</b>	328,91±596,12	.00-3360.00
<b>Walking MET</b>	1158,30±952,91	.00-6930.00
<b>Sitting MET</b>	308,27±345,83	.00-1200.00
<b>IPAQ-SF total score</b>	2399,34±1966,95	.00-10836.00

X ± SD: Mean, Standard deviation; Min-Max: Minimum-Maximum, International Physical Activity Questionnaire - Short Form (IPAQ-SF), Three-factor eating questionnaire (TFEQ), (MET min/week)

Table 2 contains data on the students' level of PA who have participated in the study. The IPAQ total mean score of the students was 2399.34±1966.95 MET-min/week, and it was found that 10.6% (44) of them were active, 62.1% (252) of them were minimally active, and 27.1% (n=110) of them were very active. It was determined that the IPAQ total mean score of male students was higher compared to the female students' IPAQ total mean score ( $p<0.05$ ). There is a significant difference which is statistical between the departments where the students study and IPAQ total mean score ( $p<0.05$ ). The IPAQ total mean score

of First and Immediate Aid program students is higher than the IPAQ mean score of other programs. It was not found any significant difference which is statistical between smoking status and IPAQ total score ( $p>0.05$ ). It has been determined that the IPAQ total mean score of the students who do exercise regularly is higher compared to IPAQ total mean score of the students who do not do exercise ( $p<0.05$ ). There was not any significant difference which is statistical between IPAQ total mean score according to their status of receiving nutritional consultancy ( $p>0.05$ ) (Table 3).

**Table 3.** Comparison of students' sociodemographic characteristics of the three-factor nutrition questionnaire and the international physical activity questionnaire (n=406)

	<b>Uncontrolled eating</b>	<b>Emotional eating</b>	<b>Sensitivity to hunger</b>	<b>Cognitive restraint</b>	<b>TFEQ Total score</b>	<b>IPAQ-SF Total score</b>
	X ± SS	X ± SS	X ± SS	X ± SS	X ± SS	X ± SS
<b>Gender</b>						
Woman	11.83±3.42	6.92±2.90	9.15±3.37	14.36±3.70	42.28±7.89	2145,37±1726,26
Male	11.15±2.94	5.51± 2.29	8.08±2.81	15.05±3.75	39.81±6.30	3153,78±2407,65
	t:1.799	t: 5.013	t: 3.162	t:-1.624	t: 3.213	Z: -4.058
	p: 0.073	<b>p:0.000</b>	<b>p: 0.002</b>	p:0.105	<b>p:0.02</b>	<b>p: 0.000</b>
<b>Department</b>						
First and Emergency aid	11.98±3.26	6.39±2.73	8.82±3.32	14.55±3.74	41.75±7.27	3092.94±2300.21
Medical Documentation and Secretarial	12.00±3.00	6.92±2.73	9.37±3.08	14.33±3.69	42.64±6.85	2049.75±1701.49
Child Development	11.38±3.43	6.38±2.88	5.56±3.35	14.50±3.77	40.82±8.01	2077.37±1737.16
Pharmacy Services	11.24±3.54	6.60±2.96	8.80±3.30	14.79±3.71	41.45±8.19	2318.30±1868.00
	F:1.416	F:0.831	F: 1.110	F: 0. 245	F: 0.996	KW: 20.280
	p:0.238	p: 0.478	p: 0.345	p: 0.865	p: 0.395	<b>p: 0.000</b>
<b>BKI Simflama</b>						
Underweight	11.21±3.32	5.62±2.62	8.46±3.16	12.34±3.31	37.65±7.30	2163.67±1883,20
Normal	11.59±3.37	6.40±2.82	8.71±3.27	14.64±3.82	41.36±7.69	2360,93±1949,89
Overweight	11.91±3.21	7.29±2.87	9.47±3.38	15.14±3.32	43.83±6.52	2808,89±2116,25
Obese	12.07±3.54	7.50±2.79	9.71±3.29	12.64±2.92	42.92±7.72	1335,27±888,44
	F: 0.434	F: 3.653	F: 1.503	F: 4.843	F:5.437	KW: 8,605
	p. 0.729	<b>p: 0.013</b>	P:0.213	<b>p:0.003</b>	<b>p: 0.001</b>	<b>p: 0.035</b>
<b>Smoking status</b>						
Yes	11.31±3.33	6,45± 2,93	8.49±3.23	14.65±3.75	40.91±7.40	2603.05±2009.31
No	11.81±3.30	6,61± 2,78	9.06±3.28	14.49±3.71	41.99±7.66	2307.13±1944.12
	t:-1.406	t:-0.545	t:-1.633	t:0.386	t:-1.331	U:-1.705
	p: 0.161	p: 0.586	p:0.103	p:0.700	p:0.184	p: 0.088
<b>Regular exercise status</b>						
Yes	11.30±3.21	6.34±2.80	8.35±3.19	16.01±3.66	42.02±7.85	3653.64±2521.09
No	11.78±3.35	6.64±2.83	9.06±3.28	14.04±3.61	41.53±7.51	1971.55±1522.16
	t:-1.280	t:-0.901	t:-01.899	t:4.775	t:0.570	U: -6.782
	p: 0.201	p:0.368	p:0.058	<b>p:0.000</b>	p:0.569	<b>p:0.000</b>
<b>Receiving counseling about nutrition</b>						
Yes	11.72±3.21	6.90±3.05	9.39±3.12	16.06±4.00	44.63±7.14	3293.50±2910.16
No	11.65±3.33	6.53±2.81	8.84±3.28	14.36±3.64	41.39±7.58	2320.02±1845.29
	t:0.117	t: 0.725	t: 0.928	t: 3.359	t: 2.362	U: -1.789.
	p: 0.907	p: 0.469	p: 0.354	<b>p: 0.001</b>	<b>p: 0.019</b>	p: 0.074

