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THE RELATIONSHIP BETWEEN HANDGRIP STRENGTH AND PHYSICAL ACTIVITY BARRIERS IN PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING HEMODIALYSIS

ABSTRACT

Purpose: The aim of this study is to investigate the relationship between handgrip strength (HGS) and physical activity barriers in patients with chronic kidney disease (CKD) undergoing hemodialysis.

Methods: This cross-sectional and descriptive study was conducted with 78 patients with CKD receiving treatment in the hemodialysis unit of a hospital located in southern Türkiye. An individual information form, the Physical Activity Barriers Questionnaire and HGS results obtained from a digital hand dynamometer were used to collect data.

Results: The participants had a mean age of 56.85±12.17 years, with an equal distribution of males and females. The HGS values of male and employed patients were higher than the values of the others (p<0.05). The physical activity barriers were higher in those who were married, female, literate/primary school graduate, unemployed and had an income less than their expenses (p<0.05). Moreover, participants' HGS was associated with their physical activity barriers (r=-0.246, p<0.05).

Conclusion: This study revealed weak correlations between lower HGS and higher physical activity barriers in CKD patients undergoing hemodialysis. CKD patients who were female, married, and had a lower education or income level in particular faced greater physical activity barriers. Higher age and body mass index were associated with increased barriers, while employed patients had better HGS. These findings highlight the need for targeted interventions addressing socio-economic and clinical factors to improve physical activity in this population.

Keywords: Chronic kidney disease, Handgrip strength, Hemodialysis, Physical activity barriers

HEMODİYALİZ TEDAVİSİ GÖREN KRONİK BÖBREK YETMEZLİĞİ OLAN HASTALARDA EL KAVRAMA GÜCÜ İLE FİZİKSEL AKTİVİTE ENGELLERİ ARASINDAKİ İLİŞKİ

ÖZ

Amaç: Bu çalışma, hemodiyaliz alan kronik böbrek hastalığı (KBH) olan hastalarda el kavrama kuvveti (EKK) ile fiziksel aktivite engelleri arasındaki ilişkiyi araştırmayı amaçladı.

Yöntem: Kesitsel ve tanımlayıcı tipteki bu çalışma, Türkiye'nin güneyindeki bir hastanenin hemodiyaliz ünitesinde tedavi gören 78 KBH hastası ile yürütüldü. Veri toplamak için bireysel bilgi formu, fiziksel aktivite engelleri ölçeği ve dijital el dinamometresinden elde edilen EKK sonuçları kullanıldı.

Bulgular: Katılımcıların yaş ortalaması 56,85±12,17 olup, kadın ve erkek sayısı eşittir. Erkeklerin ve çalışan hastaların EKK diğerlerine göre daha yüksekti (p<0,05). Evli, kadın, okuryazar/ilkokul mezunu, geliri giderinden az olan ve çalışmayan bireylerde fiziksel aktivite engellerinin daha yüksek olduğu belirlendi (p<0,05). Ayrıca katılımcıların EKK ile fiziksel aktivite engelleri ilişkiliydi (r=-0,246, p<0,05).

Sonuç: Bu çalışma, hemodiyaliz alan KBH hastalarında düşük EKK ile yüksek fiziksel aktivite engelleri arasında zayıf bir ilişki olduğunu ortaya koymuştur. Özellikle kadınların, evli bireylerin, düşük eğitim veya gelir düzeyine sahip olanların daha fazla fiziksel aktivite engeliyle karşılaştığı görüldü. Artan yaş ve vücut kütle indeksi, engellerin yükselmesiyle ilişkilendirilirken, çalışan hastalar daha iyi EKK sergiledi. Bu bulgular, bu popülasyonda fiziksel aktiviteyi iyileştirmek için sosyo-ekonomik ve klinik faktörlere yönelik hedefli müdahalelerin gerekliliğini vurgulamaktadır.

