

Assessment of Psychological Stress Associated with COVID-19 Lockdown in the Urban Adult Population of India

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COVID-19, the unprecedented deadly pandemic has turned the world topsy-turvy. It has affected all the people like poor and rich, young and old, educated and uneducated, male and female with detrimental consequences. People who are in quarantine and/or lockdown are likely to develop a wide range of symptoms like psychological stress, irritability, anxiety, depression etc. Hence, this study was undertaken to assess the psychological effects of COVID-19

lockdown among adult population residing in Chennai, India. This study is a cross sectional descriptive study carried out in Chennai, India. A structured questionnaire was developed containing 25 questions related to the emotional disturbance, depression, self-concept, physical problems, cognitive changes and role performance and 7 questions related to the demographics. An online survey was conducted using a structured questionnaire using a non-probability snowball sampling technique. A total of 579 responses were received. The findings of the present study revealed that, among 579 respondents, more than half of the respondents 320(56.3%) were under severe psychological stress, 192(33.2%) respondents that is one third of the people had moderate psychological stress and remaining were having mild psychological stress. The study also revealed that there was a statistically significant association of psychological problems associated with demographic variables. Our Study revealed that people living in Chennai had severe psychological problem due to the COVID-19 lockdown. This highlights the importance and immediate need for the development special intervention programmes for the people with psychological problems due to the COVID-19 lockdown.

Keywords: COVID-19; Lockdown; Psychological Problem; Pandemic; Stress.

The novel corona virus disease (COVID-19) that emerged at the end of 2019 began life threatening for millions of people within the few weeks of its outbreak. COVID-19 is highly infectious causing severe respiratory infections, which impacted all over the world. World health Organization (WHO) declared COVID-19 as a pandemic and as a public health emergency of national and international concern.¹ National Health Commission announced officially as B type infectious disease, till then severity COVID-19 has been underrated.² Unpredictability and the uncertainty of the situation is one of the most worrying situation which threatens not only physical health but also mental health.³

COVID-19 has considerably resulted in a large number of psychological consequences. Psychological changes which were caused by public health emergencies are reflected directly so, we can monitor psychological changes through emotional and cognitive indicators.⁴ Quarantine and isolation are the most important public health measures adopted for preventing the transmission. Isolation is the process of separating the infected individuals from those who did not get the infection is isolation whereas quarantine is separating and restricting the movements of people who have been exposed to an infectious disease to monitor if they develop the disease over a period of time.⁵ During quarantine people develop symptoms of psychological stress and disorder including low mood, insomnia, stress, anxiety, anger, irritability, emotional exhaustion, depression and irritability.⁶

Globally, Psychiatrists must be aware of such manifestations, and strategies to manage them which include both the needs of specific populations and the precautionary measures that are necessary to reduce the spread of COVID-19.^{5,7} Some studies have identified particular group of people (older adults, the homeless, migrant workers, the mentally ill, pregnant women) that may be more vulnerable to psychological stress due to impact of COVID-19 pandemic.⁷

The impact of COVID-19 pandemic is an unprecedented one witnessing billions of people across the world forced to get isolated / quarantined.⁸ Most of the countries affected with COVID-19 have announced lockdown to contain the virus, restricting people to stay at home completely to save the lives of the public.⁹ The lockdown is an unusual practice for the people to adopt it and own it to practice. Hence, this study has been undertaken to assess whether or not the psychological stress has been associated with the COVID-19 lockdown in the city of Chennai, Tamil Nadu, India.

MATERIALS AND METHODS

This is a cross sectional descriptive study carried out across Chennai city, Tamil Nadu, India. A non-probability convenient sampling technique was used. An online structured questionnaire was developed by using SurveyMonkey Software, SurveyMonkey Inc., USA. An online link has been generated for the questionnaire and a QR

code as well to access the questionnaire and ease the process of accessing the questionnaire by the respondents. This online questionnaire was affixed with a consent form along with it. The SurveyMonkey link of the questionnaire and/or the QR code of the questionnaire was sent to the contacts of the investigators by virtue of E-mail, WhatsApp, Facebook, IMO and various other social media. The investigators requested all the respondents to roll out the survey to as many people as possible through their contacts. By doing so, the link was forwarded to individuals except the primary point of contact so on. As this is an online study, those adults' individuals residing in the city of Chennai, able to understand and comprehend English and those adults who have given their consent have been included in the study. Those respondents who could not complete the survey due to internet connectivity / partially completed have been excluded from the study. The data collection was initiated on 16th April 2020 at 10 AM and closed on 22nd April 2020 at 05.17 pm. We were able to collect data from various places in Chennai.

