Mental Health Outcomes Among the Indian General Population Exposed to COVID-19 Lockdown Compared to Pre-Lockdown Conditions

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Abstarct:

The COVID-19 pandemic, declared a Public Health Emergency of International Concern in January 2020 and a global pandemic in March 2020, necessitated stringent public health containment measures worldwide. In India, a nationwide lockdown was implemented from March 24, 2020, to mitigate community transmission. While effective in infection control, prolonged restrictions on mobility, social interaction, and economic activities raised concerns regarding mental health and psychosocial well-being. Public health emergencies of this magnitude are associated with adverse psychological outcomes, including stress, anxiety, depression, and functional disruptions.

Objectives: This study aimed to assess the impact of the COVID-19 lockdown on mental health status and daily lifestyle among the general population in India, with specific assessment of stress, anxiety, depression, mood disturbances, and coping strategies conceptualized through the optimism (persisting) and adaptation (shifting) framework. Demographic determinants of these outcomes were also examined.

Methods: A descriptive cross-sectional online survey was conducted during the complete lockdown period (March–May 2020). A structured self-administered questionnaire was developed using validated constructs from the Perceived Stress Questionnaire, Generalized Anxiety Disorder Scale (GAD-7), Patient Health Questionnaire (PHQ-9), Mood Disorder Questionnaire, and the Shift-and-Persist model. The survey was disseminated via digital

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platforms, yielding 90 completed responses. Statistical analysis was performed using SPSS version 25. Stepwise multiple regression was applied to identify demographic predictors, including age, gender, education, occupation, marital status, and housing characteristics.

Results: Disruption of daily routines was reported by 94% of participants, whereas 82% experienced improved family engagement. Financial strain was prevalent. Common psychological manifestations included sleep disturbances (46%), irritability (38%), anticipatory fear (>50%), and mental fatigue (~35%), with higher symptomatology among females. Higher educational attainment significantly predicted lower stress and anxiety levels and greater adaptive coping, while marital status predicted mood variability.

Conclusions: The lockdown exerted dual psychosocial effects, characterized by enhanced familial cohesion alongside substantial psychological distress, highlighting the necessity for targeted mental health strategies during large-scale public health emergencies.

Keywords: Public Health, Lockdown, Pandemic, Covid-19, Mental Health, Stress, Anxiety, Depression, Mood Swings, Shift, Persist, Optimism

Introduction

Since December 2019, there had been outbreak of infection of unknowing virus which was first reported in Wuhan, China. Soon, it was discovered as novel coronavirus, and the infection was termed as Covid-19. Soon after, In January 2020, WHO declared the outbreak of Covid-19 to be a public health emergency of international concern and in March 2020, it was declared as a pandemic by WHO. Very soon, the virus has spread to most of the nations in the world, including India. On January 30, 2020, the very first case of Covid-19 was reported in Kerala, where a student had returned from Wuhan, China. Eventually, the cases of Covid-19 were reported from almost all states of India. To contain this spread of pandemic, Indian government decided to lockdown the country. Lockdown means to restrict the movement of people instituted as a security measure. Initially, after observing a one-day lockdown, on March 22, 2020, complete country lockdown was announced on March 24, 2020, for 21 days ending on April 14, 2020 just to start the battle against Covid-19. Lockdown was done in order to reduce the transmission of this disease and virus from person to person. Through the lockdown government aimed at zeroing the possibility of community spread. Through social or rather physical distancing, breaking the vicious cycle of transmission was the only solution visible[1].

During Lockdown in India, all the religious, cultural, social, political, sports, academic activities were banned. All the malls, cinema halls, markets, shops, places of worship were closed during the lockdown period. Due to this lockdown, a slowdown in spread of this virus there has been observed. The 1,00,000-mark was delayed by almost three weeks due to the lockdown, that was first imposed on March 24, as the Computer modelling projections reportedly claimed that at the rate the disease was spreading in the country during then, with no lockdown put in place, the country would have reached the 1,00,000-mark by the end of April. The lockdown showed its impact in slowing down the spread of Covid-19, which was less than 35,000 cases in the country in the end of April 2020.

