

# Vulnerability to Mental Health Problems in Indian Population During Lockdown amidst COVID-19 Pandemic: An Alarm not to Snooze

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## Abstract

**Background:** Lockdown measures are being implemented in several parts of the world to control the spread of novel coronavirus. This unprecedented crisis has significantly affected the lives of people in different ways.

**Aim:** To understand the experiences and vulnerability to mental health problems during lockdown among the Indian population during COVID-19 pandemic.

**Materials and Methods:** A cross-sectional study was conducted using an online survey form circulated through various social media platforms from April 12 to May 3, 2020 containing self-reported questionnaires to collect lockdown related experiences and scales to assess anxiety (GAD-7) and depression (PHQ-9). A convenience sampling method was used.

**Results:** 442 valid responses were received from different states of India. Statistical analysis revealed that one-third of the respondents suffered from some form of anxiety and depression during a lockdown. Less than 10% of them had severe levels of symptoms. The majority were males aged 18 to 45 years and private sector employees. Delivering essential services was involved with significant anxiety and depression. Availability of food and daily essentials was the most common problem. Difficulty in availing medicines and financial crisis were significant predictors of anxiety and depression. Worsening of interpersonal relationships was associated with higher levels of anxiety and depression.

**Conclusions:** The study concluded that experiences during the lockdown and associated psychological outcomes are important factors to consider and appropriate preventive measures to be taken in case of any future lockdowns.

**Keywords:** Humans, Male, Female, Patient Health Questionnaire, Cross-Sectional Studies, Pandemics, Depression, Private Sector, COVID-19, Anxiety, SARS-CoV-2, Surveys and Questionnaires

## INTRODUCTION

The novel Coronavirus disease (COVID-19) outbreak was first identified in Wuhan city, Hubei Province of China in December 2019.<sup>[1]</sup> It spread to more than 20 countries in less than a month.<sup>[2]</sup> On January 30, 2020, following the recommendations of the Emergency Committee, the WHO Director-General declared that the outbreak constitutes a Public Health Emergency of International Concern (PHEIC). Considering its alarming spread worldwide, it was declared a pandemic on March 11, 2020.<sup>[3]</sup>

Breaking the chain of transmission is the key to controlling the disease's spread. Many countries have adopted strict preventive measures in response to the outbreak by imposing several restrictions on people's routine activities. In densely populated areas, the infection rate was observed to be

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doubling in a short span of time. Hence, region-specific and national lockdowns were announced in several places in a desperate attempt to control the spread of disease. In India national lockdown started on March 24, 2020 midnight and has been implemented in phase-wise.<sup>[4]</sup> Complete lockdown refers to home confinement, avoiding visitors or mass gatherings, closing markets, malls, restaurants, bars, schools and colleges, offices, public transport and running only essential services like groceries, food and health.<sup>[5]</sup> Strict measures are necessary to avoid human-to-human transmission of infection. Implementing these measures could bring about less obvious but significant threats to people's mental health who might never be infected with the virus. Moreover, people involved in delivering of essential services are under constant stress due to stringent working protocols and frontline health workers are at increased risk of infection during the lockdown period.<sup>[6]</sup> Any outbreak or pandemic along with strict quarantine measures brings physical harm and other problems like unemployment, economic hardship, social isolation, stigma, fear and uncertainty about the future.<sup>[7]</sup> All these culminate into stress and anxiety, affecting an individual's mental health and leading to various psychosocial problems.<sup>[8]</sup> Furthermore, this situation may be an aggravating factor for many people already suffering with previous psychiatric illnesses.<sup>[9]</sup> Hence the current study aimed to find out the vulnerability to mental health problems among the Indian population during the lockdown period and the probable factors associated with it.

## MATERIAL AND METHODS

### Study Participants

The study was conducted during the middle of the lockdown period in India from April 12, 2020 to May 3, 2020. This period was chosen as the population was placed under maximum restrictions during this specified time frame. Institute's Ethical Committee approved the study Ref. No: AIIMS/IEC/2020/2189 dated: 22 Apr 2020. Citizens of India residing within the country during this period were recruited through an online survey. The objectives of the study were clearly explained to the participants and informed consent was taken. Only those individuals above the age of 18 who could understand the purpose of the survey as written in English and give valid consent were requested to participate. Participation was voluntary, with the option to opt out of the study before submitting the response.