Anahtar Kelimeler: Kronik böbrek hastalığı, Kas gücü, Hemodiyaliz, Fiziksel aktivite engelleri

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INTRODUCTION

Chronic kidney disease (CKD) is a progressive disease characterized by irreversible renal function impairment that often develops in elderly people. CKD is mainly associated with a decreased glomerular filtration rate (GFR). As the disease progresses (GFR <15), renal functions become inadequate to meet the needs of the body and the end-stage kidney disease (ESKD) occurs (1). One of the most common treatment methods in patients with ESKD is hemodialysis (2). It is recommended that patients undergoing hemodialysis engage in moderate physical activity at least 3-4 days a week (3). However, physical activity levels are significantly lower in CKD patients who undergoing hemodialysis. They typically remain physically inactive for approximately four hours per hemodialysis session, three times per week. In addition, patients may feel fatigue and weakness after a hemodialysis session, resulting in physical inactivity throughout the day. Physical inactivity in patients with CKD undergoing hemodialysis leads to accelerated physical deformation and decreased capacity for independence (4). Decreased physical activity is associated with higher morbidity and mortality (5,6).

Perceived benefits and barriers are important concepts of the health promotion model. Individual perceptions of physical activity barriers may also affect physical activity behavior. Therefore, it is crucial to understand individual perceptions of barriers in order to elevate physical activity levels (7-9). While physical activity barriers have been well-studied in other populations, limited evidence exists for CKD patients. Common barriers include time constraints, safety concerns (e.g., pain/injury risk), comorbidities, and environmental factors (10). The interaction between personal, environmental, and behavioral determinants of physical activity behavior necessitates the systematic identification of modifiable barriers to enhance physical activity adherence. This approach enables the development of culturally adapted, theoretically grounded interventions aimed at optimizing physical activity attitudes and engagement in CKD populations (11).

Increased muscle strength is known to motivate people to continue engaging in physical activity (12). By contrast, inadequate physical activity is associated with increased mortality because it contributes to a decrease in muscle strength. Moreover, CKD patients tend to have low muscle strength (13). For this reason, muscle strength is frequently evaluated when examining the clinical conditions of patients with CKD (14). Handgrip strength (HGS), which is one of the methods used to evaluate muscle strength in the clinic, is also an indicator of the body's total muscle strength (15). A systemic review highlighted that HGS was a useful tool for assessing muscle mass in CKD patients undergoing dialysis (14). A study conducted in China with 10.407 individuals showed that HGS decreased as kidney function declined (16). The aim of this study is to investigate the relationship between HGS and physical activity barriers in patients with CKD undergoing hemodialysis.

METHOD

Study Design and Sample

This cross-sectional and descriptive study was conducted in the hemodialysis unit of a state hospital located in southern Türkiye between May 2022 and July 2022. The study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology checklist for cross-sectional studies.

The sample size calculation application developed by Raosoft Inc. was used to determine the sample size. It was known that there were approximately 80 patients receiving treatment in the unit during the study period. It has been reported that the prevalence of physical activity barriers in CKD patients ranges between 66-89% (17). However, in this calculation application, prevalence values greater than 50% are generally accepted as 50%. According to this information, the minimum sample size to be included in the study was determined as 67 (margin error=5%, confidence interval=95%, population=80).

The inclusion criteria for the patients were determined as follows; being voluntary to participate in the study, being 18 years of age or older, receiving hemodialysis treatment for more than 3 months, not having any physical integrity that would prevent physical activity (such as amputation), and having no communication or comprehension problems.

All patients who met the inclusion criteria during the study period and granted informed consent (n=78) were included in the study using consecutive sampling method. This sample size exceeds the minimum required sample size (n=67), as determined by power analysis. This approach ensured the most comprehensive representation of the target population in our single-center study. Additionally, maintaining statistical power in subgroup analyses of categorical variables (e.g., gender, marital status, and educational status) was prioritized. Data collection forms were applied to the patients who agreed to participate in the study after they were informed about the study.

Data Collection Tools

The researchers collected data via face-to-face interviews before hemodialysis. Individual information form, Physical Activity Barriers Questionnaire (PABQ), and HGS measurements were used to collect data. It took approximately 20 minutes for each patient to collect data.

The researchers prepared an individual information form by reviewing the relevant literature (2,18,19). This form has questions about the participants' age, gender, income, marital status, educational level, employment status, and body mass index (BMI). The weights of the patients were measured by the nurses working in the unit before hemodialysis. The researchers measured heights of the patients before the hemodialysis procedure with a 300-cm inflexible tape measure that was marked by 1-cm intervals.

