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ORIGINAL ARTICLE

Physical activity and health anxiety in people with and without spinal pain during the COVID-19 lockdown: A comparison study

COVID-19 kapanması sırasında omurga ağrısı olan ve olmayan kişilerde fiziksel aktivite ve sağlık kaygısı: Bir karşılaştırma çalışması

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Summary

Objectives: In the coronavirus disease 2019 (COVID-19) pandemic, physical inactivity and health anxiety which are common risk factors for musculoskeletal pain have become widespread due to strict precautions and isolation. Thus, we aimed to compare physical activity, health anxiety, and spinal pain history in people experiencing and not experiencing spinal pain during the COVID-19 lockdown.

Methods: This study was designed as a case–control study. Assessments including the Nordic Musculoskeletal Questionnaire (NMQ), the International Physical Activity Questionnaire-Short Form, and the Short Health Anxiety Inventory were performed through an online questionnaire using Google forms during the COVID-19 lockdown. We reached 494 volunteers, and 348 were eliminated by the exclusion criteria. One hundred and fifty-six participants were classified as the spinal pain group (n=70) and the asymptomatic group (n=86) based on the NMQ.

Results: The total amount of physical activity was less in the spinal pain group than the asymptomatic group ($p<0.05$). The spinal pain group had higher levels of health anxiety than the asymptomatic group ($p<0.05$). Further, the percentage of people who experienced spinal pain in the past year was higher in the spinal pain group ($p<0.05$).

Conclusion: People experiencing spinal pain during the COVID-19 lockdown were physically less active and more concerned about their health. These results may be useful to improve the management of spinal pain during the lockdown or possible pandemic wave scenarios.

Keywords: Anxiety; coronavirus disease 2019 lockdown; exercise; musculoskeletal pain; pandemics; spine.

Özet

Amaç: Koronavirüs hastalığı (COVID-19) salgınında, kas-iskelet ağrısı için yaygın risk faktörleri olan fiziksel inaktivite ve sağlık anksiyetesi, katı önlemler ve izolasyon nedeniyle yaygınlaşmıştır. Bu nedenle, COVID-19 kapanması sırasında omurga ağrısı yaşayan ve yaşamayan kişilerde fiziksel aktivite, sağlık kaygısı ve spinal ağrı öyküsünün karşılaştırılması amaçlandı.

Gereç ve Yöntem: Bu çalışma, bir vaka kontrol çalışması olarak tasarlanmıştır. Nordik Kas-İskelet Sistemi Anketi (NKİA), Uluslararası Fiziksel Aktivite Anketi-kısa form ve Sağlık Anksiyetesi Ölçeği-kısa formu içeren değerlendirmeler, COVID-19 kilitlenmesi sırasında Google Formlar kullanılarak çevrim içi bir anket aracılığıyla gerçekleştirildi. Çalışma için 494 gönüllüye ulaşıldı ve 348'i dışlama kriterlerine göre elendi. Katılımcıların 156'sı NKİA'ya göre omurga ağrısı grubu (n=70) ve asemptomatik grup (n=86) olarak sınıflandırıldı.

Bulgular: Omurga ağrısı grubunda toplam fiziksel aktivite miktarının asemptomatik gruba göre daha az olduğu saptandı ($p<0,05$). Spinal ağrı grubu, asemptomatik gruba göre daha yüksek düzeyde sağlık anksiyetesine sahip bulundu ($p<0,05$). Ayrıca son bir yıl içinde spinal ağrı deneyimleme oranı, spinal ağrı grubunda daha yüksek tespit edildi ($p<0,05$).

Sonuç: COVID-19 kapanması sırasında omurga ağrısı yaşayan kişilerin fiziksel olarak daha az aktif oldukları ve sağlıkları hakkında daha fazla endişe duydukları tespit edildi. Bu sonuçların, kapanma veya olası pandemik dalga senaryoları sırasında omurga ağrısının yönetimini iyileştirmek için yararlı olabileceği düşünüldü.

Anahtar sözcükler: Anksiyete; COVID-19 kapanması; egzersiz; muskuloskeletal ağrı; omurga; pandemi.