This pandemic is having a strong effect on health of general population- both physical health as well mental health. According to Inter-Agency Standing Committee (IASC), Complicated humanitarian crises can have a significant bearing on psychological health and quality of life of the affected people and remain for a protracted period even after the crises. And here, almost every single person in the world is at risk of being affected. This time of crisis is creating stress throughout the population. In many countries affected by this pandemic, there has been a great stress on healthcare system and services, in addition to which, the psychological support needs of people facing this pandemic period is continuously rising. Outbreaks or epidemics like this can have a substantial impact on the infected patients, on persons who are quarantined, on social sustenance systems and also on the healthcare professionals and the healthcare system.[3]Everyone is affected and no-one escapes the impact on mental health and the health professionals working at the coalface of providing care yet suffering in silence.

Long term impacts of Covid-19 and social distancing on mental health are not known, but worries and reservations about such disease are obvious, as they cause a damage to regular social and economic functioning. Economists and analysts have anticipated unemployment, depleted social safety nets, starvation, etc. due to social and economic gaps exposed by this pandemic, which will result in chronic stress, anxiety, depression, alcohol dependence, and self-harm.[5] This paper aims at discussing the impact of lockdown on mental health of population, including factors like stress, anxiety, depression, mood swings, optimism and pessimism. The perception of people about lockdown and its impact on their daily lives have also been discussed.

Methodology

A cross-sectional study was performed, which was descriptive. Being Covid-19 latest issue for research, very few verified and standardized research were available for review purpose. The paper seeks information from trusted and verified sources such as websites of Ministry of Health and Family Welfare, GoI, World Health Organization, newspapers, and other trusted media sources. E-survey was conducted, where data was collected online from Indian nationals during the complete lockdown period (March 24-May, 2020) to understand their thoughts and behaviour during this period of lockdown due to COVID-19. Effect of lockdown was tried to be assessed through following framework (Figure 1):
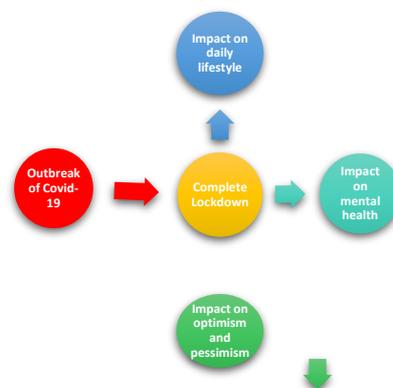

Fig.1: Framework for analysing the possible mental health implications due to lockdown

A self-administered questionnaire was developed after considering many standardised psychological instruments for assessing mental health conditions. For assessing the respondents for stress due to lockdown situation, the instrument Perceived Stress Questionnaire developed by Levenstein et al was referred. [6]Similarly, to assess anxiety, Generalized Anxiety Disorder Questionnaire (GAD-7) was referred.[7]For assessing Depression and mood swing traits due to lockdown, Mood Disorder questionnaire and Patient Health Questionnaire-9 were referred.[8,9]The questionnaire also tries to assess the strategies used by people for dealing with stressful situations- shifting which means accepting stress and getting used to it; and *persisting*, which means being optimistic and finding purpose in tough times. Instrument named Shift and persisted developed by Developed by Edith Chen and colleagues (2015)[10] was also referred while developing the e-survey tool.

Participation was voluntary. Rights to privacy and confidentiality were maintained during this data collection and writing this paper. The tool was shared through social media platform like Facebook, WhatsApp and emails to direct and indirect contacts. A total of 120 respondents could be reached, out of which, 90 respondents gave their consent to participate in the study. The data was collected and analysed in SPSS. Stepwise Multiple Regression was applied to analyse the scores, effect on mental health being the dependent variable, and other variables like Age, Gender, Educational level, Occupation, type of house, etc. being the independent variables.

Results & Discussion

This section is divided into sub-sections describing socio-demographic profile of respondents, effect of event on daily lifestyle, mental health, and personality dimensions of optimism and pessimism of respondents.

Socio-Demographic profile of respondents

Out of 90 respondents, 53 per cent were men, which shows reflected realistic demographic sex ratio. The age of the respondents ranged between the age group of 19-68 years with an average age of 34 years. Most of them (68 per cent) were between the age group of 26 to 50 years followed by 22 per cent between age group of 19 to 25 years, 10 per cent above 50 years of age.