The PABQ was developed by Ibrahim et al. (20), to determine the conditions seen as barriers to physical activity. This 5-point Likert-type scale (1=strongly disagree, 5=strongly agree) consists of 24 items and three subscales (personal, social environment, and physical environment). All items in the scale are positively expressed and high scores indicate a high probability of physical activity barriers. The Cronbach's alpha internal consistency coefficient of the original version of the scale was found to be 0.85 for the overall scale and range between 0.68 and 0.74 for its subscales. The Turkish validity and reliability study of the scale was conducted by Yurtçiçek et al. (19), with 300 healthy individuals. However, since it is reported that the Turkish version could be used in different populations, we used it in CKD patients in the present study. In its Turkish version with 22 items, the personal subscale includes items 1-14, the social environment subscale includes items 15-17, and the physical environment subscale includes items 18-22. The Turkish version of PABQ demonstrated an excellent internal consistency, and Cronbach's alpha coefficient was found to be 0.87 for the overall scale. For the subscales, Cronbach's alpha coefficient ranged from 0.53 to 0.85, indicating acceptable to good internal consistency across different domains of the scale.

The HGS was measured by the physiotherapists in the sample group using an adjustable digital high-precision hand dynamometer (Commander Echo Grip Dynamometer, JTech Medical, Midvale, Utah, USA). The device, which has a measurement sensitivity of 0.1 kg, can automatically calibrate itself with each opening. The measurements were performed on the fistula-free hand immediately before the dialysis procedure so that the patients' treatment would not be disrupted. The participants were asked to perform a single trial using the dynamometer prior to the actual assessment so they could familiarize themselves with the device; thereby, allowing accurate measurements to be obtained. The dynamometer handle was fixed to the second level and the measurements were performed in a standardized manner with patients seated in a semi-sitting position, holding their elbow in slight flexion and positioned close to the trunk/body. They were asked to grip the dynamometer with maximum force for a duration of 3 seconds upon a voice command (come on, squeeze harder, etc.). Two measurements were performed with 1-minute rest intervals. For analysis, the highest HGS value obtained from the patients was recorded in kilograms (21).

Ethical Considerations

In order to conduct the study, the approval from the Gaziantep University Clinical Trials Ethics Committee (date: 09.03.2022, approval number: 2022/82) and permission from the Kilis Provincial Health Directorate (date: 21.04.2022, number: E-83362427-604.02.02) were obtained. The study protocol was thoroughly explained to all participants, and both written and verbal informed consent were obtained from them. Written permission was obtained from the responsible author to use the PABQ in the study.

Statistical Analysis

The data were evaluated using the SPSS 25.0 software. Descriptive data were represented in frequency, percentage, mean, and standard deviation. The Shapiro-Wilk test was run to check whether or not continuous variables were normally distributed. For normally distributed continuous variables, comparisons between groups were conducted using the Independent Samples t-test or one-way ANOVA, as appropriate. Bonferroni correction was applied to determine which group caused the significant difference resulting from the ANOVA test. Effect sizes were calculated to assess the clinical significance of differences between the groups. Cohen's *d* (small=0.10, medium=0.25, large =0.50) was calculated for mean differences of continuous variables, and partial eta-squared (η^2) (small=0.01, medium=0.06, large =0.14) was calculated for significant differences in ANOVA analyses (22). The Pearson correlation test was run to determine the correlations between continuous variables (negligible: 0.00-0.10, weak: 0.10-0.39, moderate: 0.40-0.69, strong: 0.70-0.89, very strong: 0.90-1.00) (23). Statistical significance level was accepted as $p<0.05$.

RESULTS

Results of the study indicated that the number of female and male participants was equal, and their mean age was 56.9±12.2 years. The majority of the participants were married (89.7%), literate/primary school graduates (90%), had an income less than expenses (60.3%), and were unemployed (88.5%). The mean BMI value of the participants was 28.4±5.7 (Table 1).

HGS value was higher in those who were male (25.6±9.8 kg) ($p<0.001$, d=1.30) and employed (28.5±12.4 kg) (p=0.006, d=0.88). The married participants had higher scores in personal barriers subscale (44.3±12) (p=0.027, d=0.66). Those who were female (17.5±3.9) ($p<0.001$, d=-0.79), literate/primary education graduate (16.3±4.1) (p=0.041, η^2=0.08), and had an income less than their expenses (17.1±3.9) (p=0.008, η^2=0.12) had higher scores in physical environmental barriers subscale. In addition, unemployed ones had higher scores in personal barriers subscale (44.6±11.6) (p=0.049, d=-0.74), physical environmental barriers subscale (16.4±3.9) (p=0.002, d=-0.99), and overall PABQ (69±14.2) (p=0.034, d=-0.80) compared to the other participants (Table 2).

