

Original Research Article

COVID-19 lockdown impact on physical activity and anxiety levels among physiotherapy practitioners, teaching faculty and students in Mumbai: a cross-sectional web-based e-survey study

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ABSTRACT

Background: Coronavirus (COVID-19) has spread rapidly throughout the world leading to an emergency global pandemic. Among the varied affected sections of the population and healthcare, physiotherapy is no exception. To what extent, both the physical activity and anxiety levels have been affected amongst the physiotherapy practitioners, teaching faculty and students is not completely known. Hence, this study was undertaken.

Methods: Among a potential 400 participants, 357 responded (response rate=89.25%). Cross-sectional web based open e-survey was sent using google forms via emails and social media platforms such as Whatsapp, facebook, instagram and linkedin messenger. The primary outcome measures were international physical activity questionnaire-short form (IPAQ-SF) for self-reported physical activity and general anxiety disorder (GAD-7) questionnaire for measuring self-reported anxiety.

Results: Out of the 357 participants, 40 were inactive (<600 METs/week), 175 were minimally active (600-3000 METs/week) and 142 were health enhancing physically active (>3000 METs/week). The GAD-7 score showed a significant proportion of participants (74%) to have mild to moderate anxiety and only 26% had moderately severe to severe anxiety. Physiotherapy students were found to do least amount of physical activity in a week (mean METs/week of 2590) and were also more anxious with an average GAD-7 score of 7.7. Practicing physiotherapists and teachers had better scores of 3285 and 3028 METs/week and also better mean GAD-7 scores at 6.4 and 5.3, respectively.

Conclusions: The lockdown caused by the COVID-19 pandemic has affected the physical activity levels and mental wellbeing of physiotherapy students more than the physiotherapy practitioners and teaching faculty.

Keywords: COVID-19 lockdown, Physiotherapy, Physical activity, Anxiety, Questionnaire

INTRODUCTION

COVID-19 is a new variant of coronavirus disease caused by the novel SARS-CoV2 virus that leads to acute respiratory infection. Due to its rapid transmission rate, it has turned out to be a global pandemic affecting majority

of the countries in the world. It is proposed to have been originated from the Wuhan district, Hubei, China).¹

At the time of preparing this manuscript, there were a total of 24,587,583 confirmed cases of which 16 million recovered while the number of deaths is around 833,556 across the globe, as reported by the WHO.² India is

currently ranked 3rd globally, in terms of the total number of cases, which is around 3,463,972 and has a death rate of 62,550 as reported by WHO.³

In India, nationwide phase 1 lockdown was announced on the eve of 21 March that included educational, transport, corporate and agricultural sectors. Exceptions were given to essential services such as the fire service, police, hospital, chemist shops and essential food delivery services.⁴

A recent online survey using a semi-structured questionnaire reported that the responders (general population) had moderate level of knowledge about COVID-19 infection, but adequate knowledge about its preventive aspects. The attitude showed willingness to follow government guidelines on self-quarantine, hygiene and social distancing. Furthermore, many of the responders reported signs of anxiety, sleep difficulties, and paranoia of acquiring COVID-19 infection and distress related to media news.⁵

Previous studies have reported that staying home or indoors for prolonged periods of time can lead to sedentary behaviour such as spending more time in sustained lying down or sitting postures, playing video games and reduced urge of exercising which consequently led to higher risk of chronic health conditions.⁶

Impact of COVID-19 pandemic on health professionals has been previously reported. Lai et al found that about 68.7% of health-workers were experiencing depression (50.4%), anxiety (44.6%), insomnia (34.0%) and distress (71.5%).⁷

Amongst the affected professions due to the COVID-19 pandemic, physiotherapy is no exception. Many of the private practices and all physiotherapy colleges have had to shut down during the lockdown in Mumbai in accordance to the government guidelines of self-isolation and social distancing.⁸

A recent study amongst physiotherapy professionals and students inferred self-reported reduction in physical activity and energy expenditure, during the COVID-19 lockdown period.⁹ Another study has found the mental wellbeing of exam going undergraduate physiotherapy students in Mumbai to be severely affected, with depression being as high as 65.11% followed by anxiety and stress at 52.71% and 39.53 %, respectively.¹⁰

However, no study has been done on the impact of COVID-19 lockdown, on mental and physical health of physiotherapy professionals, teaching faculty and students. The main aim of the current study was to assess effects of COVID-19 lockdown on physical activity levels and anxiety levels of this select group, with the additional objective of assessing correlation between physical activity and anxiety.