A vast majority (90 and 94 per cent) of the respondents were urban and at least graduate respectively. Around 56 per cent of the respondents were married while 40 per cent were unmarried. Around 68 per cent of the respondents' dwell in their own houses, while around 32 per cent live in rented houses, which again might burden them to pay the house rent even in this situation of no-income to many. This factor emphasizes on financial pressure one has to handle during this lockdown as it can be seen from the data that around half of the respondents (49%) were employed into private sector which does not guarantee salary for the lockdown period. Around 13 per cent each were on government jobs and doing small business. Business has been hindered a lot due to this lockdown, which again puts them under financial stress. Other 25 per cent comprised of students, housewives and unemployed. Average number of

family members living together was four, implying that loneliness might not be not an aspect to worry about and good family time could be spent during the lockdown period.

However, it was observed that monthly expenditure of respondents outweighed the monthly family income. The average monthly expenditure was found to be 1.5 times more than the monthly family income. It can be attributed to the fact that during lockdown, respondents have suffered in terms of their earnings, not getting full or whole salary, loss in business, etc.

Thus, it can be said that the respondents who were living in urban areas in rented houses have been under financial burden due to lesser income, job insecurity and mandatory expenses like house rent, medical costs and other expenditures.

Effect of COVID 19 Lockdown on Daily Lifestyle

In order to understand the influence of lockdown on daily lifestyle and thoughts of the study population, few related questions were asked. The results revealed that a majority of the respondents (82%) liked the time they spent together with their families. It should be noted here that 90 per cent were females and 75 per cent were males who liked the time spent with their families, indicating more willingness of females to be with family than males. Around three-fourth of the respondents (74%) did not get such opportunity earlier to spend this much time with their families.

When asked about the impact of lockdown on their daily routine, a majority of them (94%) shared that it has been affected by this lockdown. Half of the respondents (50%) found their daily routines been affected very much due to lockdown.

Respondents were also asked about the positive aspects they feel about this lockdown. Mixed responses were captured. Majority of respondents feel that they got more time for self and to spend with their family, which was not possible otherwise. They took it as an opportunity to bond closely with family and friends. Few of them got the opportunity to complete the long pending tasks. This has provided them with more 'me-time'. Many have taken this lockdown period as an opportunity to pursue their hobbies which otherwise were left aside due to shortage of time. A few of the respondents took this time to look within and discover their true self. Most of them were of the view that staying safe is the best positive outcome of this lockdown. It has helped in reducing pollution from overcrowded cities. However, few of the respondents find nothing positive about this lockdown. They were of the view that things are not going well outside, which does not make them feel anything positive about this time. *"Delhi is pollution free. Mother Earth has rejuvenated and hopefully we will value our labour more".*

Similarly, varied responses were noted regarding the negative aspect of this lockdown. Majority of the respondents find this lockdown as a barrier to go out and socialize, which is very obvious. Many felt their daily routine has been affected negatively due to it. It has made them more lethargic and lazier. Due to restrictions to go out, people were unable to perform exercises in gyms and parks, which hindered their daily routines. Also, few of them find it difficult to do official work from home. This can be attributed to the fact that systems followed in offices were not ready for emergency situations. Many of the respondents feel stressed due

to lockdown and fear of Covid-19. They feel anxious for future situations after lockdown. Respondents were of the view that due to lockdown Indian economy has been negatively impacted. It has financially burdened the poor.

Majority of respondents did not perform any extra work due to lockdown, while many had to do daily household chores like cleaning, mopping, cooking, doing dishes as maids were not allowed to come during lockdown. This indicates the dependency on maids for daily household chores. Majority of respondents were of the view that outdoor activities like sports, social gatherings, visiting friends, business meetings, travelling were hindered due to lockdown; which again relates to the fact that socializing is very important part of human behaviour. Whereas, indoor activities like cooking, reading, gardening, internet surfing, following social media, watching TV, cleaning have been boosted in this period (Figure 2). Also, sense of personal hygiene has boosted in many.

It was interesting to note that the respondents whose indoor activities like cleaning, cooking, gardening were boosted, out of them 65 per cent were females. Also, many did not find any activity enhanced in this lockdown, out of which 70 per cent were male. Few of the respondents found leisure activities like reading, sleeping, watching TV, taking rest were enhanced during this lockdown, out of which, 91 per cent were males, interestingly. It can be observed that females found household activities like cleaning, cooking, etc enhanced during this time, while leisure activities like reading, watching TV, taking rest were enhanced in males, which clearly depicts gender role in society.

