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How has the initial lockdown and reopening due to the COVID-19 pandemic affected physical activity level and well-being in Turkey?

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Abstract

Background/Aim: The worldwide spread of COVID-19 caused changes in daily routines. During the lockdown, parks and gyms were closed and access to outdoor areas was limited. After reopening, many restrictions were removed. Since this process may have altered physical activity and well-being levels, this study aimed to explore how physical activity (PA) levels and well-being of Turkish citizens were affected by the initial COVID-19 lockdown and the reopening.

Methods: In this prospective, cross-sectional study, participants were asked to complete an online survey twice: first in May 2020 (when initial strictest partial lockdown procedures were applied) and second in July 2020 (after most restrictions had been removed). The online survey consisted of questions related to demographics, PA levels, and well-being. Categorical questions (expressed as either day per week or min per day) were used to assess vigorous and moderate PA, time spent sitting, etc. The WHO-5 Well-Being Index was used to assess well-being.

Results: The mean age and the body mass indexes of 94 individuals (52 females, 42 males) were 36.16 (10.04) years and 25.14 (3.82) kg/m², respectively. During both lockdown and after reopening, low levels of PA and well-being levels above the low mood limit (< 50) were identified. No significant change was found in either any of the PA-related variables or the well-being of participants between the initial and final assessments ($P > 0.05$).

Conclusion: Our results showed that PA levels and well-being of Turkish citizens remained unchanged after the reopening process when compared to the initial lockdown due to COVID-19. These findings may also suggest that reopening was not a sufficient stimulant factor to alter physical activity and well-being. Despite all the negative effects brought on by the pandemic, it is essential to adopt approaches to keep PA levels and well-being high.

Keywords: Physical activity, COVID-19, Well-being

Introduction

In December 2019, a pandemic viral disease had its first cases in the city of Wuhan, China. This disease was given the name COVID-19; the World Health Organization (WHO) declared it an outbreak [1]. In a short time, COVID-19 spread all over the world and became a global health threat [2].

Given the powerful transmissibility of the disease, response efforts by the Turkish government were directed to restrain the spread of the virus. A lockdown, imposed in March 2020 when the first case was detected in Turkey, included limiting social distance, closing schools, and prohibiting gathering in public places.

The closure of parks and gyms and limiting recreational activities affected the daily routines of citizens [3]. Most of the lockdown strategies were said to have led to a decrease in the physical activity (PA) level of the population [4]. The pandemic caused a reduction in energy expenditure and time spent on outdoor sports activities. Lifestyles substantially changed due to the containment measures, with the consequent risk of sedentary behaviors [5].

In addition to the negative effect of the pandemic on PA habits, mental health may also have been substantially changed due to the containment measures [6]. It was reported that prolonged self-isolation negatively impacted psychological response, thus promoting post-traumatic stress symptoms and anxiety [7]. Concerns about financial uncertainty, job loss, and other factors caused by the COVID-19 lockdowns have also negatively affected people's well-being [3, 6]. Although quarantine and physical isolation measures were thought to have a positive effect in protecting peoples' general health by preventing and mitigating the transmission of the virus, the implementation of these restraint measures may have a long-lasting and wide-ranging negative psychosocial impact [8]. Continuously watching, hearing, and reading about COVID-19 on TV, in newspapers, on the internet, etc., may have affected mental health [5]. Many people may have become anxious, angry, uncertain, and depressed due to the effects of the outbreak [7, 8].

The initial partial lockdown was ended in June 2020, and a new period termed the "new normal" began. Within the scope of the new normalization process, parks, outdoor areas, gyms, cafes, restaurants, and libraries were opened, working from home was ended, and bans on traveling were lifted. After reopening, citizens returned to their daily routines, with some legal restraints and personal precautions such as wearing a mask, attention to social distancing, and hygiene practices [9].

Although previous studies conducted in various countries (Canada, Portugal, Australia, and Italy) have demonstrated the impact of physical isolation on the physical and mental health of the population during the global pandemic, only limited knowledge is available on the consequences of the initial partial lockdown and reopening process on PA level and well-being [3, 6, 10, 11]. Other than one study that examined the effects of the lockdown and reopening [12], nearly all other related research examined the effects of the lockdown only without investigating the effects of reopening [3, 11, 13–17].

Therefore, we intended to explore the impact of the initial COVID-19 lockdown and reopening on the PA levels and the well-being of individuals. To the best of our knowledge, no published paper has reported these effects in the Turkish population. We hypothesized that PA levels and well-being of Turkish citizens would change after the initial strict, partial lockdown was ended when compared to the initial COVID-19 lockdown period in Turkey.