International Physical Activity Questionnaire - Short Form (IPAQ-SF), Three-factor eating questionnaire (TFEQ)t:Two Independent Samples T-testU: Mann-Whitney U KW: Kruskal Wallis Test

A significant difference which is statistical was found between total TFEQ score of the students participating in the study and the sub-dimensions of emotional eating behavior, hunger sensitivity behavior and gender (p<0.05). The emotional eating

behavior, hunger sensitivity behavior sub-dimension mean score and the female students' total mean score were found to be higher compared to the mean scores of male students (p<0.05). There was not found any significant difference which is statistical

between the departments where the students studied and the TFEQ total mean score and sub-dimension mean scores ( $p < 0.05$ ). The emotional eating behavior sub-dimension mean score of obese students was higher compared to mean score of other students ( $p < 0.05$ ). Similarly, the cognitive restriction behavior sub-dimension mean score of overweight students was higher compared to the other students ( $p < 0.05$ ). In addition, the fact that TFEQ total mean score of overweight students was high has been determined ( $p < 0.05$ ) (Table 3). There was not found any significant difference which is statistical between the students' TFEQ total mean scores and sub-dimension mean scores and their smoking status ( $p > 0.05$ ). The students' cognitive restriction behavior sub-dimension mean score who

exercise regularly was found to be higher compared to students who did not exercise ( $p < 0.05$ ). TFEQ total mean score and the students' cognitive restriction behavior sub-dimension mean score who received nutritional consultancy was higher than the students who did not receive nutritional consultancy ( $p < 0.05$ ) (Table 3). The relation between the students' mean scores at vocational school which were received from IPAQ and TFEQ is given in Table 4. Accordingly; the fact that there was a low negative relation between IPAQ total score and the sub-dimension of sensitivity to hunger has been found, and that there has been a positive moderate relation between the IPAQ total score and mean score of cognitive restriction behavior.

**Table 4.** Relationship between the International Physical Activity Questionnaire and the Three-Factor Nutrition Questionnaire (n=406)

		<b>Uncontrolled eating</b>	<b>Emotional eating</b>	<b>Sensitivity to hunger</b>	<b>Cognitive restraint</b>	<b>TFEQ Total score</b>
<b>IPAQ-SF</b>	<b>r</b>	-,029	-,061	-,101*	,159**	-,001
<b>Total score</b>	<b>p</b>	,554	,221	<b>,043</b>	<b>,001</b>	,985

Spearman Correlation Test was used

## DISCUSSION

According to the results obtained from the study, the PA levels of the students were  $2399.34 \pm 1966.95$  MET-min/week as a mean. In a study conducted with students during the pandemic period, PA levels of them were reported to be  $1763.57 \pm 1135.41$  MET-min/week as a mean (Bulguroğlu et al., 2021). Considering the IPAQ MET levels, the study results are similar to the literature. However, it can be said that the reason why the IPAQ score in a similar study is lower than our study is due to the pandemic process. It is thought that the limitations brought by the pandemic may cause more PA levels to be affected, especially in this age group. On the other hand, the sociodemographic variables are also effective on physical activity level in

university students. According to this study, the IPAQ total means core of male students is higher compared to female students. The studies made have also reported that male students' IPAQ total mean score is higher compared to female students (Kızar et al., 2016; Arslan et al., 2016). Difference between gender and PA level may be considered to be due to the fact that male students are more interested in sports. On the other hand, there has been studies in the literature which show that there is no relation between gender and PA level. In the study conducted by Aydın and Solmaz with students who study at the faculty of sports sciences, the fact that there is no significant difference between gender and levels of physical activity has been reported (Aydın ve Solmaz, 2016). It can be thought that this