Once the participants attempt the survey, they will be prompted to read the description of the study followed by the consent to participate in the study. Once the respondents give their consent to participate into the study, they will be further prompted to complete the demographics of the questionnaire. The demographic variable includes age, sex, education qualification, occupation, type of family, members in the family, sources of information on COVID-19. Once the respondents complete the demographic details, they will be asked to complete the questionnaire consists of 25 simple questions, to assess the psychological effects on COVID-19 Lock down among common people in Chennai, Tamil Nadu, India. They were asked to indicate their response on these 25 simple structured statements rated on a 5-point Likert scale (1-5) ranging from: Always / Usually / Sometimes / Rarely / Never. Respondents only need to read the statement, understand and then record their perception by selecting the appropriate response on the 5-point Likert Scale.

This questionnaire consisting of 25 statements has been developed by the researchers modified Weiss and Marmar impact of event scale and Hamilton Depression Scale contains Six parts,

viz. Part-I: Emotional disturbance (5 statements); Part-II: Depression (4 statements); Part-III: Physical problems (4 statements); Part-IV: Self-concept (6 statements); Part-V: Role performance (3 statements) and Part-VI: Cognitive changes (3 statements).

The study protocol was approved by the Institutional Review Board (IRB) of the Panimalar Medical College Hospital & Research Institute, Chennai (Panimalar Medical College Hospital & Research Institute IRB #1/2020/006) and conformed to the requirements of the Declaration of Helsinki (as revised in Seoul 2008).

Scoring of the questionnaire

A total score ranging from 1-41 has been considered as "mild psychological stress"; a total score ranging from 42-83 has been considered as "moderate psychological stress" and 84-125 has been regarded as "severe psychological stress".

Statistical analyses

All statistical analyses were performed using Statistical Package for Social Science (SPSS, version 17) for Microsoft windows, SPSS Inc. USA. The data were not normally distributed. And therefore Non - parametric tests were performed. Descriptive statistics were presented as numbers and percentages the data were expressed as Mean and SD. A one way analysis of variance with a post hoc Tukey HSD / Kruskal Wallis test was used for continuous data. Independent sample student t test / Mann whitney test were used to compare continuous variables between two groups A chi-squared test was used for comparison between two attributes. A two sided p value < 0.05 was considered statistically significant.

RESULTS

This study was aimed at assessing the levels of psychological stress due to COVID-19 lockdown among the adults residing in Chennai, Tamil Nadu, India during this corona pandemic. A total number of 579 respondents completed the questionnaire designed by the researchers and all the responses were recorded. All the participants were above 18 years of age. The study included only those who are accessible to internet and those who know to read and comprehend English. From lowest educational qualification to higher

Table 1. Demographics of the respondents (n=579)

Demographic Variable	Frequency	Percentage (%)
Age Group		
≤ 20 Years	69	11.90
21-30 Years	175	30.20
31-40 Years	157	27.10
> 40 Years	178	30.70
Gender		
Female	243	42.00
Male	322	55.60
Others	14	2.40
Educational Qualification		
Primary School	38	6.60
Diploma	99	17.10
Undergraduate	253	43.70
Postgraduate	171	29.50
Doctorate	18	3.10
Profession		
School	15	2.60
Medical	94	16.20
Health Care	45	7.80
Pharmacy	19	3.30
I.T	91	15.70
Own Business	107	18.50
Real Estate	58	10.00
Banking	30	5.20
Educational Institutes	40	6.90
Contract Labour	2	0.30
House Wife	27	4.70
Retired Employee	7	1.20
Senior Citizen	3	0.50
Others	41	7.10
Source of Information		
Social Media	121	20.90
Print Media	48	8.30
Mass Media	135	23.30
Government Agencies	95	16.40
Television Channels	120	20.70
Family Members	29	5.00
Friends	17	2.90
Others	14	2.40
Type of Family		
Nuclear Family	393	67.90
Joint Family	186	32.10
Number of Family Members		
2	74	12.80
3	190	32.80
4	119	20.60
More than 4	196	33.90

