ORIGINAL ARTICLE

Physical Activity, Screen Time and Emotional Wellbeing of Population during COVID-19 Pandemic in Pakistan

Shaiza Ijaz[1], Shafaq Ismail[2], Laiba Fayyaz[3], Arfa Ashraf[4], Yumnah Razzaq[5], Muhammad Ashraf Chaudhry[6]

ABSTRACT

Background and Objective: The current COVID-19 situation has restrained the movement of individuals along with instilling fear in them. This study assesses the level of physical activity, screen time and emotional status of the individuals during the current COVID-19 situation in the population of Pakistan.

Methods: The study was carried out in May 2020. The sample size was 385 and the snowball sampling technique was employed. The data was collected through a self-administered online questionnaire and included subjects from all provinces of Pakistan. The form comprised of four parts including socio-demographic details, self-reported screen time as well as SPANE and IPAQ-short form questionnaires. The data was analysed using SPSS version 25.

Results: Out of 385 individuals, 89.6% reported inadequate physical activity. Among these, the majority comprised of females (92.3% vs. 80% in males). It was determined that there were higher positive affective scores in males (28.6 ± 8.1) compared to those in females (27.5 ± 7.7). The average sedentary screen time was 7.24 ± 3.76 hours that was maximally reported in the younger age group (19 years and lesser). Moreover, a downward trend of negative affective scores, from vigorous to light physical activity level, was noted.

Conclusion: Considering the lower level of physical activity as well as increased screen time and prevalence of negative affective scores, it is pertinent to note that there is a need to promote awareness about the benefits of physical activity and its positive influence on both physical and mental health.

KEYWORDS: Physical activity, Emotional well-being, COVID-19, IPAQ, SPANE, Affective scores.

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1. Shazia Ijaz
2. Shafaq Ismail
3. Laiba Fayyaz
4. Arfa Ashraf
5. Yumnah Razzaq
6. Muhammad Ashraf Chaudhry

1-6 Department of Community Medicine, CMH Lahore Medical College, Lahore-Pakistan.

Corresponding Author:
Shaiza Ijaz
MBBS 4th Year Student,
Department of Community Medicine, CMH Lahore Medical College, Lahore – Pakistan.

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INTRODUCTION

On January 30, 2020 the World Health Organization (WHO) declared the Corona Virus Disease (COVID-19) outbreak a public health emergency of international concern (PHEIC), the cases of which were initially reported in late December 2019 in Wuhan, China.[1]COVID-19 is caused by SARS-CoV-2, which belongs to the Beta Coronaviruses (Beta-CoVs) category of positive stranded RNA virus called Coronavirus (CoVs). Its transmission is considered to be human to human, through respiratory droplets from coughing and sneezing of COVID-19 patients, as well as from aerosol

particles.[2] Currently, there is no specific treatment and vaccine available for the disease; therefore, the spread of the disease can only be prevented through precautionary measures such as self-isolation.[3] As of 31st August 2020, 216 countries and territories have reported a total of 25,118,689 cases of COVID-19 to the WHO.[4]

Pakistan received its first two cases of corona virus on February 26, 2020, with recent history of a visit to Iran.[5] Taking guidance from China and Italy (two of the epicentres of COVID-19), the Government of Pakistan along with provincial administrators implemented a nationwide lockdown to combat the spread of the disease.[6]

