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Impact of covid-19 lockdown on mental health status of people residing in the urban slums of bengaluru, karnataka, India: A cross sectional study

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Abstract

complete lockdown was imposed in India during March 2020 to curb the rise of COVID-19 cases. Previous studies have shown that prolonged periods of social isolation can adversely affect the mental well-being.

Objectives: To estimate the proportion of Depression, Anxiety and Stress and to identify the associated risk factors contributing to the same among the people living in the urban slums during lockdown.

Methods of Collection of Data: A Cross Sectional Study was conducted from April to May 2020 among 190 people aged 18 years and above living in the urban slums in the field practice area of a Government Medical College in Bengaluru who were selected by systematic random sampling, interviewed over telephone using a pretested semi-structured questionnaire including sociodemographic details and DASS-21. Data was collected using Epicollect5 mobile application and analyzed using SPSS software.

Results: The proportion of participants found to be suffering from Stress and Anxiety were 4.73% each and that from depression was 13.16%. Marital status,

history of contact with a COVID-19 positive case, presence of COVID-19 like symptoms, unemployment due to lockdown, a change in routine physical activities and interpersonal relationships and the preventive measures undertaken by the government against the disease were found to have statistically significant association with these mental health conditions.

Conclusion: COVID-19 lockdown has resulted in adverse mental health outcomes and there is a need for extending mental health services to the public during the pandemic.

Keywords: COVID-19, lockdown, stress, anxiety, depression, mental health status

Background

COVID-19 was declared a Public Health Emergency of International Concern on 30 January 2020 by WHO(1). It is a type of self-limiting infectious disease, respiratory droplets and contact transmission being the main transmission routes. As the pandemic continued to evolve, measures were taken to prevent the introduction of infection to newer areas and to reduce human to human transmission. Public health measures implemented to achieve this included quarantine, to restrict the movement of people from one place to another, or separation from the rest of the population, of healthy persons who may have been exposed to the virus. This was done with the objective of monitoring their symptoms and ensuring early detection of cases(2)**.** Also, geographical quarantine was implemented by defining containment and buffer zone (3). Perimeter of containment and buffer zones were decided based on the geospatial distribution of the cluster of cases within it(4) . A key element in India's pandemic control strategy was a complete lockdown which was imposed on March 24th2020. While the people were forced to confine themselves in their homes, it led to economic hardships and unemployment, especially among the underprivileged sections of the society (5). The economically backward sections of the society had great difficulties to meet their demands for basic needs like food and water**.**

Evidence suggests that pandemics like COVID-19 are associated with increased risk of mental disorders not only among patients, but also their contacts who are kept under quarantine and health workers and other care givers (6). Prolonged restriction of the freedom of movement which disrupts one's social life can lead to anger, frustration and a feeling of loneliness and lead to adverse psychological outcomes, even among the general population (7). It may be due to risk factors like socio economic inequalities, unemployment, separation from loved ones, uncertainty about the disease status and so on (8). The prevailing fear and taboo about the disease had great impact on the mental health of not only patients, but also the inmates of their house.

Currently, literature on the psychological impact and mental health outcome of the COVID-19 lockdown on the public is scarce in India. Hence the present study was conducted with an objective to estimate the proportion of general population suffering from common mental health conditions like Depression, Anxiety and Stress in the urban slums of Bengaluru, Karnataka, India during early lockdown period and to find out the possible risk factors for these adverse mental health conditions.

Methodology

A Cross Sectional Study was conducted from April to May 2020 among the people aged 18 years and above residing in notified containment zones of the urban slums in the field practice area of a Government Medical College in Bengaluru, Karnataka, Southern India. A sample size of 190 was calculated from a

