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Impact of the COVID-19 lockdown on physical and mental health in the general population: a cross-sectional study

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ABSTRACT

Background

The Covid-19 uncontrolled spread has compelled the people to stay confined within their houses posing a threat on their physical and mental health.

Aim

To determine and describe the impact of a physical lockdown in an attempt to limit the spread of Covid -19 on physical and mental health of general population.

Methods

A cross-sectional study was conducted to recruit the participants by conducting online survey. A multistage cluster random sampling survey was conducted on 384 adults from all over India. The survey questionnaire consisted of SF-8 health questionnaire along with other area of interest questions related to the lockdown.

Results

Descriptive analysis, T-test for difference of mean between the physical (PCS) and mental component score (MCS) and Pearson correlation test was performed to see the association between the physical and mental components of SF-8 at p value ≤ 0.01 by using SPSS version 20.0. The respondents were 180 male and 204 females. The PCS and MCS were found to be above average i.e., 75.22 and 68.05 respectively. However, significant difference was seen between the PCS and MCS. A significant positive correlation was seen between the PCS and MCS, physical activity and PCS, as well as between physical activity and MCS at p value < 0.01 . The psychological status was found to be slightly affected in 48.4% of population.

Conclusion

The physical and mental health score was found to be above average but mental health was more affected than physical health.

Keywords: COVID-19, Lockdown, Physical health, Mental health.

INTRODUCTION

The 2019 coronavirus disease (COVID-19), started as an epidemic has now become a pandemic

of global concern [1]. In an absence of any vaccination and cure of Covid-19, the government of worldwide including the Indian government has ordered people to stay at home, practice social

distancing, so as to prevent the spread of the virus as well as limit the chances of getting infected [1]. Due to this house arrest condition the physical activity level of people is also likely to decline affecting their physical health. Thus, the overall QOL of individuals is compromised due to this global threatening disease [2]. Most of the studies related to this outbreak have been found to focus on the epidemiology, clinical manifestations [3], identifying the genome of the virus [4] and challenges faced by the global health governance [5]. A few studies has been reported to comment on the psychological health status [1, 7, 8, 9] but based on our understanding no studies has seen the impact of this lockdown on the physical health of the people, neither the relationship between the physical and mental health has been reported yet on the general population in India.

In the current study SF-8 health survey questionnaire was employed and has been found to be a reliable and valid tool to assess physical and mental health in a situation like this lockdown [6] and it consists of all the significant components required for the assessment of physical and mental health of general population.

Thus, the aim of the current study is to determine and describe the impact of a physical lockdown in an attempt to limit the spread of COVID -19 on physical and mental health of general population and a secondary objective to see the relationship between the physical and mental health during this situation. This may assist government agencies and healthcare professionals in creating policies and interventional therapies to will safeguard the mental and physical wellbeing of the community in the face of COVID-19 outbreak expansion in India.

MATERIALS AND METHODS

A cross-sectional study was conducted to recruit the population after getting ethical clearance from the Institutional review board. The sampling technique employed was multistage cluster random sampling. An online survey was conducted in which the participants were invited to fill the questionnaire which consisted of SF-8 health survey along with few areas of interest questions related to this lockdown.

The population consisted of 385 individuals, age 18 years and above, both males and females.

The sample size was calculated by using Slovin's Formula [10]. i.e., $n = N / (1 + Ne^2)$, where, n = sample size; N = total population, e = margin of error (5%).

The questionnaire was in English language and thus English speaking and writing population was included. All participants were provided with informed consent before proceeding with the filling up of survey questionnaire. Data was collected within 7 days i.e., since 14th May, 2020 to 20th May, 2020.

THE SURVEY QUESTIONNAIRE

Sociodemographic data were collected on gender, age, education, state/ city, employment status, annual income (optional). The respondents were asked about their viewpoint on this lockdown, if they are working from home, number of working hours, their psychological status, feeling of panic, fear of catching infection, financial burden, job insecurity during this lockdown, effect of lockdown on social and family relationship, effect of lockdown on chronic medical condition, on sleep cycle, involvement in any physical activity/ physical exercise. Apart from these areas of interest questions SF-8 survey questionnaire was included. The SF-8 questionnaire consists of 8 domains i.e., General Health, Physical functioning, Role Physical, Body Pain, Vitality, Social functioning, Role emotional and Mental health. The first 4 components represent the physical component and the remaining 4 represent the mental component. It is based on a recall period of 4 weeks. It is a self-administered questionnaire. Norm based scoring is done in which each component is scored between 0 to 100 where 100 represents the highest functioning level. Then the score of each specific area i.e., physical component score and mental component scores are averaged together. The score above 50 are considered to be above average.