However, restricting the population in homes led to a disruption in their daily routine and lifestyle, causing anxiety and fear among people.[7,8] The constant uncertainty pertaining to the situation has been reported of having an adverse psychological impact.[9] Relatively high prevalence of symptoms of anxiety, depression, post-traumatic stress disorder, psychological distress, and stress have been observed in the general population during the current pandemic in various countries.[10] Simultaneously, it should be considered that lockdown could have adverse effects on physical activity (PA) and lead to an increased screen time due to a lot of idle time at hand. In a study conducted in China during the initial days of COVID-19, nearly 60% of Chinese adults had inadequate physical activity and the mean screen time was more than 4 hours per day.[11] It is a well-established fact, that insufficient physical activity and increased screen-time have a deteriorating impact on the physical and psychological health. Physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). It is considered as a principal risk factor for a number of non-communicable diseases, including cardiovascular diseases, diabetes and cancers.[12] Excessive screen time has been associated with multiple adverse health outcomes including obesity, type 2 diabetes, cardiovascular disease, and early mortality in adults.[13] There is undeniable evidence that regular physical activity contributes to the prevention of several chronic diseases such as cardiovascular diseases (e.g. hypertension), metabolic diseases (e.g. diabetes mellitus), cancers (e.g. breast and colon cancer), and osteoporosis and is associated with a reduced risk of premature death.[14] It has been suggested that maintaining physical activity could reduce the risk of contracting the infection itself and mitigate the effects of quarantine.[15]

Therefore, it is important to assess the physical activity, screen time, and emotional wellbeing of the population during COVID-19. According to the best of our knowledge, the lifestyle changes during COVID-19 crisis haven't been studied in the general population in Pakistan. The aim of our study is to evaluate the prevalence of insufficient physical activity, increased screen time and effects on the emotional well-being of the general population during self-isolation. Due to limited access to rural areas, this study mainly assesses the lifestyle changes in urban population.

METHODS

This cross-sectional study was carried out via an online survey that included population of Pakistan from all provinces, above the age of 16 years and those with access to internet in order to be able to fill in the forms. The study was approved by the Institutional Ethical Committee vide Letter No: 40/ERC/CMHLMC. The sample size of 385 was calculated with WHO sample size calculator with a 95% confidence level, 5% margin of error and 50% anticipated population proportion. The snowball sampling technique was employed through contactless distribution on the network. The data was collected from May 7, 2020 to May 17, 2020 (10 days), via online questionnaires made with Google Forms and distributed as links among the general population in reach. The questionnaire comprised of four parts. The first part covered demographics, socio-economic background etc., the second part determined physical activity by using the 8 item International Physical Activity Questionnaire (IPAQ)- Short Form and the third section assessed emotional wellbeing by using the scale of positive and negative experience (SPANE). Lastly, for screen time the subjects were resorted to self-reporting of time spent on screens, including video games, mobile phones, laptops, tablets etc., by the candidates themselves (as inquired about in our parent article also). The candidates were, both, informed about the study and understanding of the objectives by written explanations as well as their consent was received online via Google Forms. The

questionnaire was self-administered and filled by the candidates, and the data was kept anonymous. Anyone willing to withdraw was free to do so and all questions and clarifications were welcomed.

STATISTICAL ANALYSIS

Collected data was entered and analysed by SPSS version 25. Quantitative data was presented as mean and standard deviation while qualitative data as frequency and percentages. Association between age groups, gender, residence and intensity levels of physical activity were determined by Chi-square test of significance. The differences in sedentary screen time, positive and negative affect scores among age subgroups, gender (males and females), among urbanity and three intensity levels of physical activity were analysed by using Kruskal Wallis test of significance. A P-value of < 0.05 was considered statistically significant.

RESULTS

During COVID-19 pandemic in Pakistan, 385 participants were included in the final analysis of this study. Out of these, 274 (71.2%) were females and 111 (28.8%) were males. Other demographic variables such as age, urbanity, living and education and provinces were also included in the analysis. Across all the regions of Pakistan, 89.6% of individuals were insufficiently active during home quarantine induced by COVID-19 pandemic (Table-1). Compared with the global level reported by WHO, the prevalence of insufficient physical activity increased sharply during the initial stage of COVID-19 epidemic in Pakistan (global: 27.5%) vs. Pakistan in epidemic stage (89.6%; P = 0.001).