### Study Design

This was a cross-sectional study conducted through an online survey generated using Google forms. The survey form was in English language and included basic sociodemographic details and self-reported questionnaires to assess various experiences and problems related to the lockdown. The name of the participants, phone numbers and email id were not collected. A convenience sampling technique was used.<sup>[10]</sup> The link to the survey form was circulated through various online platforms such as email, WhatsApp and other social media accounts to different known contacts of the investigator.

Individuals willing to participate in the survey were further encouraged to send the survey forms to their various known contacts residing in different parts of the country. In this way, the survey form was intended to reach as many people as possible. All the responses received within the time frame (12-4-20 to 3-5-20) were included for data analysis.

### Sociodemographic and Lockdown Related Data

The sociodemographic details included age, gender, education, occupation, marital status, family income and location. A semi-structured questionnaire also obtained details of whether participants are living with family, involved in the delivery of essential services, number of hours involved, physical and mental comorbidity and various problems during the lockdown period. Time for self, family, spirituality and hobbies was also assessed.

### Assessment of Psychological Impact

To assess the psychological impact, our study mainly focused on the presence of depression and anxiety symptoms, the most common expected responses due to lockdown.<sup>[11]</sup> The patient health questionnaire (PHQ-9)<sup>[12]</sup> and generalized anxiety disorder scale (GAD-7)<sup>[13]</sup> were used respectively to assess the same which are self-reported, reliable, valid and widely used tools. The PHQ-9 measures depression severity. The cut-off score in both scales for the presence of depression and anxiety symptoms was  $\geq 5$ .

### Statistical Analysis

Data analysis was done using freely available standard open source statistical software. Various categorical variables were compared with levels of severity of anxiety and depression for statistical significance using the chi-square test and Fisher's exact test. Binary logistic regression analysis was used to see any correlation between various problems during the lockdown and the occurrence of anxiety and depression.  $p$ -value  $< 0.05$  was considered to be significant.

## RESULTS

### Sociodemographic Profile

A total of 456 responses were received during the specified study period. Total responses 14 were incomplete and hence were excluded. So total of 442 responses from different parts of India were included in data analysis. Responses from 3 transgender participants were assessed separately to avoid skewness of data. Out of 439 respondents, 66.9% were males and 33.02% were females. Almost 92% of the respondents were in the age group of 18 to 45 years. The majority of respondents were married (68.3%). At the time of survey, 73.1% of respondents were residing with their families.

### Comparison of Sociodemographic Profile with GAD-7 and PHQ-9 Severity of Symptoms

Out of 439, 162 (36%) respondents had a GAD-7 score of 5 or more, meaning they had some kind of anxiety. Similarly,

**Table 1:** Comparison of sociodemographic profile with GAD-7 severity of anxiety symptoms

Variables	Total	GAD 7- severity of anxiety symptoms				P-value
		No Anxiety	Mild	Moderate	Severe	
Age						
18–45 years	405	256	90	31	28	0.139
46 years and above	34	21	04	06	03	
Gender						
Male	294	195	60	18	21	0.057
Females	145	82	34	19	10	
Marital status						
Unmarried	133	74	33	15	11	0.267
Married	300	198	61	22	19	
Divorced	06	05	0	0	01	
Employment						
Government	176	125	34	07	10	0.063
Private	156	95	38	11	12	
Business	20	13	02	03	02	
Student	61	30	16	10	05	
Homemaker	14	07	03	03	01	
Unemployed Unemployed due to lockdown	07	04	01	02	00	
	05	03	00	01	01	
Socioeconomic status						
Upper	281	198	52	13	18	0.001
Upper middle	134	69	37	18	10	
Lower middle	16	06	04	04	02	
Upper lower	06	02	01	02	01	
Lower	02	02	00	00	00	
Living with Family						
Yes	321	203	68	30	20	0.072
No	21	12	07	02	00	
Living away						
Due to Job	78	55	13	02	08	
Due to lockdown	19	07	06	03	03	

GAD-7. 7 item Generalised Anxiety Disorder Questionnaire

out of 439, 169 (38%) respondents had PHQ-9 score of 5 or more, hence suffering from some kind of depression. Out of 439, 416 respondents had no history of psychiatric illness before the lockdown period. Table 1 and 2 details the sociodemographic profile comparison with GAD-7 and PHQ-9 scores, respectively.