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Introduction

The coronavirus disease 2019 (COVID-19) outbreak first appeared in China in December-2019 and the World Health Organization was reported rapidly that the COVID-19 pandemic is a public health emergency.[1] The virus already has affected more than 126 million people worldwide. The countries most affected are those in Europe and America.[2,3] The first death in Turkey due to COVID-19 was confirmed on March 15, 2020. As of this writing, 3.32 million people have been infected with COVID-19 and 31.537 of them died according to the present reports.[4] Further, in Turkey, strict precautions such as working from home, lockdown, travel restriction, and compulsory interruption to education have limited economic and social dynamics, similar to most countries.[2,3] According to the Chen's perspective report, precautions such as staying at home and self-isolation may have a negative impact on physical activity levels during the pandemic.[5] Reduced physical activity has been linked to several health problems including many musculoskeletal complaints.[6–8] However, there is no study investigating the physical activity levels of people experiencing spinal pain during the COVID-19 lockdown.

Health anxiety is a condition that leads to worry about having a serious medical condition.[9] It has been suggested that there are two types of health anxiety, pathological (hypochondriasis) and non-pathological according to the diagnostic and statistical manual of mental disorders-edition five.[10] The non-pathological type of health anxiety has been generally characterized the scores lower than 45 in the Short Health Anxiety Inventory and it may be related to serious medical conditions depending on the duration of the anxiety.[10,11] It has been reported that the non-pathological type of health anxiety has become widespread with COVID-19.[2,12–14] Özdin et al.[3] found that female gender, accompanying chronic disease, and previous psychiatric history are risk factors for health anxiety in Turkish society. On the other hand, Rode et al.[14] showed that 51.1% of patients with chronic pain have health anxiety. Negative illness perceptions have been also associated with higher pain intensity and more limitations in physical functioning in patients with chronic musculoskeletal pain.[15] However, the severity of health anxiety in people with spinal pain is still not fully clarified, especially in the pandemic. Many editorial reports suggest that the scientific community should investigate behavioral changes in people during the COVID-19 lockdown to develop prevention strategies.[12,16,17]

In the light of the above information, the present study was designed to compare physical activity and health anxiety levels in people experiencing and not experiencing spinal pain during the past 7 days of the COVID-19 lockdown. We hypothesized that people experiencing spinal pain would be more anxious about their health status and physically less active.

Material and Methods

Ethical Approval

This case–control study was conducted following the ethical approval that was obtained from the Non-Invasive Research Ethics Committee of Dokuz Eylul University (No: 5399-GOA, Protocol Number: 2020/11–36, Date: 01.06.2020). All study procedures were conducted in accordance with the Declaration of Helsinki.

Participants

The minimum number of required sample size was determined to be 57 for each group by t-test in G Power 3.1.9.2 software (90% strength, effect size=0.62) using the data from a previous study including Beck anxiety scores.[9] We reached 494 volunteers during the data receiving process and 348 were eliminated by the inclusion and exclusion criteria. Participants were classified as the spinal pain group (n=70) and the asymptomatic group (n=86). Seventy people experiencing spinal pain during the past 7 days (51 females and 19 males) and 86 people not experiencing spinal pain during the past 7 days (59 females and 27 males) were included in the statistical analyzes. The classification of the participants was made based on the musculoskeletal pain symptoms reported in the Nordic Musculoskeletal Questionnaire (NMQ).

The inclusion criteria for the spinal pain group were as follow: (1) Having the ability to read and understand Turkish, (2) being willing to participate in the study, (3) being between 18 and 55 years of age, (4) having pain located at the spinal region (neck, upper back, or lower back) during the past 7 days of the pandemic, and (5) having no pain in any body part other than the spinal region during the past 7 days of the pandemic. The inclusion criteria for the asymptomatic group

were as follow: (1) Having the ability to read and understand Turkish, (2) being willing to participate in the study, (3) being between 18 and 55 years of age, and (4) having no pain in any body part during the past 7 days of the pandemic. Exclusion criteria were for both groups as follow: (1) Present or prior status of being positive for COVID-19 or Polymerase Chain Reaction tests, (2) having common symptoms of COVID-19 such as fever, cough, and shortness of breath, (3) leaving at least one of the questionnaires blanks, (4) missing answers in any questionnaires, (5) being diagnosed with neurological, psychiatric, or cardiopulmonary disease, (6) being obese, (7) being pregnant, and (8) having a history of orthopedic surgery.