The SF-8 questionnaire was used earlier in in situation where people were kept in lockdown to assess their physical and mental health status 6. It was found to be reliable with good test-retest interclass correlation of 0.61 for Physical component score (PCS) and 0.68 for Mental component score (MCS) [6].

RESULTS

Data of this study was compiled in Microsoft excel sheet and it was analysed on SPSS version 20.0. The demographics of the subjects were analysed by descriptive statistics. The statistical values were expressed as mean \pm SD. Independent T-test was used to compare the mean of the PCS and MCS. Association between the PCS and MCS;

Working hours and MCS was determined by using Pearson correlation. Association between Physical activity and MCS; Physical activity and PCS were determined by using Point Biserial correlation. Statistical significance was fixed at p value \leq 0.01. The sample of the current study consisted of general population of 384 participants. The demographics are depicted in table 1.

Table 1: Demographics

	Male	Female
Number	180	204
Age (mean \pm SD)	28.8 \pm 6.9	27.1 \pm 6.9

The physical and mental health was evaluated by using SF-8 health survey by scoring the responses according to Physical component score (PCS) and Mental component score (MCS). A significant difference was found between the mean of PCS and MCS by doing independent T-test at t value of 5.16 and level of significance i.e., p value $<$ 0.01. The mean + S.D. of PCS and MCS scores were found to be 75.2246 \pm 17.13 and 68.0501 \pm 20.90 respectively.

A significant positive correlation was found between PCS and MCS scores by using Pearson

Correlation test. Moreover a positive correlation was seen between the involvement in physical activity and MCS as well as involvement in physical activity and PCS by using Point Biserial correlation as one of the variable (involvement is physical activity) is categorical (yes/no) while PCS is continuous variable. Whereas, no association was found between the PCS and number of working hours. The results of all the associations are depicted in the correlation table i.e., table 2.

Table 2: Correlation Table

Relationship between	Correlation coefficient(r)	P value
PCS and MCS	0.612	0.000*
Physical activity and PCS	0.327	0.000*
Physical activity and MCS	0.247	0.000*
PCS and working hours	0.06	0.176**

* Significant, p value \leq 0.01, ** non- significant, p value \geq 0.01

The results showed that a majority of the population i.e., 95.1 % agreed that this lockdown is a good step taken by the government while 1.3 % did not think it as a good step and 3.6 % were not sure about this step of government.

Data analysis revealed that the PCS and MCS of SF-8 were above average (50) i.e., 75.22 and 68.05 respectively in the current study population. Thus, showing that the physical and mental health was good. About 71.6 % of the population was physically active and involved in some kind of exercises while 28.4 % were not doing any physical activity. However, when evaluated the results of the psychological status it was seen that it was found to be slightly affected in 48.4%, moderately in 21.6

%, severely in 3.4 % of the population. About 26.6% of the population reported their mental status to be not at all affected by this lockdown. As well as, a majority of 47.7% of the population feel panic sometimes during this lockdown period while 46.9 % reported no panic at all and 5.4% of the population feels panic most of the time. About 67.7 % of the population were afraid of catching the infection sometimes, 13.5% most of the time and 18.8 % did not fear at all. Apart from this, the sleep cycle was disturbed in 60.9 % of the population and not affected in 39.1%.

About 48.7% of the population was found to be working from home during this lockdown period while 51.3 % were not working from home. Most

of the population 54.9% of the population did not feel any job insecurity, 30.2% sometimes and 14.8% most of the time. It was seen that 15.4% of the population felt financial burden during this lockdown period. 42.4% of the population did not feel any financial burden while 42.2 % feel financial burden sometimes.

Social life was found to be worsened in 35.4% of the population, improved in 15.1 % and no effect in 49.5% of the population. Family relationships were reported to be improved in 51.6%, worsened in 3.9% and not affected at all in 44.5% of the population.