### Delivering Essential Services During Lockdown

Out of 439, 149 (33.9%) respondents were involved in delivering some essential services. Out of which 115 (77.1%) were delivering all types of medical services and the remaining 34 (22.8%) were involved in non-medical service. Among them 42 (28.1%) respondents had GAD-7 score of 5 or more and the result was statistically significant ( $p=0.019$ ). 38 (25.5%) suffered from some form of depression ( $p=0.001$ ). 119 (79.8%) respondents had maximum duty hours of up to 8 hours while 30 (20.1%) had more than 8 hours. However, working hours had no significant correlation with GAD-7 and PHQ-9 scores Table 3.

### Having Comorbidity During Lockdown

Out of 439, 53 (12.07%) respondents suffered from some kind of physical illness and 23 (5.2%) had a history of psychiatric illness. The difference was statistically significant for mental

illness when comparing GAD-7 and PHQ-9 scoring with history of any physical and mental illness. Out of 23, 12 respondents were on treatment for their psychiatric illness while 11 were not on any treatment. Among 12 respondents who were on treatment, only 2 had a GAD-7 score more than 5, while 8 out of 11 who were not on treatment for their illness had a GAD -7 score of 5 or more ( $p=0.039$ ). Similarly, 5 out of 12 respondents who were on treatment had PHQ-9 score of 5 or more while 9 out of 11 respondents who were not on treatment for their psychiatric illness had PHQ -9 score of 5 or more ( $p=0.383$ ).

### Problems Faced During Lockdown

48% of the respondents had difficulty in the availability of food, vegetables and daily essentials at some point of time. Similarly, around 43% had difficulty working from home. Around 35% had difficulty in the availability of medicines, access to health care and financial crisis at some point of time Figure 1.

In logistic regression analysis, it was observed that those who had problems related to the availability of medicine due to lockdown are 2.12 times more likely to develop anxiety than those who didn't. Similarly, the estimated odds ratio 2.067

**Table 2:** Comparison of sociodemographic profile with PHQ-9 severity of depression symptoms

Variables	Total	PHQ 9- Severity of depression symptoms					p-value	
		No depression	Mild	Moderate	Moderately severe	Severe		
Age	405	248	92	27	20	18	0.348	
18-45 years	34	22	04	04	01	03		
46 years and above								
Gender	294	197	51	21	14	11	0.005	
Male	145	73	45	10	07	10		
Females								
Marital status	133	67	33	17	08	08	0.029	
Unmarried	300	199	62	14	13	12		
Married	06	04	01	0	0	01		
Divorced								
Employment								
Government	176	124	34	06	07	05	0.020	
Private	156	97	31	15	05	08		
Business	20	10	06	01	03	00		
Student	61	25	17	08	06	05		
Homemaker	14	08	04	00	00	02		
Unemployed	07	03	03	00	00	01		
Unemployed due to lockdown	05	03	01	01	00	00		
Socioeconomic status	281	200	52	11	10	08		<0.001
Upper	134	60	39	16	09	10		
Upper middle	16	06	03	02	02	03		
Lower middle	06	02	02	02	00	00		
Upper lower	02	02	00	00	00	00		
Lower								
Living with Family	321	203	66	24	17	11	0.063	
Yes	21	10	07	03	00	01		
No								
Living away	78	51	16	02	03	06		
Due to Job	19	06	07	02	01	03		
Due to lockdown								