METHODS

Design

A cross-sectional online survey was sent to physiotherapy practitioners, teaching faculty and students residing in Mumbai, during COVID-19 lockdown period in the month of September and October 2020. Students who were pursuing physiotherapy courses (undergraduates, interns, postgraduates and researchers) were included in the study. Web-based open e-survey was chosen as it is cost-effective, eco-friendly, time-saving and practically feasible during the COVID-19 lockdown period.

Survey development

The Survey contained 3 sub-sections and a total of 23 questions. The first section included a series of questions pertaining to demographic information such as name, current professional status, age (in years), gender, weight (in kg) and height (in feet and inches) and lastly any current medical history (injury, illness) that could have prevented them from exercising.

The second sub-section included 7 questions on physical activity derived from validated IPAQ-SF, followed by the third sub-section of 7 questions on self-reported anxiety levels using validated GAD-7 questionnaire.¹¹⁻¹⁴ The final question was pertaining to inter-dependence of physical and mental health.

Administration of survey

The study was executed by sending the online link (<https://forms.gle/jYgD4fMa44dYkJBp7>) of google forms to physiotherapy practitioners, teaching faculty and students via emails and social media platforms such as facebook, whatsapp, instagram and linkedin messengers. 400 potential participants were identified and e-survey link was sent to them. Return of the completed questionnaire was considered as consent for participation in survey. Reminders were sent after a period of two weeks and one month.

Sample size estimation and recruitment

The sample size for this cross-sectional study was estimated by using the simple random sampling method. The survey was sent out to 400 participants. Incomplete submission of survey questionnaire was not possible due to the function in google forms which prevents submission of partially answered questions.

Calculation of BMI using self-reported weight (in kg) and height (in feet and inches)¹⁵

BMI was derived from the formula:

$$\text{BMI} = \frac{\text{weight (in kg)}}{\text{height (in m}^2\text{)}} = \text{kg/m}^2.$$

Height in feet and inches was converted to meters. (Normal range=18.5-24.9 kg/m²).

Estimating self-reported physical activity level^{11,12}

Based on IPAQ-SF, physical activity was classified into four categories as vigorous activity, moderate activity, walking and sitting. From the time spent (in minutes) for each of the above physical activity, utilized metabolic equivalent of task (MET) for the particular physical activity was estimated by multiplying MET with time spent as per the formula below. For estimating MET-min/week, the following MET values recommended by the American college of sports medicine (ACSM) were used, sitting-1.5 METs, walking-3.3 METs, moderate activity-4.0 METs and vigorous activity-8.0 METs.

MET for physical activity for each individual (MET-minutes/week)=time spent doing that activity per day×MET for that activity×number of days spent on doing that activity in a week.

IPAQ-SF interpretation¹⁶

Three levels (categories) of physical activity were proposed based on MET-min/weeks, category 1-low/inactive, category 2-moderate/ minimally active, category 3-high/health enhancing physically active (HEPA).

Estimating self-reported anxiety levels^{13,14}

As per GAD-7 score, anxiety levels were classified into four categories based on the score obtained from a total of 21 as follows; mild anxiety (0-4), moderate anxiety (5-9), moderately severe anxiety (10-14) and severe anxiety (15-21).

Statistical analysis

Data was analysed using Microsoft excel software. Descriptive statistics were used to describe continuous variables in the form of mean and standard deviation. Pearson correlation coefficient was used to correlate physical activity and GAD-7 score, BMI and GAD-7 score and BMI and physical activity and significance was calculated for these correlations when p value <0.05. Subgroup analysis was done using students t-test and single factor ANOVA.