By gender differences, the prevalence of insufficient physical activity of females (92.3%) was significantly higher than that of males (80%) during home quarantine (P = 0.023; Table-1). Besides, the rate of participation in vigorous activity was higher in males than in females (11.7% vs. 5.5%; Table-1). Across age groups, the highest level of insufficient physical activity (93.4%) was noted among individuals aged 35 and above (P = 0.013; Table-1). In addition, a lower prevalence of insufficient physical activity (89.2%) was found among 30-34 years of age (Table-2).

The mean ± SD sedentary screen time of Pakistani residents was 7.24 ± 3.76 hours during the home quarantine. Across all age groups, the

Table-1: Intensity levels of physical activity stratified by age groups, gender and urban or rural residence during home quarantine induced by COVID-19 outbreak in Pakistan, 2020.

		Physical Activity			*P-value*
		Vigorous	*Moderate*	*Light*	
Age groups	≤ 19 years	2 (6.1%)	1 (3%)	0 (0%)	0.013
	20-34 years	25 (7.5%)	9 (2.7%)	1 (0.3%)	
	35 and above	1 (5.3%)	0 (0%)	1 (5.3%)	
Gender	Male	13 (11.7%)	7 (6.3%)	0 (0%)	0.023
	Female	15 (5.5%)	3 (1.1%)	2 (0.7%)	
Residence	Urban	25 (7.6%)	6 (1.8%)	1 (0.3%	0.068
	Rural	3 (5.4%)	4 (7.1%)	1 (1.8%)	

*P for overall difference was calculated from Chi-square tests.

Table-2: Changes in PANAS positive and negative effect in Pakistani residents aged 15 years and above during home quarantine induced by COVID-19, 2020.

		PANAS Positive Effect			*PANAS Negative Effect*		
		Mean ± S.D	*Median ± IQR*		*Mean ± S.D*	*Median ± IQR*	
	Overall	27.7 ± 7.8	28 ± 11		24.8 ± 8.5	24 ± 14.5	
				P-value			*P-value*
Age groups	≤ 19 years	27.8 ± 7.8	26 ± 9.5	0.957	24.5 ± 8.2	24 ± 15.5	0.102
	20-34 years	27.8 ± 7.8	27.7 ± 9.5		25.1 ± 8.5	25 ± 14	
	35 and above	27.4 ± 7.6	27 ± 13		21.1 ± 9.3	21 ± 15	
Gender	Male	28.6 ± 8.1	29 ± 12	0.323	23.5 ± 7.9	23 ± 13	0.072
	Female	27.5 ± 7.7	28 ± 11		25.3 ± 8.7	25 ± 14	
Residence	Urban	27.5 ± 7.8	27 ± 11	0.074	25.1 ± 8.6	25 ± 14	0.113
	Rural	29.3 ± 7.7	30 ± 10		23.1 ± 8.2	22.5 ± 15.5	
Physical activity	Vigorous	28.7 ± 7.7	28 ± 11	0.505	24.9 ± 8.5	25 ± 15	0.264
	Moderate	27.8 ± 9.2	29 ± 12.3		24.4 ± 8.4	21 ± 14.7	
	Light	26.4 ± 6.6	27 ± 9		23.5 ± 8.1	20 ± 13	

longest screen time was found in young people with ages 19 and below (7.5 ± 3.7 hours; P = 0.05). Screen time was lowest among the 35 and above age group (5.4 ± 3.4 hours; P = 0.03).

The mean positive affective scores of males were higher relative to females (28.6 ± 8.1 vs. 27.5 ± 7.7; P = 0.323), while negative affective scores of males were somewhat lower compared to that of females (23.5 ± 7.9 vs. 25.3 ± 8.7; P = 0.072; Table-2) however, this difference is not significant. In addition, the positive affective scores of vigorous physical activity were higher than that of moderate and light level activity, although this difference was statistically not significant (P = 0.505). Lastly, there was a downward trend of negative affective scores from vigorous physical activity level to light physical activity level, however, this difference was also not statistically significant (P = 0.264; Table-2).