Figure 2: Activities enhanced during Lockdown due to Covid-19
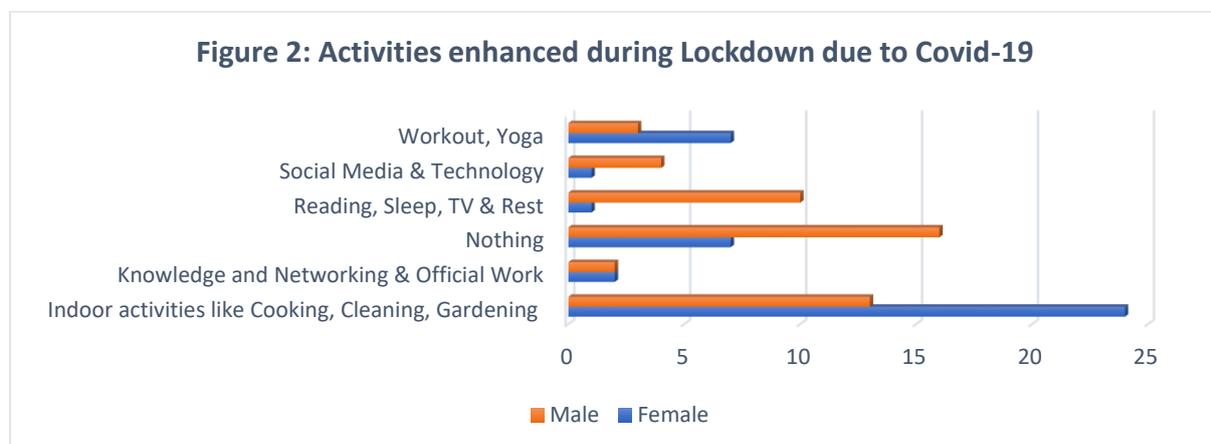
Effect of COVID 19 Lockdown on Mental Health, Optimism and Pessimism

Mental health and psychosocial problems during emergencies are highly interconnected.[2] Social and psychological problems due to emergencies, like family separation, not able to socialize or disruption of social networks, grief, depression, anxiety are also interconnected. There are few problems which arise due to lack of assistance otherwise available like lack of people's support due to stigmatization of person as 'victim' or even 'culprit' acquiring Covid-19, and anxiety due to a lack of information about available health services.

Mental health issues might aggravate during emergencies. Many underlying reasons can be found. Continuous worries, insecurities like fear of losing job, struggling for money for essential expenses, worries about health and safety of self and family, all these can lead to greater mental health issues [2].

In order to understand the impact of lockdown on mental health of the respondents, few related questions were asked. When questions were asked to find whether stress has been an impact, it was known that around 39 per cent respondents rarely or sometimes felt relaxed during this lockdown. Only 23 per cent of them felt relaxed, out of which two-third were males. More than two-fifth respondents had a sense of tiredness during lockdown. Around 38 per cent were mostly irritable these days. Out of nine per cent who were always irritable during this period, three-fourth were females. Interestingly, one-fourth of the respondents felt calm in lockdown, out of which 60 per cent were males. It is interesting to note here that in females, irritability was increased, while males were more relaxed and calmer. It depicts that stress as an impact was more visible in females.

It was also noted that around one-third of the respondents felt discouraged, out of which males were more discouraged than females (66% vs 34%). More than half of the respondents were afraid of their future. More than one-third of the respondents felt mentally exhausted during lockdown, out of which males were 62 per cent.

Preliminary evidence suggests that symptoms of anxiety and depression and self-reported stress are common psychological reactions to the COVID-19 pandemic and may be associated with disturbed sleep. The subsyndromal mental health problems are a common response to the COVID-19 pandemic.[11]

When asked few questions depicting depressing impact, it was seen that around 46 per cent of the respondents were having trouble falling asleep, 10 per cent were feeling hopeless, out of which two-third were females. Around 16 per cent found very little interest in doing things, out of which majority were females (64%). More than one-fourth have fluctuating appetite- either poor or overeating. Around 10 per cent faced problem in concentrating, out of which three-fourth were females. These results portray that females depicted more depression traits as impact due to lockdown.

Similarly, anxiety traits were also observed through this study. Although, anxiety traits were not dominant in majority of the respondents, but it was seen that more anxiety traits were visible in females than males. Around 10 per cent of the females were unable to stop worrying and were having trouble relaxing. Around 12 per cent females were afraid of something awful might happen and were feeling nervous and anxious.