educational qualification were participated in the study. Among the participants 55.6% were male and 42% female. With regard to the profession, 107 (18.5%) respondents were self-employed / having own business and 94 (16.2%) respondents were from medical profession. Regarding the source of information most of the people 135 (23%) influenced by mass media and next majority 121 (20.9%) influenced by social media. With regards to the type of family 393 (68%) respondents were in nuclear family, remaining 186 (32.1%) belong to joint family. Regarding family members 196 (33.9%) were more than four members in the family (Table-1). The Table-2 shows the frequency and percentage distribution level of psychological stress on the respondents due to the COVID-19 lockdown.

The results of our study reveals the fact that, people who were 31 - 40 years and above 40 years were identified to be under severe psychological stress due to the COVID-19 Lockdown. With respect to the gender, males were under severe psychological stress than females (Table-3). With regard to the educational qualification, all the respondents whether they were poorly educated / highly educated, all the groups were under severe psychological stress as evident by the results of our study. 65.8% of the respondents with primary school qualification, 73.7% of the respondents with diploma qualification, 51.8% of the respondents with undergraduate qualification, 45% of the respondents with postgraduate qualifications and 77.8% of the respondents with doctorate qualification have been showed that they are under severe psychological stress due to the COV-D-19 lockdown (Table-3). The result of the present study reveals the psychological effect due to COVID-19 lockdown on profession. IT people (84.6%), own business (83.2%), real estate (94.8%), banking (86.7%) had severe psychological effect because of lockdown. With regard to the type of family (Nuclear family vs Joint family), irrespective of the type of family, respondents belonging to the nuclear family (54.2%) and joint family (57.5%) were in severe psychological stress.

DISCUSSION

Epidemic and pandemic are the periodic phenomena. During the current crisis situation

caused due to the COVID-19 pandemic, lockdown has been reinforced as a precautionary measure to contain the virus and limit the contagion of the disease there by reducing the number of deaths. As lockdown has been imposed, common people are facing several challenges during this lockdown period. COVID -19 not only affects the physical health but also affects mental health of the people in terms of the disturbances in emotional, cognition & self-esteem domains. According to the behaviour immune system theory people are likely to develop negative emotions and negative cognitive assessment for self-defence.² These negative emotions affect the people's psychology and stimulate to exhibit the strange behaviours. People started reacting extremely & strangely like avoiding meeting people, contacting the people with some other disease as well and afraid to bury the COVID-19 infected person's body in the nearby cemetery etc. This is due to the threat that has been created by the outbreak of the COVID-19 pandemic thereby inducing the avoidant behaviour finally leading to the avoidant personality disorder. Therefore, it is essential to understand the potential psychological changes caused by COVID-19 Lockdown. Hence, this study conducted to evaluate the psychological effect because of lockdown.

Since the National Health Commission identified COVID-19 as a B type infectious disease, every country has announced lockdown in order to avoid the spread of disease.¹⁰ Extension and more extension of lockdown create negative emotions, irritability, depression, low self-esteem, sadness, aggressiveness; anger etc.¹¹ In this present study, among the participants 55.6% were female and 42% female. With regard to the profession, 107 (18.5%) respondents were self-employed / having own business and 94 (16.2%) respondents were from medical profession. Regarding the source

of information most of the people 135 (23%) influenced by mass media and next majority 121 (20.9%) influenced by social media. With regards to the type of family 393 (68%) respondents were in nuclear family, remaining 186 (32.1%) belong to joint family. Regarding family members 196 (33.9%) were more than four members in the family. The results of our present investigation clearly show that 55.3% of the respondents (more than half of the respondents) were under severe psychological stress induced by COVID-19 lockdown and one third of the respondents (33.2%) experience moderate psychological stress. Our findings are in line with the psychological responses and associated factors documented during the initial stage of the corona virus disease epidemic among the general population in China.⁴ It has been documented that more than 80% of the people among the Indian population were preoccupied with thought during the current COVID-19 pandemic. Sleep difficulties, paranoia about acquiring COVID-19 infection and distress related social media were reported in 12.5%, 37.8% and 36.4% participants respectively. The perceived mental health care need was seen in more than 80% of participants. Likewise most of the participants in our study had sleep disturbance, food pattern changes, anger, irritability, distress about social media.¹²