RESULTS

A total of 357 participants completed the survey (response rate of 89.25%) which included practicing physiotherapist, physiotherapy professionals and students residing in Mumbai (Table 1). Mean age of the participants was 24.7 years (18 to 55 years). Male to female ratio was 55:300 (2 participants did not comment on their gender).

The mean BMI for the whole group was 23.54 with a standard deviation of 3.9 (Figure 1). There were 241 participants with BMI <24.9, 90 participants were overweight (BMI 25-29.9) and 26 participants were in the obese category (BMI >30).

Six patients reported COVID positivity in the preceding weeks, all with minimal symptoms. 35 participants reported co-morbidities ranging from asthma, rheumatoid arthritis, back pain to anaemia, dengue and injuries, as shown in Table 2. Despite the co-morbidities, 71% of them reported to be able to manage to do vigorous physical activity.

As a whole group, the participants were not very active and spent a mean of 877 METs per week on vigorous physical activity, 1363 METs per week on moderate physical activity and 674 METs on walking. Out of total participants, 40 (11%) were inactive (<600 METs per week), 175 (49%) were minimally active (600-3000 METs per week) and 142 (40%) were health enhancing physically active-HEPA (>3000 METs per week). Students were found to do the least amount of physical activity in a week with an average MET/week of 2590. Practicing physiotherapists and teachers had better scores of 3285 and 3028 METs/week respectively as shown in Table 3.

The GAD-7 score showed a significant proportion of participants to have mild to moderate anxiety (74%) and only 26% had moderately severe to severe anxiety levels (Table 4).

Physiotherapy students had an average GAD-7 score of 7.7 followed by practicing physiotherapist at 6.4 and finally the teaching faculty at 5.3, all of them being in the moderate anxiety spectrum of the GAD-7 rating scale (Table 5).

The proportion of participants with severe anxiety was highest in the HEPA group (12%) compared to minimally active (7%) and inactive group (5%) (Table 6).

When the participants were asked in the last section of the questionnaire, if physical activity and mental state are linked to each other, the overwhelming majority answered yes (97%). However, on performing the Pearson correlation coefficient between the MET-min/week and GAD-7 score, there was very poor correlation found (r =-0.05) and this was not statistically significant (p=0.34) (Figure 2).

There was no correlation between BMI and GAD-7 score as well (r=0.05, p=0.33). There was a positive correlation between BMI and physical activity (r=0.117) and this was statistically significant (p=0.03) (Figure 3).

Subgroup analysis

Subcategories of physiotherapists

The mean GAD-7 score among students was 7.7 as against 6.4 for practicing physiotherapists and 5.3 for teaching faculty. Although the difference was marginal, this was statistically significant ($p=0.006$, unpaired t-test for student's versus practicing physiotherapist), suggesting students were more anxious than practicing physiotherapists. The practicing physiotherapists (mean MET/week=3284) and teaching faculty (mean MET/week=3028) were more active than the students (mean MET/week=2590) and this was statistically significant ($p=0.008$, for student's versus practicing physiotherapist). As the number of teaching faculty was very small, statistical comparisons were not possible for this group. There was no correlation between physical activity and GAD-7 score among practicing physiotherapists ($r=-0.01$) or students ($r=-0.007$). However, there was a stronger negative correlation between physical activity and GAD-7 score among teachers ($r=-0.312$).

Subcategories of physical activities

The mean GAD-7 score among HEPA active participants was 7.3 as against 6.5 for minimally active individuals and this was not statistically significant ($p=0.17$). There was negative correlation between physical activity and GAD-7 score in the HEPA active group ($r=-0.16$) which was statistically significant ($p=0.04$). This was not borne out in the minimally active group or the inactive group. This only weakly suggests that anxiety levels were lower in the HEPA active group participants.

BMI subcategories

The mean GAD-7 score for obese, overweight and normal BMI participants was 9.2, 7.1 and 6.7 respectively and this was statistically significant applying the single factor ANOVA test ($p=0.02$). There was however no correlation between physical activity and GAD-7 score in obese, overweight and normal BMI individuals ($r=0.07$, -0.17 and -0.03 , respectively).

Table 1: Profile of participants completing the survey (n= 357).

