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Physical Activity Levels in the Turkish Population During the COVID-19 Lockdown: An Online Cross-Sectional Survey Study

COVID-19 Karantinası Sırasında Türk Toplumunun Fiziksel Aktivite Düzeyi: Kesitsel Anket Çalışması

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ABSTRACT

Objective: The Coronavirus disease-2019 (COVID-19) pandemic caused serious limitations on people's lives worldwide. The current study aims to determine the physical activity (PA) levels and sedentary behavior levels in the Turkish population during the COVID-19 lockdown.

Method: This is a multi-centered cross-sectional survey study conducted through online channels (e-mail and WhatsApp) during the COVID-19 lockdown in Turkey. The participants were asked about the PA levels and time spent sitting (sedentary behavior levels) using the short form of the International PA Questionnaire (IPAQ-SF).

Results: Five hundred and fourteen participants were included in the study. During the pandemic, 327 (63.6%) participants had low, 168 (33%) had moderate, and 19 (4%) had high activity levels, according to the IPAQ-SF. There was a significant difference between the need to exercise and PA levels ($p < 0.001$). Three hundred and twelve (60.7%) participants spent more than five hours a day sitting. There was a significant correlation between age, gender, and occupation with sedentary behavior levels ($p = 0.001$, $p < 0.001$, and $p = 0.002$, respectively).

Conclusion: The Turkish population had low PA levels and a high sedentary lifestyle during the lockdown. It may be necessary to plan new exercise programs or activities to protect public health.

Keywords: COVID-19, exercise, lockdown, physical activity, public health

Öz

Amaç: Koronavirüs hastalığı-2019 (COVID-19) pandemisi dünya çapında tüm insanların hayatında önemli düzeyde kısıtlamalara neden olmuştur. Bu çalışmada, Türk toplumunun COVID-19 karantinası sırasında fiziksel aktivite (FA) ve sedanter davranış düzeylerinin saptanması amaçlanmıştır.

Yöntem: Çalışma, COVID-19 karantinası döneminde Türkiye'de internet kanalları (e-mail ve WhatsApp uygulamaları) kullanılarak yapılan çok merkezli, kesitsel bir anket çalışmasıdır. Katılımcılara pandemi döneminde gün içindeki FA düzeyleri ve oturarak geçirdikleri süre (sedanter davranış düzeyi) Uluslararası FA Anketi- Kısa Formu (UFAA-KF) kullanılarak sorulmuştur.

Bulgular: Çalışmaya beş yüz on dört katılımcı dahil edilmiştir. Pandemi sürecinde, UFAA-KF ile değerlendirilen 327 (%63,6) katılımcı düşük, 168 (%33) kişi orta

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ve 19 kişi (%4) ise yüksek aktivite düzeyinde olarak değerlendirildi. Katılımcıların egzersiz ihtiyacı ile FA düzeyleri arasında istatistiksel olarak anlamlı farklılık saptandı ($p < 0,001$). Üç yüz on iki (%60,7) katılımcı günde beş saatten fazla süreyi oturarak geçirdiğini belirtti. Yaş, cinsiyet ve meslek ile sedanter davranış düzeyi arasında anlamlı bir korelasyon olduğu görüldü (sırasıyla, $p = 0,001$, $p < 0,001$ and $p = 0,002$).

Sonuç: Türk toplumunun COVID-19 karantinası süresince düşük FA ve yüksek sedanter davranış düzeyine sahip olduğu saptanmıştır. Yeni egzersiz programlarının ve aktivitelerin planlanması toplum sağlığının korunması açısından önemlidir.

Anahtar kelimeler: COVID-19, egzersiz, fiziksel aktivite, karantina, toplum sağlığı

INTRODUCTION

Coronavirus disease-2019 (COVID-19) is a serious acute respiratory syndrome caused by a new type of coronavirus. It was declared a pandemic by the World Health Organization (WHO) on 11 March 2020. Both society and health professionals must be committed to overcoming this process ⁽¹⁾. In our country, the organization of the health system was rapidly changed to meet the needs of COVID-19 patients ⁽²⁾.