Materials and methods

Design

This prospective study was performed between May 2020, when the initial strictest partial lockdown procedures were implemented by the national government, and July 2020, when most of the restrictions were removed (the so-called "controlled social life" period). The study was conducted in accordance with the ethical principles of the 1975 Declaration of Helsinki. Approval was received from the ethics committee for non-invasive research at our local university. All participants provided online informed consent before participation.

Participants

Inclusion criteria were: (i) age between 18 and 65 years, (ii) able to mobilize independently, (iii) able to read, write, and understand the country's native language, (iv) willing to participate in the study. Exclusion criteria were: (i) COVID-19 diagnosis, (ii) any findings that could be related to COVID-19, (iii) hospitalization for any reasons, (iv) mental and cognitive disorders that could prevent filling out the questionnaire. Virtual snowball sampling was used for the recruitment of participants. To spread the word and refer participants to the study link, social media communications (Facebook, Instagram, Twitter) were used. Participants were asked to complete the questionnaire using an online survey platform (Google Forms) twice: in May 2020 (initial assessment) and July 2020 (final assessment).

Outcome measures

The online survey consisted of questions related to demographics, PA level, and well-being. Demographic characteristics included age, gender, and education status. The presence of any chronic illnesses was also captured.

PA levels were assessed with categorized questions measuring activities performed in the previous week. The part of the questionnaire related to the PA level contained questions on the number of days with vigorous PA per week, duration of vigorous PA per day, number of days with moderate PA per week, duration of moderate PA per day, number of days with at least 10 minutes walking in the corridor and time spent sitting or lying down per day [18].

The WHO-5 Well-Being Index was used to measure well-being. The WHO-5 is a brief self-reported scale of current mental well-being [19]. It contains five positive expressed sentences. The sentences are: "I have felt cheerful and in good spirits," "I have felt calm and relaxed," "I have felt active and vigorous," "I woke up feeling fresh and rested," and "My daily life has been filled with things that interest me." Respondents were asked to rate how well each of the five statements applied to them when considering the last 14 days. Each of the five sentences was scored from 5 (all of the time) to 0 (none of the time). The scores were summed to obtain a total raw score

ranging from 0 to 25 (0 is absence of well-being and 25 is maximal well-being). Then, the raw score was multiplied by four in order to translate it to a percentage scale from 0 (absent) to 100 (maximal). The highest scores indicated a strong sense of well-being [20].

Statistical analysis

Statistical analyses were performed using SPSS software version 25.0 (IBM Corporation). Descriptive statistics were summarized as counts and percentages for categorical variables. To determine whether variables were normally distributed, the Kolmogorov-Smirnov test and visual methods (histograms, probability plots) were used. The non-normally distributed and ordinal variables were presented as median (minimum-maximum) and interquartile range (25–75%). The Chi-square test or Fisher's exact test, as appropriate, was used to compare the proportions in different groups. The McNemar-Bowker test was used to evaluate the change in stage-based variables of PA between the initial and the final assessments. To compare the change in non-normally distributed and ordinal variables, the Wilcoxon test was used. A 5% type-I error level was used to infer statistical significance ($P < 0.05$).

Results

In total, 102 individuals responded to surveys at both time intervals. Surveys of four individuals who did not meet the inclusion criteria were excluded. Surveys of four individuals were also discarded due to missing item responses. The final analyses were done on surveys obtained from 94 individuals.

The mean age and the body mass index (BMI) of 94 individuals (52 females, 42 males) were 36.16 (10.04) years and 25.14 (3.82) kg/m², respectively. The majority of individuals (43.6%) held bachelor's degrees, and 19 individuals (20.2%) had reported a history of chronic illnesses such as hypertension, diabetes mellitus, asthma, hypercholesterolemia, hepatitis B, coronary artery disease, and breast cancer. The distribution of demographic characteristics of surveyed participants is presented in Table 1.

Table 1: Distribution of demographic characteristics of surveyed participants

n=94	Number (n)	Percent (%)
Gender		
Female	52	55.3
Male	42	44.7
Education Status		
Primary Education	5	5.3
High School	3	3.2
Associate Degree	10	10.6
Bachelor's Degree	41	43.6
Master's Degree	24	25.5
Doctorate	11	11.7
Chronic Illness		
Yes	19	20.2
No	75	79.8

The BMI of the individuals remained stable after reopening ($P > 0.05$). The results showed that while 77.7% of participants did not do any vigorous PA during the lockdown, this proportion was 73.4% after reopening. Also, 54.3% of participants reported not doing any moderate PA during the lockdown, a proportion that was 48.9% after reopening. As variables related to PA level assessed through categorical questions expressed in min per day were analyzed, no significant change was observed in the number of individuals between the initial and final assessments ($P > 0.05$). Table 2 shows the results of the McNemar-Bowker test.