When the distribution of the participants' responses to PABQ was examined, it was determined that in the physical activity barriers subscale, the highest scores were obtained from Item 3 (I have health problems that prevent me from being physically active) (4.10±1.35), Item 4 (physical activity is difficult and tiring) (3.94±1.29), and Item 1 (I do not have extra energy to do physical activity after I finish my work) (3.93±1.44). In the physical activity barriers subscale, the participants obtained the lowest scores from Item 5 (I look funny and feel embarrassed when I do physical activities) (1.81±1.24), Item 17 (I do not have free time to exercise or do physical activities because of my work) (1.91±1.37), and Item 8 (I think physical activity is not beneficial to my health) (1.99±1.32), respectively. Table 3 shows the distribution of their other responses to PABQ.

When the correlation between some characteristics of the participants, HGS and physical activity barriers was examined, it was determined that HGS had a negative weak-moderate correlation with PABQ total score (r=-0.246, p=0.030) and age (r=-0.273, p=0.016). In addition, age (r=0.380, p=0.001) and BMI (r=0.233, p=0.040) of the participants had a positive weak-moderate correlation with total PABQ and some of its subscales (p<0.05) (Table 4).

Table 1. Descriptive characteristics of the participants (n=78)

Variables	n	%
Gender		
Male	39	50
Female	39	50
Marital status		
Married	70	89.7
Single	8	10.3
Educational background		
Literate/primary education	71	90
High school	5	6.4
Higher education	2	2.6
Income status		
Income less than expense	47	60.3
Income equal to expense	28	35.9
Income more than expense	3	3.8
Employment status		
Employed	9	11.5
Unemployed	69	88.5
Age (years)	56.9±12.2	
BMI (kg/m²) (M ± SD)	28.4±5.7	

BMI: Body Mass Index, M: Mean, SD: Standard Deviation.

DISCUSSION

Inadequate physical activity is a common condition in patients with CKD undergoing hemodialysis. Fatigue, decreased muscle strength, and perceived barriers to physical activity after hemodialysis are associated with inadequate physical activity in patients with CKD (24). In their study, Moorman et al. (25), reported that fatigue was the most common physical activity barrier in CKD patients. It is known that individuals with a high perception of barriers to physical activity avoid engaging in physical activity (26). The present study conducted on CKD patients in the southern Türkiye revealed that patients who were female, married, had a low education level and had an income less than their expenses had high physical activity barriers. Individuals with low educational and income levels often do not engage in sufficient physical activity, primarily because they do not consider it as a priority in their lives (27). Therefore, simple and understandable educational materials (brochures, videos) should be used to raise awareness of CKD patients with low educational levels on the importance of physical activity. Furthermore, women with low socio-economic status tend to have insufficient physical activity levels since social expectations such as household chores and childcare lead them to allocate little time for exercise (28,29). For socioeconomically disadvantaged patients and women, free or affordable physical activity opportunities (e.g., free gyms, hospital-based rehabilitation programs) should be provided. A study by Calogiuri and Elliott (30) reported that physical activity in gyms can motivate people because gyms encourage socialization. This may provide an important opportunity for CKD patients with insufficient financial means to engage in physical activity.

CKD patients undergoing hemodialysis tend to have decreased muscle strength over time, thus negatively affecting their engagement in physical activities in the future (26). In the present study, the decrease in muscle strength and the increase in physical activity barriers were correlated with each other in patients with CKD receiving hemodialysis. In addition, when the distribution of their responses to the PABQ was examined, it was found that the most important physical activity barriers were related to health problems, lack of energy and fatigue. Other health problems that are caused by the disease such as muscle strength loss and lack of energy cause a vicious cycle. This condition places patients with CKD at risk of physical exhaustion and poses a very serious obstacle to participation in physical activity or exercise. Engaging in physical activity becomes significantly more challenging for these patients after they reach that threshold (31). Low-intensity (walking, water exercises) and gradually increasing physical activities should be recommended for CKD patients who complain of low energy and fatigue (32). For patients suffering from fatigue, energy-saving techniques and rest periods should be scheduled before physical activity. In their study, Farragher et al. (33), determined that individual energy conservation programs applied to chronic dialysis patients were beneficial in improving fatigue-related outcomes. For patients with CKD, interventions should be made to make physical activity or exercise a lifestyle in the early stages of the disease when muscle loss and the burden of the disease are low. The support provided by healthcare personnel to CKD patients undergoing hemodialysis is extremely important in encouraging them to engage in physical activity. A study examining the correlation between the attitudes of healthcare professionals and barriers to physical activity reported that the non-proactive attitude of healthcare professionals reduced physical activity in patients undergoing hemodialysis. Moreover, patients with fewer disabilities would benefit the most from the attitude of proactive staff (34). In hemodialysis units, the presence of physiotherapists specialized in exercise, along with doctors and nurses, may be effective in planning and encouraging exercise programs for patients undergoing hemodialysis.

