

An analysis of the effect of COVID-19 lockdown on the Physical Activity patterns and mental well-being - A cross sectional study in India.

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Abstract

Strict lockdowns were imposed in India in response to COVID-19 pandemic. These preventive measures influenced the regular life style routine of people and had a significant impact on their health.

Research trends reported an increase in sedentary behaviors. There were reports indicating an increase in psychosocial dysfunction within the population in that period.

It is interesting to note the changes in physical activity pattern over the course of the pandemic and the effect of the lock down on mental well-being.

Materials and Methods: This was a cross sectional observational study. A Google form with multiple choice questions and open-ended questions was administered to the volunteers above 18 years of age. physical activity was assessed by the IPAQ (International Physical Activity Questionnaire).

Psychological function was assessed by the WHO-5 well-being index.

Results: A 100 participants enrolled in the study. The study population was a mix of people across all spectrums of society. We noted an increase in the number of those pursuing an exercise activity during the pandemic. Many started indulging in low intensity physical activities.

29% of the population was found to have a high likelihood of depression based on their scores.

Conclusion: The lockdown negatively impacted the mental health of the population. This study found an alarming prevalence of poor mental well-being in the population. Increase in physical activity levels alone won't suffice to stem the rise of the same.

There is a need of a structured diagnostic and therapeutic program to tackle this problem.

Keywords: COVID – 19, physical activity, mental state, wellbeing

Original paper

COVID-19 is one of the deadliest infection challenging medicine and health care all over the world today. India was not spared. An increasing trend of cases observed in the later part of 2019. The sudden upsurge in cases caused the WHO to declare COVID-19 as a pandemic and the whole world adapted strict isolation and social distancing norms to slow the infection rates.¹

By March 2020 a strict lockdown was imposed in India too. These preventive measures influenced the regular routine life style of people and had significant impact on their health. Optimal health requires adequate sleep, exercise and a good diet, also called as the three pillars of lifestyle. Research trends reported an increase in sedentary behaviors, such as spending excessive amounts of time sitting, reclining, or lying down for screening activities during lock down period. This influence physical activity and exercise pattern.² According to Berger, physical activity and psychological factors are interrelated.³

One of the recent study conducted in Brazilians showed worsened mental health during the first month of COVID-19 quarantine and these changes are associated with various factors like age, gender, education, financial difficulties, friends; family disagreements; sleep and frequency of exercise during the pandemic.⁴

Hawryluck et al examined the effects of quarantine on people living in Toronto, Canada during the SARS epidemic outbreak and had reported high prevalence of psychological distress in them.⁵ The longer the period of isolation, the greater the risk of symptoms appearing. It is interesting to

know how physical activity pattern has changed over the course of the pandemic and how physical activity interacts with well-being.

Physical Activity (PA) means any bodily movement produced by skeletal muscle which requires energy expenditure. It can be any bodily activity that enhances or maintains physical fitness.

Physical Activity can be assessed by IPAQ (International Physical Activity Questionnaire).⁶

As threat of the pandemic increases, stress levels tend to increase. But there is individual

variation in coping responses which can reflect health behavior and well-being. The World

Health Organization (WHO) defines mental health as “a state of well-being in which the

individual realizes his or her own abilities, can cope with the normal stresses of life, can work

productively, and is able to make a contribution to his or her community.” Wellbeing can be

assessed by using simple tool like the WHO 5 well-being index.⁷

There are very few studies correlating exercise pattern and psychological changes amongst the population during COVID lockdown period in India. Pune was one of the worst affected cities in India. Therefore, this research was planned to examine how the public health protocols against COVID-19 pandemic, like isolation and social distancing, impact physical activity and mental well-being of adults residing in Pune city.

Aim of the project was to study the effect of lockdown in COVID -19 pandemic on physical activity and well-being in adult population. These objectives were achieved by online survey.

Physical activity was assessed using subjective questionnaire. Physical activity was measured using IPAQ (International Physical Activity Questionnaire). Wellbeing was evaluated with WHO 5 well-being index and physical activity and wellbeing were compared in

adult population residing in lockdown of COVID -19 Pandemic.

Materials and Methods

This was a cross sectional observational study carried out in Pune city. Participants of this study included adults over the age of 18 years who had been in social isolation due to COVID -19 lockdown for at least a period of two months. Volunteers were recruited via social media and social messaging applications.

Volunteers below 18 years and volunteers on antipsychotic medication or on hormonal therapy were excluded.