The effect of media was found to be mixed (both good and bad) on majority of the population i.e., 39.6%, neutral in 32.6%, bad in 18.8% and good in 9.1%. Chronic medical conditions like B.P., Diabetes, and joint arthritis were not worsened in 84.4%, worsened mildly in 11.2%, moderately in 3.9% and severely in 0.5% of the population.

DISCUSSION

The aim of the current study was to see the impact of COVID-19 lockdown on physical and mental health of the general population, for which 384 participants were recruited through online survey by using Google forms. The survey form was distributed among the population through emails and other messenger applications.

COVID-19 is a global threat which is highly infectious and the government has announced lockdown in which all the citizens are staying at home to protect themselves from getting the infection and to prevent its spread¹. In the current study 95% of the population agreed that this lockdown is a good step taken by the government. But if we talk about lockdown it has affected the mental health of the people as they are confined within their houses and there is a change in their daily routine [1]. This is further supported by the findings of our study in which the psychological status was found to be affected slightly to moderately in majority of the population. Again as reported in the current study on evaluating the physical and mental health by using SF-8 health survey, most of the participants responded their overall health to be good i.e., above average score (>50 out of 100). These findings are in accordance with the study of Wang C and colleagues, 2020 in

which majority of the participants responded their overall health to be good during the lockdown period¹. While on evaluating the mental and physical health separately, though the score again was above average but the score of the mental component was found to be significantly less than physical component. About 20% of the population scored their mental component below 50 while in case of physical component only 6 % scored below 50. This can be supported by the fact that in the current study 71.6% of the population was involved in some kind of physical activity.

Physical and mental health is associated with each other [11, 12]. Even in our study a significant correlation was found between the physical component score and mental component score. As well as, the involvement in physical activity was found to be positively correlated with physical and mental component score. Thus, signifying that, being involved in physical exercises has a positive impact on the physical as well as on mental health and this could be one of the measures taken by people to keep their overall health good during this lockdown period.

COVID-19 has disrupted and slowed down the Indian economy [13]. Dev SM and colleagues reported in their study that the rate of unemployment has increased and there is an expected decline in the employment. Due to these reasons people have developed a feeling of job insecurity [13]. Even in our study about 30.2% of the population reported to be insecure about their job sometimes. Further in the current study 42.2 % of the population felt financial burden sometimes and the percentage of the people who did not feel financial burden at all was also same 42.4%. This could be because most of the participants were qualified professionals and belonged to good financial background. In order to reduce the impact of this lockdown on economy and academic sector people were encouraged to do work from home as well as classes are taking place through online portals. Due to this, people are compelled to spend a lot of time on laptop/ mobile. In our study the average time spent on laptop/ mobile was 5 hours though the maximum time reported was 10-12 hours. All these factors again may be responsible for the negative impact on the mental health and psychological status of the population.

A large number of the population i.e., about 67.7% were worried of catching the infection and

these findings are in accordance with the study done by Chakarborty K and colleagues, in which 50% of the population feared of contracting the infection even when they did not come in contact with any infected person [14].

This lockdown has found to have a positive impact on the family relationship as reported in this study that 51.6% people had improved relationship with their family members. However, 35.4% reported that their social life has worsened during this lockdown.

The role of media is very critical in conveying the correct information related to the spread of the disease and the measures taken by the government to control the same. In the present study, only 9.1 % reported that media is playing a positive role. Majority reported mixed i.e., both positive and negative role played by the media. It is the duty of the media, not to highlight only negative news but also display the positive measures and news with the same effort. As media is also playing a role towards mental and psychological status of the people.

The study has limitations too. The survey was conducted online, due to which the uneducated/ economically weaker section/ labourers could not

be included in the current study. Thus, these results cannot be generalised to overall population of India. Our study was a first attempt to see the effect of this lockdown on physical health which was found to be good as most of the people were physically active during this lockdown.

Thus, our findings suggests that there is need to develop physical and psychological interventions that can minimize anxiety, depression, stress and improve physical activity during the outbreak of COVID-19.

Thus it can be concluded that the physical and mental health was found to be good during this period of lockdown but mental health and psychological status was found to be more affected. This could be due to various factors like fear of catching the infection, job insecurity, financial burden, adverse effect of media and disturbed social life.

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