Many of the anticipated consequences of quarantine and associated social and physical distancing measures are themselves key risk factors for mental health issues. These include suicide and self-harm, alcohol and substance misuse, gambling, domestic and child abuse, and psychosocial risks (such as social disconnection, lack of meaning or anomie, entrapment, cyberbullying, feeling a burden, financial stress, bereavement, loss, unemployment,

homelessness, and relationship breakdown). A major adverse consequence of the COVID-19 pandemic is likely to be increased social isolation and loneliness, which are strongly associated with anxiety, depression, self-harm, and suicide attempts across the lifespan.[12]

Table 1: Predictors of mental health variables using stepwise multiple regression analysis

Dependent Variable	Predictors	R	R2	Adjusted R2	B	F	P<
Stress	Education level	0.308	.095	.085	-3.479	9.244	0.003
Anxiety	Education level	0.304	.093	.082	-2.201	8.99	.004
Mood Swings	Marital Status	0.273	0.075	0.064	0.633	7.114	0.009
Persist	Education level	0.236	.056	.045	1.096	5.199	0.025

Source: Authors collected the data and employed SPSS 25, a statistical software, for analysis and generating results.

Stepwise multiple regression (Table 1) was applied to observe the degree to which independent variables included in this study predict dependent variables. It was applied to recognize the factors that account for maximum proportion of variance in dependent variables- stress, depression, anxiety, mood swings, shift and persist; and variables which do not make any additional contribution to the study variables can be eliminated. In the present study, there were few predictor variables like gender, educational qualification, occupation, type of house which might affect the prediction of dependent variables under study- stress, depression, anxiety, mood swing, shift and persist.[2–4]

On analysing the predictor variables for stress, it was found that the multiple regression suggests that educational level meet the criteria. Educational level predictive values were positively significant (p<0.05= 0.003). This means that educational level as predictor do affect 'stressful impact' as a dependent or criterion variable. But other variables like gender, occupation, type of house, marital status do not play any role in enhancing or diminishing stressful impact. The most significant predictor came out to be educational level with R equal to 0.308 and R2 equal to 0.095 (F=9.244, P<.01). This shows that educational level along with all other variables account for 9.5 % of variance in stressful impact and by itself accounted for 8.5% variance (R2 change = 0.085) when considered alone.

Similarly, for the variable anxiety, educational level was again found as predicting significantly (p<0.05= 0.004). Educational level affects 'anxiety traits as an impact' due to lockdown, with R = 0.304 and R2 = 0.093 (F= 8.99, P< 0.01). This shows that educational level along with all other variables account for 9.3 % of variance in stressful impact and by itself accounted for 8.2% variance (R2 change=0.082) when considered alone.

For analysing predictor variables for mood swing, it was found that marital status met the criterion. Marital status predictive values were positively significant ($p<0.05=0.009$). It implies that marital status as a predictor do affect the 'mood swing traits' as a dependent variable than any other variables. It accounts for 7.5% variance in 'mood swing trait' along with all other variables and by itself accounts for 6.4% variance ($R^2= 0.075$ and R^2 change$= 0.064$).

As the study focuses on stressful situations, two strategies shifting, and persisting were also studied. Persisting means being optimistic and finding purpose in tough times, whereas, shifting which refers to accepting stress and getting used to it. It was found that educational level was again found as a significant predictor variable for the variable 'persist' ($P<0.05= 0.025$). Educational level affects 'persisting trait as an impact' due to lockdown, with $R = 0.236$ and $R^2 = 0.056$ ($F=5.199$, $P< 0.01$). This shows that educational level along with all other variables account for 5.6 % of variance in stressful impact and by itself accounted for 4.5% variance (R^2 change$=0.045$) when considered alone

The regression coefficient 'B' of educational level for Stress, Anxiety and Persisting is -0.3479, -0.2201, 1.096 respectively; the direction of influence for predictor educational level is negative for stress and anxiety while positive for persisting. It can be inferred here that educational level negatively influences stress and anxiety traits while positively influences persisting, which itself is a positive trait.

According to this finding, it can be said that respondents with lower stress and anxiety traits and higher persisting traits are higher in educational level. The respondents with higher educational level are more persisting, and low on stress and anxiety traits.

Thus, it appears that the relationship between educational level and stress, anxiety and persisting is noteworthy. Stress and anxiety were negatively influenced by educational level, implying that higher the education, lower the stress and anxiety traits. Similarly, persisting, as itself a positive trait depicted a positive relationship with education level. Those higher in educational level were optimistic and tried to find purposes in tough times during lockdown. An interesting relationship between marital status and mood swing was also observed in the study.