Procedures

Assessments were performed between 10 and 20 June 2020 through an online questionnaire created using Google forms software (Google, CA, USA). People between the ages of 18 and 55 years were contacted through social media (WhatsApp, Instagram, and Facebook etc.) and informed about the study and then asked whether they volunteered to participate. The link to the online questionnaire was shared with the people who agreed to participate and they were asked to fill out all questionnaires. The online survey began with the informed consent form also included questions about sociodemographic characteristics and medical history, The Short Health Anxiety Inventory (SHAI), The NMQ, and The International Physical Activity Questionnaire-Short Form (IPAQ-SF). Further, questions such as "How many days are you stayed at home during the COVID-19 pandemic?" and "How long are you sitting in a day?" were asked.

The SHAI

The SHAI was used to assess the level of health anxiety and hypochondria symptoms. It consists of 18 items that ask participants to select the situation that the best describes their feelings over the past week. The total score ranges from 0 to 54 and higher scores indicate the higher levels of anxiety.[18] The Turkish version of the SHAI was found to be valid and reliable (ICC=0.91) to use both in clinical practice and research.[19]

The NMQ

The NMQ allows for a comparison of musculoskeletal complaints among different body regions in epidemiological studies. Furthermore, it is suitable to use in studies including a large number of participants. The Turkish version of the NMQ was found to have appropriate psychometric properties, including good test-retest reliability (prevalence-adjusted bias-adjusted kappa=0.51–0.90), internal consistency (Cronbach's alpha=0.89), and construct validity.[20] Our purpose of using the NMQ was as follows: (1) To determine people experiencing and not experiencing spinal pain during the past 7 days of the pandemic for inclusion in the study, (2) to determine people experiencing pain in a body part outside the spine during the past 7 days of the pandemic for exclusion from the study, and (3) to determine those experiencing spinal pain at any time during the past 12 months in both groups.

The IPAQ-SF

The IPAQ-SF is a self-report questionnaire that measures physical activity in the past 7 days. The Turkish version of the IPAQ-SF was found to be valid and reliable (rs=0.78) in the assessment of physical activity.[21] The IPAQ-SF was used to assess the amount of vigorous-intensity physical activity, moderate-intensity physical activity, walking, and the number of hours spent sitting a day.

Statistical Analysis

The statistical analysis was performed on the 70 participants with spinal pain and 86 asymptomatic participants using the IBM® SPSS® Statistics 25. Kolmogorov–Smirnov test was used to determine if data are normally distributed. Age, weight, height, body mass index, health anxiety level, the number of days spent at home, and the number of hours spent sitting a day were normally distributed while the total amount of physical activity, vigorous-intensity physical activity, moderate-intensity physical activity, and walking did not show normal distribution. Descriptive statistics were presented with mean and standard deviation for normally distributed variables while presented with median and quartiles for non-normally distributed variables. Independent samples t-test was used to determine whether there were statistically significant differences between two groups in terms of demographic characteristics, the number of days spent at home, and the number of hours spent sitting. Mann–Whitney U test was used to determine whether there were statistically significant differenc-

Table 1. Demographic characteristics of groups

Characteristic	Spinal pain group Mean (SD) (n=70)	Asymptomatic group Mean (SD) (n=86)	p
Age, years	29.17 (9.26)	31.57 (10.86)	0.139[a]
Weight, kg	64.38 (13.11)	64.74 (11.42)	0.853[a]
Height, cm	168.49 (9.01)	168.9 (8.71)	0.775[a]
BMI, kg/m^2	22.52 (3.07)	22.6 (2.98)	0.862[a]
Gender, female, n (%)	51 (72.9)	59 (68.6)	0.562[a]
Education level, n (%)			
High School	5 (7.1)	6 (7.0)	0.968[b]
Bachelor	65 (92.9)	80 (93)	
Job requirement, n (%)	52 (60.4)	53 (75.7)	0.441[b]
Health Behavior, n (%)			
Habitual drinking	36 (51.4)	41 (47.7)	0.759[b]
Habitual smoking	18 (25.7)	24 (27.9)	0.641[b]

[a]: Independent Samples t-test, [b]: Chi-square test; SD: Standard deviation; BMI: Body mass index.

es between two groups in the amount of physical activity. The level of significance was set at p<0.05.