PHQ-9. 9 item Patient Health Questionnaire

**Table 3:** Comparison of Delivery of essential services during lockdown with GAD-7 and PHQ-9 severity of symptoms

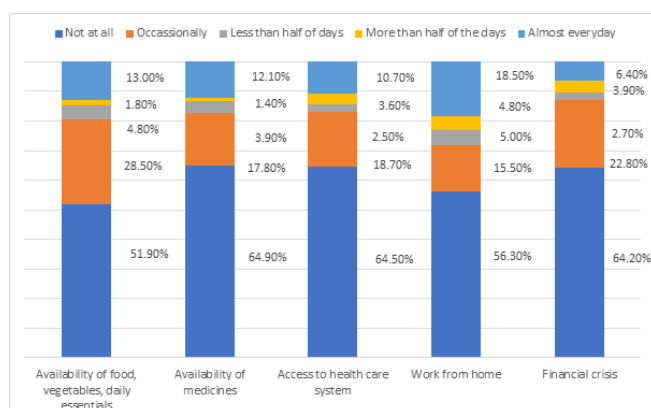
Variables	Total	Gad 7- Severity of anxiety symptoms					p-value
		No Anxiety	Mild	Moderate	Severe		
Delivering essential services							
Yes	149	107	29	08	05	0.019	
No	290	170	65	29	26		
Hours involved in delivering essential services							
Upto 8 hours	119	68	28	12	11	0.157	
More than 8 hours	30	23	05	00	02		
Variables	Total	Phq 9- Severity of depression symptoms					p-value
Delivering Essential services							
Yes	149	111	25	04	04	0.001	
No	290	159	71	27	17		
Hours involved in delivering essential services							
Upto 8 hours	119	68	29	11	05	0.810	
More than 8 hours	30	19	07	03	00		

GAD-7. 7 item Generalised Anxiety Disorder Questionnaire. PHQ-9. 9 item Patient Health Questionnaire

**Table 4:** Problems during lockdown and occurrence of Anxiety and Depression-Logistic regression analysis

Variables	Anxiety				Depression			
	B	Exp(B)	95% C.I. for EXP(B)	P value	B	Exp(B)	95% C.I. for EXP(B)	p-value
During Lockdown								
Problem in availability of daily essentials	0.097	1.102	0.673–1.805	0.700	0.103	1.108	0.674–1.822	0.685
Problem in availability of medicines	0.755	2.128	1.221–3.708	0.008	0.676	1.965	1.131–3.414	0.017
Difficulty in access to health care	-0.136	0.872	0.527–1.445	0.596	0.272	1.313	0.799–2.157	0.283
Difficulty in working from home	0.150	1.161	0.758–1.779	0.492	0.324	1.382	0.901–2.121	0.138
Financial loss	0.726	2.067	1.348–3.171	0.001	0.792	2.208	1.434–3.399	0.000
Absence of helper at home	0.147	1.158	0.755–1.776	0.502	-1.75	0.839	0.546–1.290	0.424

EXP(B) = odds ratio

**Figure 1:** Problems faced during lockdown

indicates that people with financial loss/crisis due to lockdown are more likely to develop anxiety compared to those persons who didn't have a financial loss. Also, those who had a problem related to the availability of medicine due to the lockdown are 1.96 times more likely to develop depression than those who didn't. Similarly, the estimated odds ratio 2.2 indicates that person with financial loss/crisis due to lockdown are more likely to develop depression compared to those persons who didn't have a financial loss Table 4.

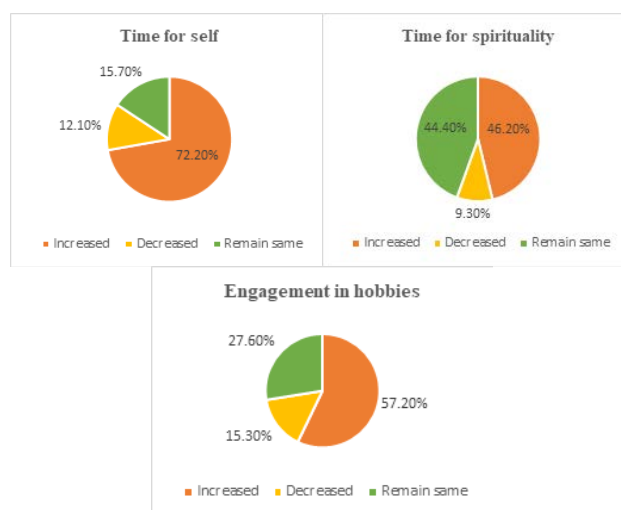
Overall, the logistic regression analysis concluded that the odds of problems related to the availability of medicines and financial loss are significant predictor variables for developing anxiety and depression symptoms.

### Changes in Time for Self, Spirituality and Hobbies During Lockdown

Figure 2 shows the percentage of respondents and how time available for self, spirituality and hobbies changed during the lockdown period. However, comparing the above parameters with GAD-7 and PHQ-9 scores was not statistically significant.