The results of our study reveals the fact that, people who were 31 - 40 years and above 40 years were identified to be under severe psychological stress due to the COVID-19 Lockdown. This might be due to the fact that, those respondents who are in these age groups were more responsible in the working area and family, so they have had more psychological stress than other groups. With respect to the gender, males were under severe psychological stress than females.

Table 2. It shows the levels of psychological effects (mild/moderate/severe) on the respondents due to the COVID-19 lockdown (n=579)

Level of Psychological Stress	Frequency	Percentage
Mild Psychological stress	67	11.6
Moderate Psychological stress	192	33.2
Severe Psychological stress	320	56.3

Table 3. Association of Psychological Stress with demographics (N=579)

Demographic variables	Level of Psychological stress on COVID-19 Lockdown										Chi Square Static
	Mild Psychological Problem		Moderate Psychological Problem		Severe Psychological Problem		Total		Chi Square Static		
	No	%	No	%	No	%	No	%			
Age in years											
≤ 20 Years	10	14.5	50	72.5	9	13.0	69	100	$\chi^2 = 47.058$		
21 to 30 Years	17	9.7	68	38.9	90	51.4	175	100	df=3		
31 to 40 Years	12	7.6	43	27.4	102	65.0	157	100	P=0.000		
> 40 Years	67	11.6	192	33.1	320	55.3	579	100	Highly Significant		
Gender											
Female	33	13.6	111	45.7	99	40.7	243	100	$\chi^2 = 30.904$		
Male	34	10.6	79	24.5	209	64.9	322	100	df=2		
Others	0	0.0	2	14.3	12	85.7	14	100	P=0.000		
Qualification											
School	3	7.9	10	26.3	25	65.8	38	100	$\chi^2 = 30.968$		
Diploma	3	3.1	23	23.2	73	73.7	99	100	df=4		
Under Graduate	31	12.2	91	36.0	131	51.8	253	100	P=0.000		
Post Graduate	29	17.0	65	38.0	77	45.0	171	100	Highly Significant		
Doctorate	1	5.5	3	16.7	14	77.8	18	100	Significant		
Profession											
School	1	6.7	8	53.3	6	40.0	15	100	$\chi^2 = 230.232$		
Medical	15	16.0	64	68.0	15	16.0	94	100	df=13		
Health Care	12	26.7	29	64.4	4	8.9	45	100	P=0.000		
Pharmacy	0	0.0	4	21.1	15	78.9	19	100	Highly Significant		
I.T	6	6.6	8	8.8	77	84.6	91	100	Significant		
Own Business	3	2.8	15	14.0	89	83.2	107	100			
Real Estate	1	1.7	2	3.5	55	94.8	58	100			
Banking	0	0.0	4	13.3	26	86.7	30	100			

Staying in the home is not big deal for women but it is very difficult for men and due to this attitude/perception, males have had more psychological stress than females. Wang C., et al (2020) reported that especially the female study subjects were identified with more psychological problem than the male subjects.⁵ Whereas in our present study, males had more psychological stress than the female study subjects. This might be attributed to the cultural differences across the countries.

With regard to the educational qualification, all the respondents whether they were poorly educated / highly educated, all the groups were under severe psychological stress as evident by the results of our study. 65.8% of the respondents with primary school qualification, 73.7% of the respondents with diploma qualification, 51.8% of the respondents with undergraduate qualification, 45% of the respondents with postgraduate qualifications and 77.8% of the respondents with doctorate qualification have been showed that they are under severe psychological stress due to the COVID-19 lockdown. The result of the present study reveals the psychological effect due to COVID-19 lockdown on profession. IT people (84.6%), own business (83.2%), real estate (94.8%), banking (86.7%) had severe psychological effect because of lockdown. The severe economic crisis of USA also could be contributor towards the psychological stress that is observed among the IT professionals. The Indian IT companies who have had collaboration with them were in a dilemma of being unemployed so they have severe psychological problem. Next to the IT profession, real estate followed by own business facing more psychological problem. Because of lockdown the economy has attained the stage of stagflation and this resulted in the reduced purchasing power of the people. So both professions have landed up in psychological distress. In this present investigation, bank employees also were under severe psychological stress (86.7%) even though they are at work (as it is a public relation profession) during this COVID-19 lockdown. This might be attributed to the feeling of threat & panic about spread of disease.