Results

Demographic characteristics are presented in Table 1. No differences were found in age, weight, height, body mass index, sex ratio, education level, job requirement, and health behaviors including habitual drinking and smoking between two groups (p>0.05) (Table 1). The lower back was the most selected painful side of the spine among the spinal pain group who have experienced pain in at least one of the cervical, upper back, or low back regions during the past week of the pandemic (Fig. 1).

The number of days spent at home during COVID-19 lockdown and the number of hours spent sitting a day did not differ between groups (p>0.05). Besides, the percentage of those experiencing spinal pain at any time during the past 12 months was higher in the spinal pain group (95.71%) compared to the asymptomatic group (59.3%) (p<0.05). Furthermore, the level of health anxiety was higher in the spinal pain group (p<0.05) (Table 2).

The amounts of physical activity were presented as MET minutes per week in Table 3. No differences were found between groups in the amounts of vigorous-intensity physical activity, moderate-intensity physical activity, and walking (p>0.05) while the total amount of physical activity was lower in the spinal pain group than the asymptomatic group (p<0.05) (Table 3).

Discussion

In the present study, we collected the spinal pain characteristics through the NMQ and compared the spinal pain group and asymptomatic group in terms of physical activity and health anxiety levels during the COVID-19 lockdown. Our study groups did not differ in terms of age, gender, body mass index, the number of days spent at home, and the number of hours spent sitting a day. In this regard, the results indicated that the spinal pain group has a more anxious attitude towards their health than the asymptomatic group. Besides, we observed a lower total amount of physical activity in the spinal pain group compared to the asymptomatic group.

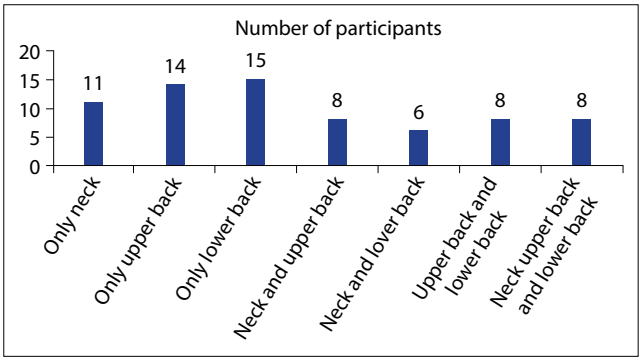

Figure 1. Regions where the spinal pain group experienced pain during the last week.

Table 2. Sitting time, time spent at home, health-related anxiety, and spinal pain history of groups

Variable	Spinal pain group Mean (SD) (n=70)	Asymptomatic group Mean (SD) (n=86)	p
Sitting time, hours per day	8.76 (2.74)	7.83 (3.81)	0.079
Time spent at home, day	57.17 (16.7)	53.55 (19.82)	0.225
SHAI score	15.91 (6.33)	13.79 (5.73)	0.029*
Those having spinal pain during the past year, %	95.71	59.3	<0.001*

*p<0.05 in Independent Samples t-test. SD: Standard deviation; SHAI: The Short Health Anxiety Inventory.

Table 3. Physical activity levels of groups

Physical activity parameter	Spinal pain group Median (Q1/Q3) (n=70)	Asymptomatic group Median (Q1/Q3) (n=86)	p
TPA, MET min per wk	720 (288.75/1386)	990 (625.5/1509.75)	0.048*
VIPA, MET min per wk	0 (0/0)	0 (0/0)	0.171
MIPA, MET min per wk	0 (0/520)	80 (0/600)	0.788
Walking, MET min per wk	396 (198/792)	544 (198/940.5)	0.138

*: p<0.05 in Mann–Whitney U test. Q: Quartiles; TPA: Total physical activity; MET: Metabolic equivalent of task; VIPA: Vigorous-intensity physical activity; MIPA: Moderate-intensity physical activity; min: minute; wk: week.