similar study conducted by Wang C et al by taking the prevalence of mild depression to be 13.8% at 95% confidence interval (9). Around 7-10 kilometres around the residence of a COVID-19 positive case was declared as containment zone and an extensive fever survey was conducted in the same area. A population of 910 was found out and demarcated as to be living under the containment zone. By using systematic random sampling, every 5th household was selected. One adult from that house was selected for the telephonic interview. Participants who did not give consent and those who were on treatment for any psychiatric conditions were excluded from the study. After obtaining the Institutional Ethical Committee clearance, the participants fulfilling the inclusion criteria were interviewed over telephone in the local language Kannada after taking informed verbal consent. Interviews were conducted using a pre-tested semi structured questionnaire consisting of sociodemographic details and COVID-19 related questions. Mental health status was assessed by DASS-21 questionnaire(10) . The English version of DASS-21 questionnaire was translated to Kannada and back translated to ensure that there were no ambiguities or confusion due to the language. A set of open-ended questions were used to assess the response of the public to lockdown and to elicit risk factors contributing to adverse mental health outcomes, if any. Data was collected using Epicollect5 mobile application and analysed using SPSS software version 20.0. Scores obtained from the DASS 21 questionnaire were used to grade the severity of Stress, Anxiety and Depression and to find out the proportion of these conditions. Responses to the open-ended questions were coded and recoded during analysis.

Results

Table 1: Sociodemographic details of study participants (N=190)

Variables	n (%)
Age (years)	Median= 33.5
	IQR=25-45
Sex	Males= 113 (59.5%)
	Females= 76 (40.5%)
Marital Status	Married= 132 (69.5%)
	Unmarried= 54 (28.4%)
	Divorced= 3 (1.6%)
	Widow/Widower= 1 (0.5%)
Socioeconomic status[1]	Lower= 6 (3.2%)
	Lower middle= 42 (2.1%)
	Upper Lower= 112 (58.9%)
	Upper Middle= 26 (13.6%)
	Upper= 4 (2.1%)
Health Insurance coverage	Yes= 13 (6.8%)
	No= 177 (93.2%)
Comorbidities	Yes= 16 (8.4%)
	No= 174 (91.6%)

[1]Modified Kuppuswamy's classification 2020

The median age of the study participants was 33.5 years with an IQR of 25-45 years. Married participants (69.5%) were more in number. Majority (58.9%) belonged to upper lower socioeconomic status according to the Modified Kuppuswamy's socioeconomic classification 2020 (11). Among the participants, 6.8% had health insurance coverage. Any co-morbid conditions like Diabetes mellitus, Hypertension, Thyroid dysfunction, or Bronchial asthma were present in only 8.4% of the participants. (Table 1)

Table 2: Details of COVID-19 related questions among the study population

Variable	n (%)	
History of contact with a confirmed positive case	Yes	12 (6.3%)
	No	168 (88.4%)
	Unknown	10 (5.3%)
Presence of symptoms suggestive of COVID-19	Yes	18 (9.47%)
	No	172 (90.52%)
Current self-rating of health status	Poor	1 (0.5%)
	Average	23 (12.1%)
	Good	119 (62.6%)
	Very good	47 (24.7%)

Among the participants with a positive history of contact with a confirmed positive case of COVID-19, 4.7% had direct contact and 4.2% had an indirect contact. Only 9.47% of the study participants reported symptoms suggestive of COVID-19 and the most common symptoms reported were fever and dry cough (33.3% each). (Table 2)

Table 3: Proportion of Common Mental Health Conditions among the study participants

Condition	Grading	n (%)
Stress	Mild	6 (3.2%)
	Moderate	3 (1.6%)
	Severe	0 (0%)
Anxiety	Mild	5 (2.6%)
	Moderate	4 (2.1%)
	Severe	0 (0%)
Depression	Mild	15 (7.9%)
	Moderate	9 (4.7%)
	Severe	1 (0.5%)

Participants who were found to suffer from Stress and Anxiety were 9 each in number (4.73%) and 25 (13.16%) were found to have depression. Thus, the overall proportion of participants suffering from Stress and Anxiety were found out to be 4.73% each and that of depression to be 13.16%. 6 (3.2%) of the study participants were found to suffer from Mild stress, 3 (1.6%) from moderate stress, 5(2.6%) had mild anxiety, 4(2.1%) had moderate anxiety. None of the participants were found to suffer from severe stress or anxiety. 15 participants (7.9%) had mild depression, 9 (4.7%) had moderate and 1 (0.5%) had severe depression. (Table 3)