Conclusion & Recommendation

This paper discussed the impact of lockdown on mental health of population, including factors like stress, anxiety, depression, mood swings, strategies for coping stressful situations indicating optimism and pessimism. The perception of people about lockdown and its impact on their daily lives was also discussed.

It was found that majority of the respondents live in urban areas. Many of them dwell in rented houses and half of the respondents were doing private jobs. it was observed that monthly expenditure of respondents outweighed the monthly family income. It can be inferred that during lockdown, respondents might have suffered in terms of their earnings, not getting full or whole salary, loss in business, etc and have been under financial burden due to lesser income,

job insecurity and mandatory expenses like house rent, medical costs and other expenditures, leading to stressful situations.

Majority of the respondents liked the time they spent together with their families. They got more time for self and to spend with their family in this lockdown, which was not possible otherwise. Respondents also took this lockdown as an opportunity to complete the long pending tasks, to pursue their hobbies, to look within and discover their true self. As a negative aspect, majority of respondents find this lockdown as a barrier to go out and socialize, negative impact on daily routine. They felt more lethargic and lazier and found it difficult to do official work from home. Many of the respondents felt stressed due to lockdown and fear of Covid-19.

Outdoor activities were hindered due to lockdown; which again relates to the fact that socializing is very important part of human behaviour. Whereas, indoor activities have been boosted in this period. Also, sense of personal hygiene has boosted in many. Interestingly, females found their indoor activities like cleaning, cooking, gardening were boosted compared to males. Majority of male respondents found leisure activities like reading, sleeping, watching TV, taking rest being enhanced during this lockdown[2].

Respondents found difficulty in relaxing, had a sense of tiredness during lockdown. Many respondents were mostly irritable during lockdown period. In females, irritability was increased, while males were more relaxed and calmer. It depicts that stress as an impact was more visible in females. It was found that many respondents felt discouraged, out of which males were more discouraged than females. Many respondents were afraid of their future and felt mentally exhausted during lockdown.

Depicting depressing impact, many of the respondents were having trouble falling asleep, few were feeling hopeless, found very little interest in doing things, had fluctuating appetite- either poor or overeating and few faced problems in concentrating. Females depicted more depression traits as impact due to lockdown.

Similarly, more anxiety traits were visible in females than males. Few of the females were unable to stop worrying and were having trouble relaxing, were afraid of something awful might happen and were feeling nervous and anxious.

The relationship between educational level and stress, anxiety and persisting was found noteworthy. Stress and anxiety were negatively influenced by educational level, implying that higher the education, lower the stress and anxiety traits. Similarly, persisting, as itself a positive trait depicted a positive relationship with education level[1]. Those higher in educational level were optimistic and tried to find purposes in tough times during lockdown. An interesting relationship between marital status and mood swing was also observed in the study.

Thus, it can be recommended that an immediate utmost important task is to collect data on mental health effects of lockdown and Covid-19 pandemic across the population. The data on mental health impact of pandemic on vulnerable groups should also be collected and researched for. The impact of Covid-19 on mental health and perceptions of its patients should also be researched for. Research for diminishing the mental health impacts of this pandemic on

susceptible and other populations are urgently required. Impact of correct information and knowledge of pandemic on mental health can also be topics of research.

Declarations:

I. Ethics approval and consent to participate: As the data was collected through online mode, participation was on voluntary basis. The IRB Board at IIHMR University waived off ethics approval in this study. An informed consent was taken from every respondent. All methods of data collection were carried out in accordance with relevant guidelines and regulations.

II. Consent for publication: Not applicable.

III. Availability of Data and Material (ADM): The dataset used and analysed during the current study is available from the corresponding author on request.

IV. Competing interests: Not Applicable

V. Funding: Not received

VI. Authors' contributions: Both the authors contributed in conceptualization, development of data collection tool, corresponding author contributed in write up and the other author contributed in data analysis.

VII. Experiments protocols: This study has not done any experiment on humans, or no use of human tissue samples was made in this study. Not applicable.

VIII. Acknowledgment: We wish to acknowledge all those people who have successfully survived the lockdown due to Covid-19 pandemic and were able to keep up their mental and physical wellbeing and supported others to maintain the same.

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