Profile	Total numbers (N)
Practicing physiotherapist (non-covid duty).	139
Practicing physiotherapist (on-covid duty).	15
Student (covid postings).	32
Student (non-covid postings).	150
Teaching faculty (non-covid duty).	11
Teaching faculty (non-covid duty).	10

Table 2: Co-morbidities that could have prevented the participants from exercising.

Current co-morbidities as reported by the participants	Numbers
None (no co-morbidity)	311
Arthritis	3
Airway pathologies (asthma, bronchitis, sinusitis leading to breathing difficulty)	6
Covid positive	6
Psychological disorders	1
Systemic pathologies (hypothyroidism, PCOS, anaemia, illnesses such as dengue, organ-kidney stones, appendix, uterine dysfunction, BP, diabetes)	13
Musculoskeletal injury and/or pain	13
Post-surgical (ACLR, patellar fracture)	3
Total	357

Table 3: Average METs/week spent on physical activity by different categories of participants.

Category	Number of participants	Average MET/week
Practising physiotherapists	154	3285
Teaching faculty	21	3028
Students	182	2590
Total	357	8903

Table 4: Anxiety levels among participants.

GAD-7 score	Anxiety indicator	Number of participants	Percentage
0-4	Mild	112	31
5-9	Moderate	154	43
10-14	Moderately severe	59	17
15-21	Severe	32	9
	Total	357	100

Table 5: average GAD-7 score for each category of the participants.

Category	Number	Average GAD-7 score (out of 21)	Pearson correlation coefficient (r)
Practising physiotherapist	154	6.4 (moderate)	-0.01058
Teaching faculty	21	5.3 (moderate)	-0.31241
Students	182	7.7 (moderate)	-0.00714

Table 6: Anxiety levels among inactive, minimally active and HEPA active participants.

	Total number of people who were inactive=40	Percentage
GAD-7 score	Mild	8
	Moderate	16
	Moderately severe	14
	Severe	2
	Total number of people who were minimally active=175.	Percentage
GAD-7 score	Mild	61
	Moderate	79
	Moderately severe	22
	Severe	13
	Total number of people who were HEPA active=142.	Percentage
GAD-7 score	Mild	43
	Moderate	59
	Moderately severe	23
	Severe	17

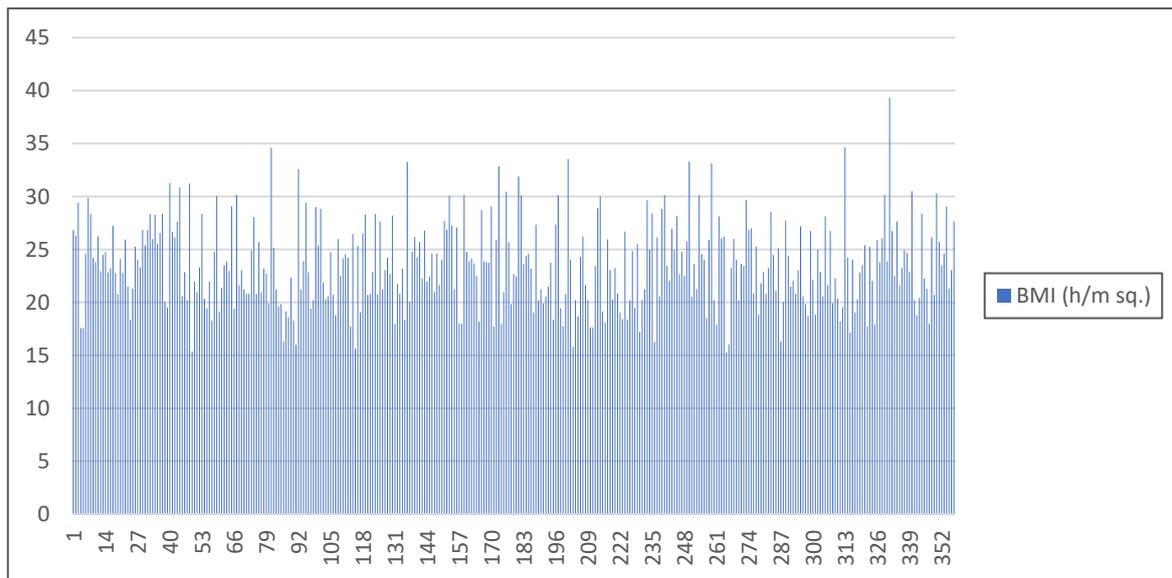


Figure 1: BMI of the participants (x-axis: number of participants, y-axis: BMD).