Table 4: Risk factors contributing to Stress, Anxiety and Depression

Sn.	Variable	p-value[1]		
		Stress	Anxiety	Depression
1	Age	0.668	0.175	0.828
2	Sex	0.612	0.552	0.727
3	Marital status	0.072	0.022	0.454
4	Educational status	0.720	0.647	0.130
5	Socioeconomic status	0.770	0.062	0.351
6	Health Insurance coverage	0.565	0.707	0.687
7	Co-morbidities	0.687	0.680	0.807
8	History of contact with a confirmed positive case of COVID-19	0.145	<0.01	<0.01
9	Presence of symptoms suggestive of COVID-19	0.292	<0.01	0.001
10	Adverse financial status in the family due to lockdown	0.474	0.429	0.120
11	Unemployment	<0.01	0.664	0.487

	due to lockdown			
11	Difficulty in procuring groceries	0.097	0.178	0.254
12	Apprehension about oneself or family members contracting infection	0.326	0.346	0.475
13	Adverse change in routine physical activities	0.007	0.363	0.165
14	Change in interpersonal relationships during lockdown	0.218	0.040	0.045
15	Preventive measures undertaken by the government	0.039	0.038	0.092
16	Information disseminated by the media	0.337	0.540	0.252
17	Effect of lockdown on spiritual well being	0.854	0.598	0.641

[1]for χ^2 test. Value less than 0.05 is considered statistically significant.

Among the study variables analyzed, marital status had a statistically significant association with anxiety (p-value=0.022). Mild anxiety was found in 80% of the married participants. History of contact with a confirmed positive case of COVID-19 was found to have statistically significant association between anxiety and stress (p-values <0.01). Presence of symptoms suggestive of COVID-19 also had association with stress and anxiety. The most common symptoms reported by study participants were fever and dry cough (33% each). Unemployment due to lockdown and an apprehension about the preventive measures undertaken by the government had statistically significant association with the presence of stress with p-values 0.007 and 0.039 respectively. An adverse change in physical activity had a statistically significant association with stress with p-value=0.007. A change in the interpersonal relationships, either positive or negative was found to be associated with anxiety and depression with p-values of 0.040 and 0.045.

The responses of the public to lockdown, their concerns and queries and their suggestions to improve the services given to them during lockdown were assessed by open ended questions during the interview. 89 participants (46.8%) believed lockdown adversely affected the financial conditions of their families. The most common reason given for the same was unemployment or loss of work (83.8%). Only 39 participants (20.5%) had difficulty in procuring groceries and other essential supplies. 64% among them gave lack of income as the reason for the same, 19.4% opined that it was because of the closure of shops and commercials nearby. The apprehension of getting COVID-19 infection to oneself or family members was expressed by 64 (33.7%) participants and 88.2% of them believed that COVID-19 was a “scary” disease. 20.3% were fearful because they had either children or

elderly at home. 33 participants (17.4%) reported an adverse change in their routine physical activities due to lockdown. 88 (46.3%) of the participants did not experience any change in the interpersonal relationships during lockdown whereas 17 (18.9%) were of the opinion that they were voluntarily avoiding contact with friends and relatives because of the social distancing norms without any complaints, 24 (12.6%) were happy that relationships improved during lockdown as they got more time to spend with their families, 19 (10%) stated that there was increased tension and fighting in the family, mostly due to financial issues. 100 (52.6%) participants felt that the information given by the media was adequate and helping them to be more cautious but 23 (12.1%) believed the media are misleading them, and the information provided is not satisfactory. The public had varied responses about the services provided by the government during lockdown and the suggestions to improve it; 73 (38.4%) wanted the government to supply food and medicines to them, 45 (23.7%) suggested an improvement in health services- to conduct more testing, isolate and organize health camps in their localities to cater the needs of non-COVID-19 patients. 21 (11.1%) of the participants were fully satisfied and were thankful to the authorities for the services given whereas 5 (2.6%) of participants demanded financial support from the government during lockdown. (Table 4)

Discussion

Though COVID-19 was a public physical health emergency, it had its effect on the mental health and well-being of the entire human population across the globe, mostly because of the various measures undertaken by authorities to contain the infection. Lockdown was the strategy adopted by most of the countries worldwide to lessen the spread of the infection. Social distancing is important to stop the virus form spreading, but experts suggest that prolonged period of social isolation can lead to adverse mental health outcomes, ranging from a sense of loneliness to suicidal tendencies (12). The most important problem faced by the poor Indian households was unemployment or loss of work due to lockdown. Eight out of ten households in India reported a loss of income during the early days of lockdown (13). The worst hit was the lower middle-class families. Unemployment and poverty are often attributed to the rising prevalence of stress and anxiety disorders. Hence our cross-sectional study was conducted to describe the impact of COVID-19 lockdown on the mental health status of the urban slum dwellers in Bengaluru city, in the southern part of India.