difference is due to the fact that students studying in sports departments receive practice-based education about sports as well as due to their awareness of sports. In the study which was carried out by Bulguroğlu et al. (2021) during pandemic period, it was reported that 30.7% of the students were not physically active, and in the study conducted Aydın and Solmaz (2016) with students studying in sports sciences, it has been reported that 7.7% of the students were not physically active (Bulguroğlu et al., 2021; Aydın ve Solmaz, 2016). In our study, it has been determined that the levels physical activity of university students were low and 10.6% (44) of them were physically inactive. Considering the literature results including different sample groups, it can be said that physical activity level in university students is low. It can be thought that this difference is due to the fact that students use public transportation when coming to and going from the school, intensive course schedules and the absence of sports-related courses in some departments. Another variable that affects the physical activity in students is BMI. In our study, there was not found any significant difference which is statistical between BMI and the physical activity levels. It was determined that physical activity level of obese students was lower than those of underweight, normal and overweight students. However, in a study conducted with students who study at the faculty of health sciences, there was not found any significant difference which is statistical between BMI and physical activity level (Arslan et al., 2016). In another study, it is reported that there has been no difference between BMI and physical activity level (Gençalp et al., 2020). It can be thought that this difference is due to the differences in the study groups, the regions where the students live, and the school culture. In addition, it can be assumed that access to sports facilities explains the relation between BMI and the physical activity level. In the study,

students' IPAQ mean score who study in the first and immediate aid program is higher compared to the students' IPAQ total mean score who study at the department of the medical secretariat, child development and pharmacy services. In a study, it was reported that, unlike our study, the levels of physical activity of the students did not differ for the departments. Reason for this situation is that the students who are accepted to the sports departments are taken with a special talent exam for the department. In addition, the majority of the courses are based on practice (Aydın et al., 2016). In our study, it can be thought that the high level of physical activity of the students of the first and immediate aid program may be due to the presence of sports-related courses in the their programs as well as due to the awareness of the students about the sports. Other factors affecting physical activity are smoking and nutrition. Studies have reported that there is no statistical difference between smoking status and physical activity levels (Aydın et al., 2016; Gençalp et al., 2020; Pirinççi et al., 2020). Our study results are similar to the literature in this respect. When the Three-Factor Eating Questionnaire mean scores of the students who have participated in the study are evaluated, the mean total score of TFEQ is  $41.66 \pm 7.59$ . In a study conducted with students who study at the faculty of health sciences, it was reported that the total score of the Three-Factor Eating Scale was  $47.57 \pm 9.94$  (20). Our study results are similar to the literature. In our study, the emotional eating, hunger sensitivity and TFEQ total mean score of male students were lower compared to female students. In the study carried out by Erkaya et al. (2020) with the students of vocational school of health services, it is reported that male students' three-factor eating scale total score, emotional eating score and restrictive eating score of are significantly compared to female students (Erkaya et al., 2020). It can be thought that it is due to the fact that female students are



more sensitive to weight compared to male students, and that they pay attention to their diet. In our study, the mean TFEQ, emotional eating and cognitive restriction scores of the underweight students were lower than normal, overweight and obese students. In a study, the mean TFEQ, emotional eating and cognitive restriction scores of underweight students were statistically significantly lower than normal and overweight individuals (Saygın, 2021). In our study, the underweight students have lower scores in terms of cognitive restriction score than other groups. According to these findings, it can be thought that underweight students do not restrict their food intake. In the literature, the fact that the mean score of cognitive restriction behavior increases as BMI increases (Saygın, 2021; Işgın et al., 2014) has been reported. It has been reported that as the weight increases, students may exhibit restriction behavior in order to maintain their body weight and shape (Saygın, 2021). However, in our study, while the mean score of cognitive restriction behavior increases among underweight, normal and overweight students, it decreases among obese students. It can be thought that the fact that these results are different from the literature may be due to the low number of obese students participating in the study. In our study, mean score of cognitive restriction behavior of the students who do exercise regularly is higher than the students who do not do exercise. In addition, a similar result is observed when the IPAQ and cognitive restriction behavior score are compared. In a study conducted with university students, the fact that as the level of physical activity increases, the behavior of conscious restricting of eating increases has been reported (Çoşkun, 2020). It can be thought that it is due to the fact that the students who do exercise make the cognitive restriction of eating in order to balance their body weight. Physical activity is very important in maintaining body

weight control (Finlayson et al., 2009). The fact that healthy nutrition and physical activity are key lifestyle factors regulating lifelong health through the ability to improve body composition, musculoskeletal health, physical and cognitive performance, as well as to prevent metabolic diseases such as obesity and diabetes mellitus (Koehler et al., 2019) is known well. For this reason, it can be recommended to include courses on healthy nutrition in university education, to create student communities where students can be more active, and to direct students to sports activities.

## CONCLUSION

The physical activity level of the students of vocational school health services is low. Proper nutritional habits are moderate. In addition, students show uncontrolled and emotional eating behavior. The eating disorders of the students increase as the physical activity level of them decreases. It is thought that it is required to improve the awareness of the students about physical activity and proper nutrition.

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