DISCUSSION

Pakistan, like many other countries, went into complete lockdown to control the spread of COVID-19 on March 24, 2020, approximately one month after receiving its 1st first two cases. From 25th April 2020 onwards, Federal and Provincial Governments issued several notifications to relax the lockdown systematically to ease the strain on the country's economy although education institutes and public places e.g. Marriage halls, Cinemas, and Parks remained close and continued till September 15 2020.[6] This nationwide cross-sectional study was conducted during the initial phase of partial lockdown. The study provides a clear snapshot of the impact of COVID-19 pandemic and lockdown on the lifestyle of the general population, including the extent of physical activity, screen time and psychological health.

According to the data collected from 384 participants across 4 provinces, Federal, Gilgit-Baltistan and Azad Kashmir, 89.6% of the general population of Pakistan was inadequately physically active during the lockdown. This trend of physical inactivity is congruent with the results found in a nationwide survey in China and ECLB-COVID-19 international online survey.[11,16] It is noteworthy, that the percentage prevalence of physical inactivity has been significantly increased from 33.7% to 89.6% during the lockdown when compared with the data collected in 2016.[17] This shows that regardless of WHO's recommendations, to maintain sufficient physical activity during this period, lockdown and home confinement had a hugely negative effect on all the levels of physical activity. This is an appalling situation, as physical inactivity and sedentary behaviour contributes significantly to the global burden of chronic diseases.[18] It has been stated by various institutions of knowledge that physical activity and moderate intensity exercise is crucial in tackling the psychological impact of COVID-19 lockdown and to boost one's immunity.[19,20] Therefore, it is essential to promote and highlight the importance of physical activity, home based exercises, and healthy lifestyle guidelines should be made a priority for the population.

As determined by the data, the prevalence of insufficient physical activity was higher in women as compared to men, and it is similar to the results seen in non-epidemic times.[17] The lower level of physical activity in women can be attributed to the cultural and traditional restrictions on women. Women in Pakistan are mostly involved only in household work and childcare.[21] They are also discouraged from doing outdoor exercise and taking part in any vigorous physical activity, as shown by lower participation by women in vigorous physical activity. Across all age groups, middle age population aged 35 years and above has had the highest level of insufficient physical activity. As reported by National Demographic and health survey 2017-18, the majority of this age group was married and working.[22] Generally in the cultural setup of Pakistan, married individuals become neglectful of their health and fitness. They are more involved in taking care of their families and earning money to support their respective families. With the restriction on mobility, the physical activity related to work and business also declined. Their free time activities also revolve around a sedentary lifestyle e.g. reading, watching TV. etc. This is worsened by a lack of awareness and government efforts in educating individuals, motivating them and creating an atmosphere where physical activity is considered as an integral part of life. However, a relatively lower prevalence of insufficient physical activity was found in the young population aged 20 – 35 years; it can be attributed to their access to digitized media and other facilities, providing them with awareness and

opportunities. Our study shows, that the middle-aged population is at higher risk to become physically inactive and develop a sedentary life-style.

Sedentary screen time is an important indicator of health practices in the population. The mean sedentary screen time of Pakistani residents was found to be more than seven hours during home quarantine; it is almost 3 hours higher than what was reported in the Chinese population. Excessive screen time is said to have a significant impact on an individual's physical health, as it is associated with obesity and diabetes mellitus.[23,24] Moreover, it contributes to mental health problems such as anxiety, depression, reduced sleep quality and psychopathological symptoms.[25] Across all age groups, the longest screen time was found in young people ages 19 and below. The millennial population is more tech-friendly and invested in video gaming and social media applications. Screen time was the lowest among the 35 and above age group, and the reason may be lack of knowledge and time due to their cultural and financial responsibilities, as described above, thus allowing them lesser time to engage with their devices.