The proportion of participants in our study found to be suffering from Stress and Anxiety were 4.73% each and that from depression was 13.15%. This is comparable to the data from the National Mental Health Survey [NMHS] of India 2015-16 which gives the overall lifetime prevalence of any psychiatric morbidity as 13.67% and the current prevalence as 10.56% (14). However it should also be noted that the sampling method, study population and the screening instruments using in the present study and the NMHS differ considerably. But the findings of the present study conducted on the underprivileged living in the urban slums of a metropolitan city like Bengaluru is highly relevant as the NMHS clearly points out that the prevalence of psychiatric morbidity was found to be higher in urban metro cities.

The overall proportion of common mental health conditions was found to be different from a similar study conducted in India during lockdown. It was an

online survey conducted during early lockdown [7]. The researchers investigated stress, anxiety, depression and well-being of the study participants. But the study instruments used were different. The prevalence of stress anxiety and depression were found to be higher than the present study, 74.1%, 38.2% and 10.2% respectively. It may be due to the fact that the study had a larger sample size, was conducted in different states across India and had used different screening instruments.

The results of a study conducted in China, the first country to identify the COVID-19 outbreak, on the psychological impact of the disease on the general population is quite relatable to the present study, as it was also conducted among the general population during the initial phase of the pandemic [9]. The same study instrument as in the present study was used but it was found out that the proportion of participants suffering from stress, anxiety and depression were found to be slightly higher. The study also showed that there is an association between the occurrence of symptoms suggestive of COVID-19, history of contact with a confirmed case of COVID-19 and the prevalence of stress, anxiety and depression, similar to the present study.

The present study has immense public health significance as well. Presence of symptoms suggestive of COVID-19 and a positive history of contact with a confirmed COVID-19 case were found to have a statistically significant association with stress, anxiety and depression which warrants the need for extensive testing among the general population to alleviate their apprehension about contracting the infection. Unemployment and the fear of impending financial crisis was also found to be a risk factor for the development of mental health conditions, this can be overcome by policy decisions by giving moratorium periods for the payment of EMIs of loans, by ensuring uninterrupted supply of groceries and other essentials. Mental health issues during lockdown or periods of social isolation should also be addressed.

Conclusion

The proportion of participants found to suffer from common mental health conditions in the urban slums of Bengaluru during the initial phase of lockdown was found to be less than 20%. Marital status, history of contact with a confirmed COVID-19 case, presence of COVID-19 like symptoms, unemployment due to lockdown, an adverse change in routine physical activities, change in interpersonal relationships and preventive measures undertaken by the government were found to have statistically significant association with stress, anxiety, and depression. Findings of this study can be used to formulate psychological interventions to improve mental health and overall well-being of the underprivileged sections of the society, during the pandemic.

Limitations of the Study

The study was conducted during the initial phase of the lockdown. A repeat survey among the same population would have helped us to assess the trend of mental health status among the population of urban slums. Since the study was addressing mental health, qualitative approaches like Focus Group Discussions or in-depth interviews could have yielded better results which were not feasible in view of the pandemic situation. Interviews were conducted over telephone which might have resulted in data collection bias and non-completion bias during the study(15) .

Recommendations

Though lockdown is an essential strategy to curb the exponential rise of cases during a pandemic, the

government and the competent authorities should consider the health and well-being of the citizens, with special preference to the underprivileged. The study points out the need for mental health counselling during periods of social isolation or quarantine. A panel of experts consisting of psychiatrists and psychologists should be formed to address mental health issues. Free counselling should be made by means of telephonic conversations and a helpline number should be made available to address the queries and concerns of the public. To reduce the financial strain of the public, which arises mostly due to unemployment during lockdown, a relaxation on EMIs of loans can be provided and measures can be taken to make sure that there is uninterrupted supply of groceries, safe drinking water and essential medicines.

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