With regard to the type of family (Nuclear family vs Joint family), irrespective of the type of family, respondents belonging to the nuclear

family (54.2%) and joint family (57.5%) were in severe psychological stress. There is a less variation between the two types of families. Most of our study participants (37.1%) respondents expressed that they were in irritable and angry mood, 29.2% of respondents expressed that they had sleep disturbance, 20.4% of people revealed that they had problems in activities of daily living, 24.2% people felt that their food patterns has been changed and 20% of respondents expressed that they are demotivated due to the COVID-19 lockdown. More than half of the study subjects expressed that they are facing financial crisis and 25% of the study subjects expressed that they had persistent arguments at home.

Since the findings of our study clearly reveals that 55.3% of the respondents were under severe psychological stress and 33.2% were under moderate psychological stress as induced by the COVID-19 lockdown among the urban people living in Chennai, India. This highlights and emphasizes the need for the development of the plausible solutions, need for the development of various innovative intervention programs that unleashes the psychological stress among the people due to this current COVID-19 lockdown. When psychological effects are more in large population it may result in panic situation leading to exhaustion of resources. It can also lead to limitations in daily activities, avoidant behaviour causing limited socialization. Because of psychological problem people adopt various unwanted lifestyle and dietary modifications. Hence, it is important to deal with the mental health difficulties in the situation of pandemic. Researchers also suggested devising some intervention programme for the people in China to combat the psychological stress due to the COVID-19 lockdown.⁴ Same as in our study most of our study participants felt depression, anxiety, poor concentration, lack of motivation, problems in activities of daily living and disturbance in self-coping.

CONCLUSION

The findings of our study clearly indicates that, the COVID-19 lockdown disturbed the lives of normal people in all the categories such as male and female; old and young; educated and

uneducated; poor and rich. This study showed clearly the people living in Chennai had severe psychological problem because of COVID-19 Lockdown. All the people were aware about the importance of staying at home to fight against the COVID-19 in order to contain the virus in spite of that it is observed that lockdown induced the psychological stress of all categories of people. The COVID - 19 pandemic represents a massive global mental health crisis. There is a need to intensify the awareness programme and address the mental health issues of the people during this lockdown. Developing strategies and implementing effective programmes to overcome the psychological stress during lockdown is the prime need for the society. So, there is an immediate need to develop special intervention programs for the individuals with severe psychological stress due to the lockdown. Our findings can be used to formulate psychological intervention to improve the mental health and psychological well-being during the COVID-19 Lockdown.

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Ethics approval and consent to participate

Institutional Review Board (IRB) Approval has been obtained prior to start of the study (Panimalar Medical College Hospital & Research Institute IRB #1/2020/006). Informed Consent has been obtained from all the participants of the study.

Consent for publication

All authors provided their consent for publication of this manuscript.

Availability of data and material

The data used to support the findings of this study are available from the corresponding author upon request.

Competing interests

All the authors declare no conflict of interest.

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Authors' contributions

KK, PKRS, RGJM, PS, DR, SSDS, SKM: having contributed equally to the work; VMK, MK, PC, VPV, SKM: contributed to data curation, validation, visualization and writing the manuscript; VPJ, SKB, KMJ, PB, UKMC, NS, PB, VPV, SKM: contributed to formal analysis, validation, visualization and writing the manuscript; KK, PKRS, RGJM, PS, DR, SSDS, VMK, MK, PC, VPJ, SKB, KMJ, PB, UKMC, NS, PB, VPV & SKM: All authors reviewed the manuscript and approved the submitted manuscript.

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