During this period, rehabilitation processes, school-based physical education and sports programs, access to fitness centers and public gardens were restricted to maintain social distance. All these precautions have increased the sedentary lifestyle ⁽³⁾. Physical activity (PA) is the basic and primary component of healthy living ⁽⁴⁾. Regular PA has been shown to reduce the risk of developing systemic inflammation, increased body mass index, and the risk of developing infectious diseases. Questions regarding the potential role of PA as an immune function adjuvant to reduce the risk of infectious diseases have increased significantly during the new coronavirus outbreak ⁽⁵⁾.

This is an important study to determine the effect of changing life conditions on the PA levels and sedentary behaviors in the Turkish population during the COVID-19 lockdown.

METHOD

This is a cross-sectional survey study conducted through online channels (e-mail and WhatsApp). The study was conducted during the lockdown period due to the pandemic in Turkey. The survey reached 711 individuals who had been in lockdown at that time, and 514 people agreed to participate in the study. The study was approved by the Research Ethics Committee under the number KAEK/2020.06.82. The voluntary consent form was filled out on the online platform.

Patient Population

Our study corresponded to a period when the lockdown was imposed on all Turkish people. Inclusion criteria were (i) being 18 years and older, (ii) being in quarantine while the study was running, (iii) agreeing to participate in the

survey, and (iv) being able to use online platforms (e-mail or WhatsApp). In addition, participants with a disease that impaired walking or doing exercise and a recent history of surgery that restricted the level of PA were excluded.

Measurements

Demographic data (i.e., sex, age, gender), occupation (working at a desk, physically demanding job, retired, housewife), and residential location (city or small town) were all recorded. As the outcome measure, the frequency of exercise, PA levels, and the time spent sitting were asked. The short form of the International Physical Activity Questionnaire (IPAQ) was used to evaluate PA levels. The reliability and validity of the Turkish version of this questionnaire have been assessed ⁽⁶⁾. This questionnaire consists of seven questions and provides information about sitting, walking, and the total time spent in moderate-to-vigorous intensity activities. The total score of the short form includes the sum of walking, duration (minutes), and frequency (days) of intense activity. The sitting score (sedentary behavior level) is also calculated separately. In the evaluation of all activities, the criteria taken are that each activity should be done at least 10 minutes at a time ^(6,7). A score of "metabolic equivalent of task (MET)-minute/week" is obtained by multiplying the minute, day, and MET values. According to the standard MET values, sitting is 1.5 MET; walking time (minutes) is multiplied by 3.3 MET. In the calculation, 4 MET are considered as moderate activity, and 8 MET as severe activity. As a result of the IPAQ score, PA levels are classified as low (< 600 MET-min/week), moderate (600-3000 MET-min/week), and high (> 3000 MET-min/week) levels of PA ^(7,8).

Statistical Analysis

In the statistical analysis of all data, IBM SPSS version 22.0 [Statistical Package for the Social Sciences, Statistics for Windows (IBM Corp., Armonk, United States of America)] was used. Average and standard deviation values in parametric tests in descriptive statistics of the data were used. In non-parametric tests, the median values, the lowest and highest values, were used.

The distribution of variables was checked with the Kolmogorov-Smirnov test. The comparison between two groups was performed with the χ^2 test with pairwise z-tests (Bonferroni correction) for categorical data. The results were evaluated in the 95% confidence interval, and $p < 0.05$ was defined as statistical significance.

RESULTS

Five hundred and fourteen individuals who voluntarily accepted to participate in the survey and answered the questions completely were included in the study. 374 participants (72.8%) were women, and 140 (27.2%) were men. The median ages of the participants were 33 (20-45), 51 (45-65), and 67 (65-73) years. The demographic data and occupations of the participants are shown in Table 1.

During the lockdown period, 327 (63.6%) participants had low, 168 (32.7%) had moderate, and 19 (3.7%) had high activity levels according to the IPAQ score. There was only a significant difference between the need to exercise and IPAQ scores ($p < 0.001$) (Table 2).