Table 2: Changes in the stage-based variables of physical activity level

		1st Assessment		2nd Assessment		P-value
		n	%	n	%	(McNemar-Bowker Test)
Vigorous PA, min per day	None	73	77.7	69	73.4	0.495
	<15	1	1.1	5	5.3	
	16-30	7	7.4	5	5.3	
	31-45	7	7.4	6	6.4	
	46-60	3	3.2	5	5.3	
	61-90	1	1.1	3	3.2	
	90<	2	2.1	1	1.1	
Moderate PA, min per day	None	51	54.3	46	48.9	0.853
	<15	7	7.4	8	8.5	
	16-30	19	20.2	21	22.3	
	31-45	10	10.6	11	11.7	
	46-60	3	3.2	6	6.4	
	61-90	1	1.1	1	1.1	
	90<	3	3.2	1	1.1	
Time Spent Sitting, min per day	<15	4	4.3	3	3.2	0.152
	16-30	9	9.6	11	11.7	
	31-45	7	7.4	12	12.8	
	46-60	9	9.6	13	13.8	
	61-90	8	8.5	15	16.0	
	90<	57	60.6	40	42.6	

PA: Physical Activity, n: number, % percent

No significant change was found in any of the PA-related variables or the well-being of participants between the initial and final assessments ($P > 0.05$) (Table 3).

Table 3: Changes in the assessed variables of participants

	1st Assessment		2nd Assessment		P-value
	Median (min-max)	IQR (25-75%)	Median (min-max)	IQR (25-75%)	
Vigorous PA, days per week	0 (0-7)	0-0	0 (0-7)	0-1	0.723
Moderate PA, days per week	0 (0-7)	0-2	1 (0-7)	0-2	0.812
Time Spent walking in corridor, days per week	0 (0-7)	0-3	0 (0-7)	0-5	0.316
WHO-5 Well-Being Index Score	64 (0-100)	48-76	64 (8-100)	52-80	0.383

IQR: Interquartile range, COVID-19: Coronavirus disease 2019, PA Physical activity, WHO-5: The 5-item World Health Organization, Wilcoxon Signed Rank Test

Discussion

The findings of our study illustrated that the PA levels and well-being of Turkish citizens did not show a significant difference between the initial strict partial lockdown period and the period after the reopening. We also found that during both lockdown and post-reopening, the PA levels of participants were low and their well-being was above the low mood limit (< 50). These findings may also suggest that reopening changes were not sufficient enough to stimulate a change in PA behavior and well-being.

The stressful context of mandatory behavioral changes, including staying at home and social isolation, was thought to influence both physical and mental health during the COVID-19 pandemic. Since regular PA provides benefits to immunologic responses as well as enhanced mood and coping with stress, encouragement to be physically active has become more essential than ever for both the physical and mental health of the population during the COVID-19 pandemic [7, 11].

Doing moderate-intensity exercise has been reported to act as an important adjuvant to stimulating the immune system [21, 22]. Results of a recent study based on a large Biobank cohort also showed that regular physical activity could lower the risk of severe COVID-19 infection and hospitalization [23]. Generally speaking, it is universally accepted that people who are in self-quarantine should try to be physically active and exercise as much as they can at home without changing their routines [4]. Nowadays, many scientific communities have

highlighted the benefits of doing exercise or increasing PA levels during COVID-19 restrictions [3–6, 11, 14, 17, 24].

Some studies have provided useful insights into the effects of COVID-19 lockdowns on PA and well-being [3, 6, 11, 14, 17]. Lesser et al. [3] showed that inactive Canadian people became less physically active, while active people became more physically active during COVID-19 restrictions. The PA level of Canadians was found to be strongly related to their well-being. The authors suggested that during public health restrictions, outdoor PA should be encouraged to increase well-being [3].

Maugeri et al. [11] investigated the PA level of Italians before and during the COVID-19 quarantine. To assess PA levels and psychological well-being, they used IPAQ and the Psychological General Well Being Index, respectively. Results of their study showed that PA levels significantly decreased during the pandemic. They thought that this phenomenon could be due to a sharp change in everyday routine and that people who remained at home spent much more time in low-intensity activities. They also found that the reduction of PA levels was related to lower well-being. They highlighted that maintaining regular PA was an important step toward improving physical and mental health [11].