### Interpersonal Relationship During Lockdown

According to 49.2% of respondents felt their relationship with their spouse hadn't changed much while 24.8% reported improvement and 6.6% felt it worsened. But 39.4% of respondents felt their relationship with children hadn't

**Figure 2:** Showing how Time for Self, Spirituality and Hobbies changed during lockdown

changed much while 22.8% reported improvement and 2.5% felt it worsened. However, 57.6% of respondents felt their relationship with their parents hadn't changed much while 32.3% reported improvement and only 4.6% felt it worsened. On comparing the status of interpersonal relationships with scores of GAD-7 along with PHQ-9 the following observations were made.

### Relationship with Spouse

It was found that only 32% of respondents in whom the relationship had neither changed nor improved had some form of anxiety and depression. However, anxiety and depression were reported in 76% of respondents in whom the relationship had worsened and results were statistically significant ( $p < 0.001$ ).

### Relationship with Children

A total of 32% of respondents in whom the status of their relationship with children hadn't changed had some form of anxiety and depression. In respondents whose relationship had improved 38% had anxiety and 36% had depression symptoms. However, in respondents whose relationship



had worsened with children during lockdown, 82% had anxiety and 73% had depression symptoms and results were statistically significant ( $p < 0.001$ ).

### Relationship with Parents

In respondents whose relationship with parents hadn't changed 32% had anxiety and 35% had depression symptoms. In respondents whose relationship had improved 39% had anxiety and 41% had depression symptoms. However, in respondents whose relationship had worsened with parents during lockdown, 70% had anxiety and 65% had depression symptoms and the results were statistically significant ( $p < 0.001$ ).

### Response from Transgender Participants

This study had received a response from three transgender people but we have not included in the main analysis because fewer numbers and data could result in skewness. It was observed that one person was suffering from mild anxiety and mild depression and one was suffering from severe depression problems.

## DISCUSSION

The world is currently battling with a serious a health crisis in the form of the COVID-19 pandemic. The ability of this novel coronavirus to mutate easily and spread rapidly poses a significant challenge even to most of developed countries (Table 4).<sup>[14]</sup> Lockdown measures, social distancing with isolation and quarantine have been implemented in several countries to stop the chain of transmission. These strict control measures bring a sudden blow to the people's livelihood, creating distress and difficulties across all sections of the general public. India had never witnessed such a massive lockdown and understanding its psychological impact is necessary to mitigate the consequences in case of any future lockdowns. Our study aimed to explore the vulnerability of Indian population to mental health problems during lockdown. Our study findings show that at least one-third of the respondents reported some form of anxiety and depression during the lockdown period. Most of them had mild to moderate levels of anxiety and depression. Severe levels were observed only in less than 10% of the respondents. An online survey conducted in India during the lockdown showed about two-fifth of the participants had anxiety and depression.<sup>[15]</sup> The majority of them were in the age group of 18 to 45 years. Males seem to experience more anxiety and depression. Marital and occupational status had a significant correlation with depression symptoms, where married males working in the private sector found to be suffering more. A study from Italy has also shown that during a lockdown, people have experienced higher levels of stress, anxiety and depression, and sleep disruption.<sup>[16]</sup> Another survey from Great Britain has also observed higher anxiety levels and low happiness and well-being levels in self-employed citizens during a lockdown.<sup>[17]</sup> One-third of the respondents were involved in delivering of essential services during the lockdown period.