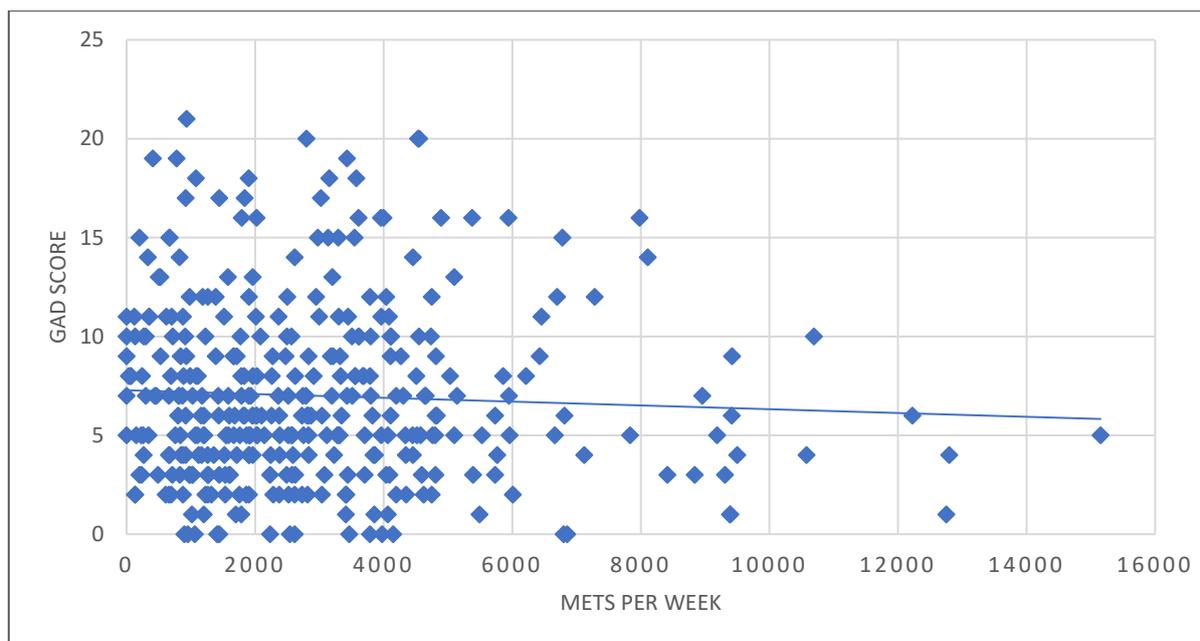


Figure 2: Scatter plot for METS/week versus GAD-7 score showing a negative correlation ($r=0.05$) and not statistically significant; ($p=0.342$).

DISCUSSION

The primary aim of this research study was to understand the impact of COVID-19 lockdown on the levels of physical activity and general anxiety amongst practicing physiotherapists, physiotherapy teaching faculty and students residing in the city of Mumbai, India. The study suggests that physiotherapists as a group spent very little time on vigorous activity and only 40% were indulging in health enhancing physical activity per week. This is not in keeping with the current WHO guidelines, which emphasizes that everyone, of all ages and abilities, should be physically active and that every type of movement counts. The new guidelines recommend at least 150 to 300 minutes of moderate to vigorous aerobic physical activity per week for all adults, including people living with chronic conditions or disability, and an average of 60 minutes per day for children and adolescents.¹⁷

Contrary to previous studies, physiotherapists appear to be less anxious as a group with a mean GAD-7 score of 7 out of 21 (moderate anxiety).^{5,10}

We speculate that the main reason for this is possibly good coping strategies among physiotherapists, such as good family support, engaging in hobbies, following healthy eating habits and sleeping patterns, doing household chores, exercising regularly, yoga/meditation, and so forth; help to maintain positive attitudes and decrease the stress levels. Another reason could be the inherent bias in the survey responses.