Spinal pain is characterized by multifactorial conditions involving physiological, psychosocial, and sociodemographic variables.[22] Reduced physical activity is one of these factors.[8,22] Maurer et al.[8] reported that long-term physical inactivity is strongly correlated with disc degeneration of the thoracic and lumbar spine. They mentioned that the relationship between spinal pain and physical inactivity is a vicious cycle in which both causes and consequences can adversely affect each other. In the same vein, we found less total amount of physical activity in the spinal pain group during the COVID-19 lockdown. Physical inactivity and sedentary lifestyle, which modern life has already raised, have become widespread with pandemic restrictions. Accordingly, the spinal pain population should increase physical activity according to the guidelines recommending regular 30 min of moderate physical activity/day and 5 days/week to improve their pain.[23] Further, home-based exercise programs that are traceable through mobile apps should be encouraged to both reduce pain and increase physical activity in people with spinal pain.

Physical inactivity leads to several health problems and nervous system changes, including slower mental processing, depression, and anxiety.[24] Our present results showed that people experiencing spinal pain have higher levels of health anxiety in addition to the lower amount of total physical activity compared to asymptomatic people during the COVID-19 lockdown. In a similar perspective, Fallon et al.[13] investigated the adverse effects of the COVID-19 lockdown on pain, physical activity, and psychological well-being in people with chronic pain. They found that patients with chronic pain have higher severity of pain compared to before lockdown. Besides, patients with chronic pain were more adversely affected by lockdown compared to pain-free people, demonstrating more anxious and depressed moods and lower levels of physical exercise in the same line with our findings. Although our study's methodology did not establish a cause-effect relationship, we can speculate that less physical activity levels may provoke health anxiety in people with spinal pain based on the above-mentioned studies and our results. On the other hand, to the best of our knowledge, this is the first study that indicating health anxiety is higher in people experiencing spinal pain than asymptomatic people during the COVID-19 lockdown. Similarly, the previous studies also reported that maladaptive illness perceptions were associated with the higher intensity of pain and more limitations in the physical functioning in patients with musculoskeletal pain.[15,24] Patients with spinal pain might experience more

pain when their attitudes to the disease affected. Consequently, psychosocial characteristics of pain such as health anxiety or illness perception gain importance in the present literature.[14,15,25]

Another result of the present study was that the percentage of people who experienced pain in the past year was higher in the spinal pain group during the COVID-19 lockdown. Cortical-limbic circuitry is considered to have a sensitive response to emotional stress and the subsequent changes in the prefrontal cortex led to chronification of the present pain.[26] Therefore, we have assumed that health anxiety could lead to the reoccurrence of the previous pain in the COVID-19 lockdown. Besides, stress types such as "tendency to worry," "social isolation," and "perceived long-term stress" have been suggested to be predictors of chronic spinal pain.[27] Thus, health anxious emotions during the COVID-19, social isolation, and continuous exposure to infographics about the COVID-19 might cause stressful attitudes that lead to the previous spinal pain becoming chronic, which is needed to clarify in the future studies.

Several limitations of the present study should be considered. First, the spinal pain group consisted of a heterogeneous sample including different painful regions. Besides, it is not possible to demonstrate the cause-effect relationships between spinal pain, health anxiety, and physical activity level due to our methodology. Furthermore, spinal pain has multifactorial characteristics including biopsychosocial and cultural variables. However, we did not assess other psychosocial variables such as pain catastrophe, depression, and kinesiophobia. The future studies including these parameters can deepen our findings. Further, our data set was formed according to the subjective participation of respondents due to the online data collecting process in the COVID-19 lockdown period. One particular advantage of the present research was that characteristics of physical activity and health anxiety were assessed in a specific population, which is experiencing spinal pain during the COVID-19 lockdown. Besides, having matching study groups in terms of daily sitting time, the number of days in lockdown, demographic characteristics including age, gender, body mass index, education level, and job requirement, and health behaviors were another strength of our study.

Conclusion

The present study has indicated that people with spinal pain have lower total amounts of physical activity and the higher levels of health anxiety compared to asymptomatic controls during the COVID-19 lockdown. These results may be useful to develop the new management strategies for spinal pain which can be implemented during the COVID-19 pandemic and possible pandemic wave scenarios.

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