Institutional ethical committee approval was received as per protocol. The volunteers were briefed about the study and an informed consent was obtained from them. A Google form with multiple choice questions and open-ended questions was administered to the volunteers. The questions included information regarding types of exercises, duration of exercise per day or week and time spent for television, internet surfing, playing video games /computer games etc.

Physical activity was assessed by the IPAQ (International Physical Activity Questionnaire). The IPAQ (short) questionnaire includes information about walking, moderate-intensity activities and vigorous- intensity activities.

The WHO-5 well-being index⁸ is a short, self-administered questionnaire covering five positively worded items, related to positive mood (good spirits, relaxation), vitality (being active and waking up fresh and rested), and general interests (being interested in things). It has shown to be a reliable measure of emotional functioning. Each of the five items were rated on a 6-point Likert scale from 0 (=not present) to 5 (=constantly present). The raw score ranges from 0 to 25, 0 representing worst possible and 25 representing best

possible quality of life. A score below 13 indicates poor well-being. If the raw score is below 13 or if the patient has answered 0–1 to any of the five items, it is an indication for further assessment to confirm depression.

Data was analyzed in percentage for multiple choice questions and for comparison of physical activity and wellbeing index.

Results

Table 1: Demographic data of the respondents

Age (years)		
	18-30	36
	30-40	5
	40-50	29
	50-60	24
	60-70	6
Gender		
	Female	61
	Male	39
Diet preference		
	Veg	55
	Nonveg	6
	mixed	39
Marital status		
	Married	62
	Non-married	38
Educational Status		
	Graduates	19
	Post graduates	49
	Under graduates	32
Comorbidities		
	Hypertension	17
	Diabetes	7

Table 2: Time spend on various activities

Time	Before lockdown	During lockdown
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spends on	Less than 8 hrs.	More than 8 hrs.	Less than 8 hrs.	More than 8 hrs.
Job	40	60	60	40
domestic chores	81	19	43	57

Table 3: Population pursuing exercise activity

	Before lockdown	During lockdown
Number of people (out of 100)	90	92

Table 4: physical activity

Type of exercise	Before lockdown		During lockdown	
	Less than 30 mins	More than 30 mins	Less than 30 mins	More than 30 mins
Walking	47	48	60	36
Yoga	26	19	28	35
Jogging	14	7	17	6
Gym	10	18	9	12
Aerobics	11	7	9	11
Swimming	9	1	10	None

Table 5: wellbeing index

	Males		Females		Total
Number of participants	39		61		100
Number of participants with score above 13	28	39.43	43	60.56	71
Number of participants with score below 13	11	37.93	18	62.06	29

participants answer 0 or 1 for one or more question	8	34.78	15	65.21	23
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Discussion

The study made an attempt to evaluate the exercise pattern and mental being of a cross section of society. A total of 100 participants enrolled in the study. The use of an online questionnaire eliminated the need of physical contact in that dreaded period of isolation and quarantine. Table No 1, the demographic analysis of the data showed a female preponderance in our subjects with the number of female participants (61) being almost double that of the male participants (39). The largest age group was of the young adults in the age group of 18-30 years (36) followed by subjects in the 40-50 years age group (29) and the 50-60 years age group populace coming in third at 24. Suffice to say, that the analysis included a diverse study population across all age groups, which was invaluable to study variables across the whole spectrum. On a more personal front, Majority of the study sample preferred a vegetarian diet 55. This may be indicative of the changing dietary trends across the country. 62 subjects were found to be enjoying marital bliss, whether this contributed to any mental stress is a topic more reserved for humorists. The population in question was highly educated, consisting of a majority of post graduates followed by 32 undergraduates and 19 graduates. Corresponding to this level of education, more than half of the study population was either in service or pursuing their own business. They were also well aware of any co morbid conditions that they were having. This allowed us to take a detailed past history. 17 of the study population had previously diagnosed hypertension, while only 7 had a history of detected Diabetes Mellitus.

The study then attempted to analyze their working patterns. It was noted that before entering their lockdown period, 40 of the participants spent less than 8 hours on their job and nearly 60 participants were spending approximately 8 hours in the pursuit of their occupation. Post the implementation of lockdown, 60 of the populace were spending less than 8 hours on their job (Table No 2). The number of people spending 8 or more than 8 hours dropped by almost 10% each. Similar results were also noted by other researchers.⁹

On the home front, it was interesting to note that 81 of the population were spending less than 8 hours in domestic chores and only a mere 19 devoted more than 8 hours to it. With the lockdown, the number of people spending more than 8 hours on their daily domestic chores almost tripled to 57 (Table No 2). There was also an increase in those spending approximately 8 hours in pursuit of the same. In another study in India also found that increased hours spent on domestic work during lockdown that too by males.¹⁰

90% of the study sample was exercising before the lockdown phase. A slight increase in this fraction was seen during the lockdown phase (Table No 3).