Previously Srivastav et al conducted a study on physiotherapy professionals and students and found that there was a significant reduction in self-reported physical activity and energy expenditure levels ($p<0.0001$).⁹ Similarly, another study done by Puntambekar et al found that the mental wellbeing of exam going undergraduate students was severely affected due to the COVID-19 lockdown.¹⁰

We found multiple studies looking at healthcare professionals anxiety levels during the COVID pandemic. Wilson et al conducted a survey across India specifically looking at healthcare professionals working with COVID patients during the start of lockdown in April 2020.¹⁸ Their findings were similar to ours with 33% and 48% experiencing no or mild anxiety respectively and only 13% and 4% experiencing moderate to severe anxiety. This is in contrast to a similar study reported from Wuhan, the epicentre of the pandemic. Zhu et al reported the prevalence of stress, depression and anxiety levels to be 29.8%, 13.5% and 24.1% respectively in over 5000 health care professionals.¹⁹ One of the reasons for the lower anxiety levels in current study could be due to the fact that our study was conducted much later during the lockdown period in India, by which time there was more information available about the COVID-19 virus transmission, risk groups and prevention strategies.

Gupta et al performed a survey among 769 Indian armed forces doctors and found much higher anxiety levels of about 28.2%.²⁰

Social isolation has been shown to be significantly associated with reduction in physical activity along with self-reporting of multiple health risk behaviours.²¹

Many national newspapers also reported that the healthcare professionals including practicing physiotherapists, teachers and students on COVID-19 duty had to quarantine themselves in the hospital dormitories or hostel and hotel rooms provided by the government.²² Staying away from family can add to the feelings of sadness, loneliness and anxiety.

In case of teachers, researchers and students, these findings could be attributed to the closure of universities and colleges that offer limited technological support and knowledge resulting in uncertainty about the future. The current pandemic places demand on students and teachers alike to adapt to online teaching albeit with limited resources, thus resulting in above normal stress levels. For students, the uncertainty regarding their exam conducts and pattern and also future career can be worrisome.

Clearly, the establishment of a structured protocol for the affected sections of society is much needed, so as to enable them to remain resilient even during such trying conditions. Measures need to be installed by university or college admins to look after the physical health via virtual exercise sessions and mental health via online interactive and/or counselling sessions.

This study found that the proportion of participants with severe anxiety was highest in the HEPA group (12%) compared to minimally active (7%) and inactive group (5%). This is contrary to popular beliefs of mental health being better in physically active people. The only explanation we can speculate is that the attempt to exercise more could be a coping strategy to feel better during the anxious periods.

97% of the participants were in agreement with a direct relation being present between physical activity and mental well-being. However, on performing the Pearson correlation coefficient between the METs/week and GAD-7 score, there was very poor correlation found ($r=-0.05$) and this was not statistically significant ($p=0.342$), thereby, signifying an inherent bias in the response to the survey questions.

Strengths and limitations

The strengths of this study were that the method of survey was cost-effective, minimally time consuming, easily accessible by participants and eco-friendly. A good response rate was obtained. (89.25%). It is also unique in that it looks at a single sector of healthcare professionals in an urban setting. We do acknowledge that our study had a few limitations. The study was limited to the physiotherapy professionals, teaching faculty and students who had smartphones, laptops and other

electronic devices supporting social media apps such as whatsapp, instagram and facebook messenger, along with proficiency in english language. One of the other major drawbacks of this study is not having the pre-lockdown data on physical activity levels to compare it with COVID-19 lockdown. Lastly this study acknowledges the inherent biases of a survey.

CONCLUSION

The lockdown caused by the COVID-19 pandemic has affected the physical activity levels and mental wellbeing of physiotherapy students more than the physiotherapy teaching faculty and practising physiotherapists. No significant correlation was found between physical activity levels and mental wellbeing.

There is a definite need to establish guidelines by physiotherapy councils and government for the physical and mental welfare of not just physiotherapy professionals, teachers and students but for all healthcare professionals.

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