Table 2. Comparison of physical activity barriers and handgrip strength according to descriptive characteristics of the participants (n=78)

Variables	Handgrip strength (kg) (M ± SD)	Physical Activity Barriers Questionnaire			
		Personal (M ± SD)	Social environment (M ± SD)	Physical environment (M ± SD)	Total (M ± SD)
Gender					
Male	25.6±9.8	42.5±13	8.4±3.3	14.3±4.2	65.1±15.2
Female	14.7±6.5	44.9±10.2	8±3.2	17.5±3.9	70.4±13.2
p-value[a]	**<0.001*****	0.381	0.648	**<0.001*****	0.107
Effect size	d=1.30	-	-	d=-0.79	
Marital status					
Married	20.5±10.0	44.3±12	8.2±3.3	16±4.3	68.4±14.7
Single	16.7±8.6	38±6	8.7±1.9	15.4±4.7	61.8±10.8
p-value[a]	0.265	**0.027***	0.866	0.713	0.215
Effect size	-	d=0.66	-	-	-
Educational background					
Literate/primary education[1]	20.2±10.2	44.5±11.8	7.9±3.1	16.3±4.1	68.8±14.5
High school[2]	21.3±3	35.2±7.4	11.2±3.7	12.8±5.4	59.2±11.4
Higher education[3]	15.3±13.1	34±1.4	9.5±2.1	10.5±2.1	54±1.4
p-value[b]	0.761	0.111	0.073	**0.041*** 1>2=3	0.140
Effect size	-	-	-	η^2=0.08	-
Income status					
Income less than expense[1]	20.7±9.9	45.3±10.6	8.3±3.4	17.1±3.9	70.7±12.7
Income equal to expense[2]	17.9±9.4	41.4±12.7	8.3±2.7	14.3±4.4	64±15
Income more than expense[3]	32.1±5.4	38.7±17.6	6±4.4	12.3±4.5	57±26
p-value[b]	0.051	0.282	0.485	**0.008**** 1>2=3	0.059
Effect size	-	-	-	η^2=0.12	
Employment status					
Employed	28.5±12.4	36.6±10.1	9.8±3.4	11. 9±5.1	58.2±12.6
Unemployed	19.0±9.1	44.6±11.6	78±3.1	16.4±3.9	69±14.2
p-value[a]	**0.006****	**0.049***	0.114	**0.002****	**0.034***
Effect size	d=0.88	d=-0.74	-	d=-0.99	d=-0.80

[a]: Independent Samples t-tests, [b]: One-Way ANOVA, d: Cohen' d, η^2: Partial Eta-Squared, *: $p<0.05$, **: $p<0.01$, ***: $p<0.001$, M: Mean, SD: Standard Deviation.

The present study indicated that there was a correlation between the increasing BMI and age of the participants and the increase in physical activity barriers. It is known that the lack of self-discipline, pain, discomfort and time constraints in overweight individuals are correlated with the increasing level of physical inactivity (35). Physical activity barriers should be reduced by giving appropriate motivation to CKD patients by a multidisciplinary team including physicians, physiotherapists, and nurses. Furthermore, comorbid conditions in CKD patients may cause physical activity barriers. It is known that aging causes more comorbidities physiologically and psychologically (10). Therefore, in studies aiming to reduce physical activity barriers, comorbid conditions, especially in elderly patients, should be carefully examined.

Limitations

This study has some limitations. Although there was a negative correlation between PABQ and HGS, the power of the correlation was weak. This weakness may be associated with the low HGS of the population in the study. In addition, the presence of small sample groups in some categorical variables may have caused weak-moderate correlations (e.g., higher education n=2, income more than expenses n=3).