Faulkner et al. [17] evaluated PA and the well-being of individuals from four different countries (United Kingdom, Ireland, New Zealand, and Australia) within the first two to six weeks of government-mandated COVID-19 restrictions. They used IPAQ-SF and the WHO-5 Well-Being Index for the assessments. Their findings demonstrated that participants whose exercise behavior was negatively affected by COVID-19 restrictions reported lower well-being.

In a study surveying, 1491 adults in Australia, 21% of participants reported increased PA while 49% reported declined and 30% reported unchanged PA. Moreover, negative changes in PA were associated with higher depression, anxiety, and stress symptoms. Authors highlighted the utilization of health-promotion strategies directed at adopting or maintaining positive health-related behaviors to address increases in psychological distress during the pandemic [14]. Similarly, Gornicka et al. [25] surveyed 2381 Polish adults and found that the PA levels of 38% remained unchanged while 43% reported decreased PA.

Unlike previous studies, which examined the effects of the lockdown only, a more recent study by Ding et al. investigated the effects of both lockdown and reopening on daily steps. To measure daily step count, they used a social fitness plugin of the most popular mobile social media application in China. They found a sharp decline in daily step counts upon the lockdown of an average of 3796 steps, followed by a significant trend of an increase of 34 steps/day until the end of the lockdown. After reopening, they found that the increasing trend to be continued, but at a slower rate of five steps per day. They concluded that the COVID-19 lockdown led to a sustained period of reduced physical activity despite later increases in step count and suggested that PA should be encouraged and facilitated by government and health professionals [12].

In our study, we measured PA levels and well-being both during the lockdown and after reopening, as Ding and colleagues did; however, we did not measure these variables pre-lockdown. This was due to the prospective design of the study and the inventories we used to measure outcomes. As a result, we found that PA levels and well-being of Turkish citizens did not change after reopening as compared to the initial strict partial lockdown period. In other words, reopening did not cause a significant change in PA levels and the well-being of individuals.

Akçay et al. [24] also investigated the effect of COVID-19 on PA levels of Turkish citizens. They assessed PA levels only during the lockdown, using IPAQ-SF, and compared the percentages with the national and global prevalence, which had been reported by previous studies. They found 70% of the participants to have insufficient PA levels and an increased inactivity rate due to the COVID-19 pandemic. This PA percentage was twice the global value. They suggested that preventive measures should be taken in a timely manner to avoid the risk of diseases that may stem from inactivity.

A study by Akçay et al. [24] showed that the PA level of Turkish citizens during the initial lockdown was lower than usual, and our study showed that reopening had no impact on the PA levels of Turkish citizens. Considering these results together, it can be inferred that the PA levels of Turkish citizens, which were already low during the lockdown, remained the same after reopening, though they were expected to change according to the hypothesis of the study. Unlike the results of Ding et al. [12], which reported a slight but significant increase in the PA levels of Chinese citizens post-reopening, we did not find a significant change in either PA levels or well-being. We suggest that future studies should investigate the possible reasons for these results. Perceived barriers to PA and psychosocial factors such as self-motivation and social influence during the COVID-19 pandemic, which may have an influence on PA levels, should be examined.

A common feature of the above studies was the utilization of an online survey in early 2020 pre- and during the strictest public health restrictions. We also used an online survey to collect data; however, we conducted this study using a prospective design. In other words, we first examined the PA and well-being levels of participants from Turkey during the initial, strictest partial lockdown and then re-assessed these variables after most of the restrictions had been removed (the so-called "controlled social life" period).

To the best of our knowledge, ours is the first study to investigate the effects of reopening after the initial strict partial lockdown during the COVID-19 pandemic in Turkey on PA levels and well-being. Therefore, the timing of the data collection was expedient for accurately measuring PA levels and well-being during and after the public restrictions due to the pandemic.

Limitations

There are also some limitations to this study. First, all data were collected using a self-reported online survey. However, self-reported data is subject to some biases and limitations. Second, the findings of our study revealed that reopening was not a sufficient stimulant factor to alter people's physical activity and well-being. However, it should be kept in mind that PA levels and well-being might be affected by education level, marriage status, chronic illnesses, etc. The fact that these confounding factors were not analyzed in the present study could be another limitation.

Conclusion

Our results showed that PA levels and well-being of Turkish citizens remained unchanged after the reopening process as compared to during the initial COVID-19lockdown. These findings may also suggest that reopening was not a sufficient stimulant factor to alter people's physical activity and well-being. Despite all the negative effects brought on by the pandemic, it is essential to adopt approaches to keep PA and well-being at a high level.

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