This was consistent with the findings of Constandt B¹¹. he reported increased activity levels in those population groups who were physically active even before the lockdown.

Imran FA¹² also reported significant increased number of people indulging in physical exercise during lockdown and household activity also increased in that period.

however, Lefferts EC¹³ reported contrasting findings, studied the populace across the further waves of the pandemic and concluded overall, physical activity levels significantly below “pre-pandemic” levels.

In our study, majority were focused on low intensity exercises like walking. 47% walked for less than 30

minutes before the lockdown, and this number increased to 60% during the lockdown. Those who spent more than 30 minutes in the same, dropped down by almost 9%. Jogging was not preferred by almost 75% of the study population before and even during the lockdown. Of the remaining people indulging in jogging, only 7 % were active for more than 30 minutes; even this number dropped down to 6% in lockdown (Table No 4).

Around 45% of the sample size were involved in yoga before the lockdown, 19% for more than 30 minutes and around 26% for less than 30 minutes. Possibly due to the increased number of online yoga coaching activities and the ease of doing yoga at home; there was a significant jump in the number of active yogis in the lockdown. A total of 60% sample were involved in yoga, with 35% practicing for more than 30 minutes. Tronco et al also analyzed the exercise patterns of remote workers in the lockdown period and noted that there was a significant increase in the population carrying out low intensity exercises like walking and yoga.¹⁴ In studies carried out to evaluate the effect of yoga on mental stress, yoga had a more significant impact on patients with schizophrenia than exercise or no intervention.¹⁵

This concluded our analysis of exercise pattern.

For evaluating the mental wellbeing aspect, we calculated the WHO wellbeing index score of the participants. 29% were found to have a score below 13 (Table No 5). These findings point towards high likelihood of depression amongst these 29%. Further evaluation by major depression inventory score is essential for them.

Multiple studies have repeatedly highlighted the poor mental well-being of the Indian population. Psychological distress was observed in almost half the study population. Around three quarters of the cases reported poor well-being.^{16,17}

These figures are significantly higher than those observed in this study. In many cases depression goes undiagnosed and unrecognized. The dire consequences can be impaired social relations or even suicide.

Moreover, those undiagnosed, if they are not properly treated, they carry a high risk of snowballing into a more deviant lifestyle which can negatively impact their private lives as well as society as a whole.

Physical activity positively impacts the immediate mood of participants. In fact, research suggests an inverse correlation between depression and physical activity. This effect is not gender biased.

It is interesting to note that it is the amount of time spent in being physically active than the intensity of activity that is correlated inversely with depressive mood. As reported by a multitude of researchers, even regular walking has a positive impact on mental health. 18

High level of mental and psychological dysfunction found in the adult population found via our study is a matter of concern.

The lockdown adversely affected several variables that could have negatively impacted mental health. Exercise pattern showed a positive increase. In spite of the same there was a 29% likelihood of depression.

This points to the fact that the rate could be even higher in time periods with levels of reduced physical activity.

This points to the need of a wider mental health survey, to be taken at an administrative and social level, amongst the population with proper implementation of counseling facilities across the state.

An impetus to physical activity levels should be provided not only in schools but also in society as general to help combat the high levels of psychological dysfunction.

Conclusion

On thorough perusal of the results of the study we can conclude the following findings.

People were certainly more active during lockdown period. This increase in activity levels did not have a more positive effect on wellbeing. Exercise being only one of the factors affecting psychological health, did not mitigate the rise of psychological depression up to a desired extent.

The wellbeing criteria went on to show that the percentage of population with psychological involvement during lockdown was comparable to the level in the pre COVID period. It is important to note that there was no proportional increase in wellbeing in spite of rising stress levels. This may be attributed to the supportive social structure in India as well as the increase in physical activity levels.

The pandemic and the lockdown was an unprecedented event. It is pertinent to note the findings of our study for any further such global events. Special attention must be paid to the mental well-being of the population. Any increase on the prevalence levels of psychological involvement must be noted by frequent screenings of the population. Measures to improve the same should be implemented with involvement of a trained psychiatrist.

An impetus must be provided to improve the physical activity of the population to support them and help them to tide over these dire times.

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