Finally, there was a marginally significant positive correlation between engagement in physical activity and positive affective scores. Males have been more involved in physical activity and thus had a better emotional state. Moreover, the positive affective score of vigorous physical activity was higher, whereas the negative affect score was lower. These results show that vigorous physical activity contributes to better emotional wellbeing as it reduces stress by activating brain metabolism, increasing secretions of neurotransmitters and enhancing cerebral blood flow.[26] In addition, vigorous physical activity improves mood and increases energy levels and decreases anxiety and anger.[27]

CONCLUSION

During the initial phase of COVID-19 Pandemic and associated lockdown, the majority of the population was insufficiently active, with more percentage of women and middle age group people. Screen time was increased, particularly in young people. Emotional health worsened during this phase, especially in women as predicted by Negative affect scores. The results of this study can be utilized by the relative authorities to generate a plan of action regarding health promotion during times of social distancing, so that we are prepared for the world after pandemic with a healthy population.

LIMITATIONS OF THE STUDY

Considering the scarce resources and limited time, snowball sampling technique was a feasible method for data collection. Although representativeness is not guaranteed but an adequate representation of each province was ensured. Even though WHO approved physical activity questionnaire (IPAQ-S) was used, which has good reliability and validity but it is important to know that self-reported data of physical activity is not always in harmony with the scientific devices used to gauge it. The language of the questionnaire (English) and the non-availability of the Internet along with the lack of usage of digital platform in many parts of the country, may have contributed to sampling bias. Hence, the data calculated mostly pertains to the urban population and hardly covers the representation from rural areas. Keeping in view all the limitations, further studies should be conducted including all socioeconomic classes and all the limitations should be minimized for better results in the future.

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CONFLICT OF INTEREST

None to declare.

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None to disclose.