312 (60.7%) participants spent more than five hours a day sitting, 136 (26.5%) participants reported sitting time as one to five hours, 31 (6%) spent sitting less than one hour, and 33 (6.4%) reported variable levels. There was a significant correlation between age, gender, and occupation with sedentary behavior levels ($p = 0.001$, $p < 0.001$ and $p = 0.002$, respectively) (Table 3).

Table 1. Participant characteristics for the cross-sectional study	
Characteristics	n (%)
Gender	
Female	374 (72.8)
Male	140 (27)
Age	
20-45	341 (66.3)
45-65	112 (22)
> 65	61 (12)
City	
Metropole	482 (93.7)
Small town	32 (6)
Occupation	
Desk worker	286 (55.7)
Physically demanding	85 (16)
Housewife	82 (16)
Retired	61 (12)

The need to exercise during the pandemic was also questioned. Four hundred and fourteen participants stated that they needed to exercise. Also, the resources where people obtained information about exercise were asked. 105 participants stated that they played the sports they did before, 189 participants have found them through online channels (YouTube videos, Instagram, Facebook, mobile phone applications, others), 44 people continued doing the exercises recommended by their doctors, 10 found television programs, four participants through books, and 22 through other resources.

DISCUSSION

This survey is the first investigation to evaluate the PA levels and sedentary behaviors among the Turkish people during the lockdown period.

According to WHO data, 27.5% of adults worldwide aged 18 and over were not found active enough, and approximately 3.2 million deaths per year occur due to unhealthy lifestyles⁽⁹⁾. Considering the PA levels of the Turkish population, 30.6% of adults aged 18 and over had insufficient PA levels^(10,11). During the lockdown period, the PA levels of the people were reduced because of spending more time at their homes⁽¹²⁾. As the results of the current study, similarly, the PA level of the people was significantly low.

Sedentary behavior is defined as time spent engaged in sitting or lying down activities that require an energy expenditure of 1.0 to 1.5 basal metabolic rates⁽¹³⁾. Margaritis et al.⁽¹⁴⁾ reported that the lockdown would cause physical inactivity and sedentary behavior. In addition, in a study investigating the sedentary behavior of people during the lockdown in Bangladesh, it was found that 21% of participants had high sedentary behavior. This situation was attributed to prolonging the time spent on electronic devices⁽¹⁵⁾. Zheng et al.⁽¹⁶⁾ also reported that young adults in China had low PA levels and high sedentary behaviors during the pandemic. Similarly, in this study, the participants had sedentary behaviors (i.e., sitting five hours or more a day) and low activity levels during the lockdown. Most of the population worked at their homes and spent their time sitting for a long time.

Previous reports showed that females had higher sedentary behavior levels and lower PA levels than males^(15,17). According to the current study, females had higher sedentary behavior levels than males, and unexpectedly, there was no difference between females and males regarding PA levels.

Young people were more likely to be physically inactive in recent studies^(15,16). The present study did not observe any

significant relationship between age and PA levels. However, young adults (aged 20-45 years) had higher sedentary behavior levels. These results could be because young adults have been working at home and spent a long time on the computer during the lockdown.

Many opportunities to be physically active have been suspended due to COVID-19, including school-based physical education and athletic programs, fitness centers, and public parks. There is a concern that being inactive affects health negatively and increases mortality⁽³⁾. The Turkish physical medicine and rehabilitation association COVID-19 working group, and Ministry of Health, and many countries around the World prepared booklets and exercise videos with suggestions to encourage people to stay physically active⁽¹⁸⁻²⁰⁾. In this study, most participants stated that they needed to exercise and exercised in different ways. Also, more than half of the exercisers (51%) preferred to use online channels. In a review that presented the effect of information technologies on lifestyles, mobile interventions and the internet improved lifestyle behavior and PA up to one year⁽²¹⁾. The results of the

present study also supported this information. Therefore, the preparation of online resources to meet the exercise needs of people is beneficial.