The majority of them were in medical services and were experiencing significant levels of anxiety and depression, irrespective of their duration of working hours. It is well documented that those involved in medical services are at higher risk of developing psychological problems due to COVID-19-related infection. It is understood that lockdown-related difficulties alone could be significant stress.<sup>[18,19]</sup> Our study found that individuals who had a history of psychiatric illness were more at risk of developing anxiety and depression. Also, those individuals who were not on treatment for the same were at higher risk. A similar observation was made in a study where higher levels of anxiety and depression scores were seen in patients with psychiatric illness under strict lockdown measures.<sup>[20]</sup> Almost half of the respondents had experienced difficulty in availing basic needs such as food, vegetables, groceries and other daily essentials. The probable reason could be rapid depletion of stocks due to panic buying and hoarding combined with a shortage of supplies due to massive restrictions in transport services. Food comes under one of the primary needs for survival. Lockdown inherently comes with large-scale disruption in the maintenance of the supply chain from production to consumption hence becoming a major concern.<sup>[21]</sup> The cost of daily essentials and other basic needs could increase, restricting availability to affordable sections of society. Secondly, working from home was difficult despite being a safe option. The probable explanation could be various distractions, inconveniences working online, lack of proper communication, guidance and supervision. Difficulty in the availability of medicines and financial crisis were found to be important risk factors in developing anxiety or depression. Access to healthcare system and absence of public transportation in case of an emergency was also common concern for around one-third of respondents. Many people couldn't avail the treatment of common health problems as most health institutions only limited patient care to emergencies. People had difficulties in returning home from different places due to mass ban on all modes of transport. Loss of jobs in several sectors, decreased production, and difficulties in doing regular business activities during lockdown substantially burden the financial status of the individual and the state.<sup>[22]</sup> All these factors could be a stressful experience for common people increasing the risk of mental health problems.<sup>[23]</sup> During this lockdown period time for self, hobbies and spirituality had significantly increased in the majority of the respondents however anxiety and depression symptoms were still reported. One probable reason could be that having more time could also give a sense of slowness resulting in boredom.<sup>[16]</sup> Our study findings suggest that status of interpersonal relationships within the family is a significant factor in predicting anxiety and depression symptoms. Individuals whose relationship with spouse, children and parents had worsened were at higher risk. The lockdown period would have given more time to spend with family. But it might not be pleasant in all the cases. Families where the interpersonal relationship is problematic being confined together in a same place may

cause more turbulence.<sup>[24]</sup> Interpersonal conflicts, a difference of opinion, personality issues, lack of understanding and respect are some common reasons which may eventually lead to a mental breakdown during this difficult time. So, ensuring a good family environment during a lockdown period is an important factor to consider. In this current crisis, the plight of the transgender population shouldn't be ignored. Our study received three responses from transgender individuals and out of them two suffered anxiety and depression symptoms. Already facing a variety of societal problems, the impact of lockdown on transgender individuals is an area of concern where further research is warranted.<sup>[25]</sup>

The prevalence of anxiety and depression in India before lockdown was around 1–3%, according to National Mental Health Survey 2015-16.<sup>[26]</sup> The nationwide lockdown had brought immense changes and variety of problems in routine life of the people. Studies have reported significant rise in levels of anxiety and depression (10–30%) among the general population during the lockdown period.<sup>[27-29]</sup> Lockdown measures may be needed to control the spread of infectious diseases like the novel coronavirus but it comes with several distressful experiences if not properly implemented. These alarming mental health concerns must be seriously addressed without any lag in planning appropriate preventive and management strategies. Due consideration has to be given to the most common problems faced by the public while formulating guidelines and policies related to lockdowns to mitigate the psychological impact. In case of future mass lockdown, arrangements like helplines to address grievances, well-organized support from government agencies, and individual and community-level participation exist. Teleconsultation, counseling, awareness of common problems, and physical and mental health concerns during lockdown should be available at all possible levels. Adopting appropriate stress management strategies and enhancing coping abilities at an individual level will also greatly help reduce the impact of mass lockdowns.

## LIMITATIONS

Most of our responses were from employed professionals from upper and upper-middle socioeconomic strata and living with family, as we could approach them only through online resources. The impact of lockdown and its experiences in people from lower socioeconomic class, unemployed individuals, migrant workers and other related populations couldn't be assessed in more detail. Again, the results cannot be generalized due to inherent bias in convenience sampling. An online survey, the responses were solely based on how far the survey form got circulated through various social platforms. Hence there was no control over the selection of participants, probable confounding factors and the sample size. Being a survey of small size, the findings can't be generalized but still our study shows mental health problems experienced by Indians during the lockdown.

## CONCLUSION

Lockdown during the COVID pandemic was an unprecedented challenge that our country has seen in the recent past. It had a huge impact on the lives of common people in various forms and has given us a lot of lessons to learn. The experiences during the lockdown period had increased the risk of mental health problems in the general population across the socioeconomic strata. People were vulnerable to psychological disorders, most commonly anxiety and depression. In the wake of the emergence of new covid strains and the resurgence of other viruses such as monkeypox, nipah, etc., the world is at risk of another pandemic any time soon, according to scientific experts. In such grave situations, future lockdowns may be inevitable to contain the spread of transmission. Considering the potential mental health concerns during such restrictive measures, it would be prudent to have robust preventive strategies and a support network to mitigate the psychological impact of future lockdowns if any.

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Nil.

## CONFLICTS OF INTEREST

There are no conflicts of interest

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