REFERENCES

1. WHO. Statement on the second meeting of the International Health Regulations (2005). Emergency committee regarding the outbreak of novel Coronavirus (2019-nCoV). Available online at: https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov). [Last accessed on November 17th, 2020].
2. Jayaweera M, Perera H, Gunawardana B, Manatunge J. Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy. Environ Res. 2020; 188 (1): 109819. [Epub ahead of print].
3. Wu YC, Chen CS, Chan YJ. The outbreak of COVID-19: an overview. J Chin Med Assoc. 2020; 83 (3): 217.
4. WHO. Coronavirus disease 2019 (COVID-19): situation report, 179. Available online at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200717-COVID-19-sitrep-179.pdf?sfvrsn=2f1599fa_2. [Last accessed on November 17th , 2020].
5. Saqlain M, Munir MM, Ahmed A, Tahir AH, Kamran S. Is Pakistan prepared to tackle the coronavirus epidemic? Drugs Ther Perspect. 2020; 20 (1): 1-2.
6. Anser MK, Yousaf Z, Khan MA, Nassani AA, Abro MMQ, Vo XH, et al. Social and administrative issues related to the COVID-19 pandemic in Pakistan: Better late than never. Environ Sci Pollut Res Int. 2020; 27 (27): 34567-73.
7. IBA. Ebook short notes on the economy during the COVID-19 crisis. 2020. Emotional burden in the times of COVID-19. Available online at:https://businessreview.iba.edu.pk/COVID19/articles/gulnaz-v2.pdf. [Last accessed on November 19th, 2020].
8. Mukhtar S. Pakistanis' mental health during the COVID-19. Asian J Psychiatr. 2020; 51 (1): 102127. [Epub ahead of print].
9. Salman M, Asif N, Mustafa Z, Khan T, Shehzadi N, Hussain H, et al. Psychological impact of COVID-19 on Pakistani university students and how they are coping. Available online at: https://www.medrxiv.org/content/10.1101/2020.05.21.20108647v2. [Epub ahead of print].
10. Xiong J, Lipsitz O, Nasri F, Lui LMW, Gill H, Phan L, et al. Impact of COVID-19 pandemic on mental health in the general population: A systematic review. J Affect Disord. 2020; 277 (1): 55-64. [Epub ahead of print].
11. Qin F, Song Y, Nassis GP, Zhao L, Dong Y, Zhao C, et al. Physical activity, screen time, and emotional well-being during the 2019 novel coronavirus outbreak in China. Int J Environ Res Public Health. 2020; 17 (14): 5170-1.
12. WHO. Global recommendations on physical activity for health. 2010. Available online at: https://www.who.int/dietphysicalactivity/global-PA-recs-2010.pdf. [Last accessed on November 17th , 2020].
13. Warburton DE, Nicol CW, Bredin SS. Health benefits of physical activity: the evidence. CMAJ. 2006; 174 (6): 801-9.
14. Vizcaino M, Buman M, DesRoches CT, Wharton C. Reliability of a new measure to assess modern screen time in adults. BMC Public Health. 2019; 19 (1): 1-8.
15. Fallon K. Exercise in the time of COVID-19. Aust J Gen Pract. 2020; 22 (1): 49-51.
16. Ammar A, Brach M, Trabelsi K, Chtourou H, Boukhris O, Masmoudi L, et al. Effects of COVID-19 home confinement on eating behaviour and physical activity: results of the ECLB-COVID19 international online survey. Nutrients. 2020; 12 (6): 1583-5.
17. WHO. Prevalence of insufficient physical activity among adults: data by country. Glob. Heal. Obs. Data Repos. 2016. Available online at: https://apps.who.int/gho/data/view.main.2463. [Last accessed on November 17th, 2020].
18. González K, Fuentes J, Márquez JL. Physical inactivity, sedentary behavior and chronic diseases. Korean J Fam Med. 2017; 38 (3): 111-5.
19. Jiménez-Pavón D, Carbonell-Baeza A, Lavie CJ. Physical exercise as therapy to fight against the mental and physical consequences of COVID-19 quarantine: Special focus in older people. Prog Cardiovasc Dis. 2020; 63 (3): 386-8.
20. Halabchi F, Ahmadinejad Z, Selk-Ghaffari M. COVID-19 Epidemic: Exercise or not to exercise; that is the question! Asian J Sports Med. 2020; 11 (1): e102630-7.
21. Minaz M. Importance of physical activity in women. Prim Health Care. 2017; 7 (1): 253-5.
22. National Instituteof Pakistan Studies and ICF. Pakistan demographic and health survey 2017–2018.2019. Available online at: https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf. [Last accessed on November 17th, 2020].
23. Goldfield GS, Saunders TJ, Kenny GP, Hadjiyannakis S, Phillips P, Alberga AS, et al. Screen viewing and diabetes risk factors in overweight and obese adolescents. Am J Prev Med. 2013; 44 (4 Suppl. 4): S364-70.

24. Banks E, Jorm L, Rogers K, Clements M, Bauman A. Screen-time, obesity, ageing and disability: findings from 91 266 participants in the 45 and Up Study. Public Health Nutr. 2011; 14 (1): 34-43.
25. Wu X, Tao S, Zhang Y, Zhang S, Tao F. Low physical activity and high screen time can increase the risks of mental health problems and poor sleep quality among Chinese college students. PLoS One. 2015; 10 (3): 1-10.
26. Flannery RB. Treating learned helplessness in the elderly dementia patient: Preliminary inquiry. Am J Alzheimers Dis Other Demen. 2002; 30 (1): 345-9.
27. Carek PJ, Laibstain SE, Carek SM. Exercise for the treatment of depression and anxiety. Int J Psychiatry Med. 2011; 41 (1): 15-28.

Author's Contribution

SIJ: Conception and acquisition of data, drafting of the work.

SIS, LF, AA, YR: Acquisition of data, drafting of the work.

DMAC: Analysis or interpretation of the data for work, drafting of the manuscript**,** Approval of the final version of the manuscript to be published.

ALL AUTHORS: Approval of the final version of the manuscript to be published.