Study Limitations

This investigation has some limitations. First, it is a self-reported survey study. So, it is less effective than face-to-face interviews. Second, the age distribution of the participants is not homogenous because the elderly population uses technological devices less than younger people do. Third, it is a cross-sectional study and only presents the results during the lockdown of the COVID-19 pandemic.

CONCLUSION

In summary, these results show that during the pandemic, for remaining physically active, there is a need to do exercise. The PA levels of people who had a lockdown due to infection control methods during the COVID-19 pandemic may be an essential indicator regarding guiding public health and taking precautions. At present, because the new normal

Table 2. Comparison of parameters according to the metabolic equivalent of task (MET) scale (IPAQ-SF)

	MET < 600 n (%)	MET 600-3,000 n (%)	MET > 3,000 n (%)	p
Gender (%)				
Female	240 (64.2)	119 (32)	15 (4)	0.688
Male	87 (62)	49 (35)	4 (3)	
Age (%)				
20-45	207 (60.7)	121 (35)	13 (4)	0.272
45-65	75 (67)	32 (29)	5 (4)	
> 65	45 (74)	15 (25)	1 (2)	
City (%)				
Metropole	306 (63.5)	158 (33)	18 (4)	0.964
Small town	21 (66)	10 (31)	1 (3)	
Occupation (%)				
Desk worker	185 (65)	90 (31)	11 (4)	0.852
Physically demanding	51 (60)	30 (35)	4 (5)	
Housewife	48 (60)	30 (37)	3 (4)	
Retired	42 (69)	18 (29)	1 (2)	
Musculoskeletal system complaints (%)				
Yes	203 (66.3)	92 (30)	11 (4)	0.288
No	124 (60)	76 (36)	8 (4)	
Need to exercise during the pandemic (%)				
Yes	245 (59.2)	152 (37)	17 (4)*	< 0.001
No	82 (82)	16 (16)	2 (2)*	

* significantly different from others

Table 3. Comparison of parameters according to sedentary behavior levels

	Total time spent sitting (sedentary behavior levels)				p
	<1 hour n (%)	1-5 hours n (%)	>5 hours n (%)	Variable durations n (%)	
Gender					
Female	29 (8)	112 (30)	209 (55.9)	24 (6)*	< 0.001
Male	2 (1)	25 (18)	104 (74)	9 (6)*	
Age					
20-45	21(6)	72 (21)	229 (67.2)	19 (6)	= 0.001
45-65	7 (6)*	45 (40)	48 (43)	12 (11)	
>65	3 (5)	20 (33)	36 (59)	2 (3)	
City					
Metropole	30 (6)	126 (26)	295 (61.2)	31 (6)	0.722
Small town	1 (3)	11 (34)	18 (56)	2 (6)	
Occupation					
Desk worker	13 (4)	52 (18)	211 (73.5)	11 (4)	< 0.001
Physically demanding	4 (5)*	28 (33)*	41 (48)	12 (14)	
Housewife	12 (15)	35 (43)	28 (35)	6 (7)*	
Retired	2 (3)	22 (36)	33 (54)	4 (7)	
Need to exercise during pandemic					
Yes	22 (5)	111 (27)	255 (61.6)	26 (6)	0.559
No	9 (9)	26 (26)	58 (58)	7 (7)	
PA levels					
Low	24 (7)	79 (24)	208 (63.6)	16 (5)	0.064
Moderate	5 (3)	53 (31)	93 (55)	17 (10)	
High	2 (10)	5 (26)	12 (63)	0 (0)	
* significantly different from others					

is being in less contact, it may be necessary to plan new initiatives, such as online exercise programs and individual activities, to be aware of the necessity of physical activities to protect public health. However, more research studies and preventive programs should be prepared to prevent large health problems. We hope that the pandemic ends with minimal damage to all people worldwide.

Ethics Committee Approval: The study was approved by the Research Ethics Committee under the number KAEK/2020.06.82.

Informed Consent: The voluntary consent form was filled out on the online platform.

Conflict of Interest: No conflict of interest was declared by the authors.

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