CONCLUSION

Patients with CKD who were married, female, had a low education level, had an income less than their expenses, and were unemployed had higher physical activity barriers. In addition, as patients' age and BMI increased, physical activity barriers increased. The most frequently expressed physical activity barriers were related to patients' health problems, fatigue, and low energy complaints. HGS in CKD patients undergoing hemodialysis was higher in those who were male and employed. HGS was associated with physical activity barriers in these patients.

Table 3. Distribution of participants' responses to items of Physical Activity Barriers Questionnaire

Item number	Statement	Mean	Standard deviation	Minimum	Maximum
3	I have health problems that prevent me from being physically active.	4.10	1.35	1.00	5.00
4	Physical activity is difficult and tiring.	3.94	1.29	1.00	5.00
1	I don't have extra energy to do physical activity after I finish work.	3.94	1.44	1.00	5.00
2	I feel physically ill and uncomfortable when I exercise.	3.90	1.34	1.00	5.00
22	I don't have extra money to go to the gym or buy sports equipment and clothing.	3.83	1.52	1.00	5.00
21	Hot or rainy days prevent me from doing physical activity.	3.60	1.43	1.00	5.00
11	The intensity of exercise required to achieve health benefits is too high for me.	3.53	1.41	1.00	5.00
16	I don't have friends with whom I can do physical activities.	3.37	1.74	1.00	5.00
14	My body shape prevents me from doing physical activities.	3.33	1.58	1.00	5.00
13	I lack self-discipline/initiative to do physical activity.	3.13	1.34	1.00	5.00
6	I am not interested in exercise or doing physical activities.	3.12	1.48	1.00	5.00
9	I am afraid of getting injured while exercising and I am concerned about my safety.	3.10	1.62	1.00	5.00
20	I don't know how to use sports equipment and skills in physical activities.	3.08	1.54	1.00	5.00
15	My family/friends don't encourage me to do physical activities.	2.91	1.68	1.00	5.00
10	I'm too lazy to do physical activities.	2.76	1.43	1.00	5.00
19	The sports facilities or areas are too far away and I don't have any transportation.	2.71	1.73	1.00	5.00
18	There are no areas/facilities or opportunities for physical activities in my neighborhood.	2.69	1.74	1.00	5.00
12	I am not skilled in physical activities.	2.68	1.34	1.00	5.00
7	I do not enjoy physical activities or exercise.	2.35	1.39	1.00	5.00
8	I do not think physical activities are good for my health.	1.99	1.32	1.00	5.00
17	I do not have free time to exercise or do physical activities because of my job.	1.91	1.37	1.00	5.00
5	I look funny and feel embarrassed when I do physical activities.	1.81	1.24	1.00	5.00

Table 4. Correlation between some characteristics of the participants, handgrip strength and physical activity barriers (n=78)

Variables		1	2	3	4	5	6	7
1. Age (years)	r	1						
	p	-						
2. BMI (kg/m²)	r	0.206	1					
	p	0.071	-					
3. Handgrip strength	r	**-0.273***	0.019	1				
	p	0.016	0.867	-				
PABQ								
4. Personal	r	**0.343****	**0.280***	-0.204	1			
	p	0.002	0.013	0.074	-			
5. Social environment	r	0.121	-0.211	-0.122	0.030	1		
	p	0.293	0.063	0.286	0.794	-		
6. Physical environment	r	**0.251***	0.176	-0.178	**0.404****	-0.033	1	
	p	0.027	0.123	0.119	0.000	0.776	-	
7. Total	r	**0.380****	**0.233***	**-0.246***	**0.939****	**0.237***	**0.620****	1
	p	0.001	0.040	0.030	0.000	0.037	0.000	-

*: $p<0.05$, **: $p<0.01$, r: Pearson Correlation Test, BMI: Body Mass Index, PABQ: Physical Activity Barriers Questionnaire.

Ethics: The approval from the Gaziantep University Clinical Trials Ethics Committee (date: 09.03.2022, approval number: 2022/82) and permission from the Kilis Provincial Health Directorate (date: 21.04.2022, number: E-83362427-604.02.02) were obtained.

Informed Consent: The study protocol was thoroughly explained to all participants, and both written and verbal informed consent were obtained from them.

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