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A WEB BASED CROSS-SECTIONAL SURVEY ON THE MENTAL HEALTH STATUS OF THE GENERAL POPULATION OF INDIA DURING THE CORONAVIRUS DISEASE 19 (COVID-19) PANDEMIC AND ITS ASSOCIATED FACTORS DURING THE NATIONWIDE LOCKDOWN

Community Medicine

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ABSTRACT

The 2019 Coronavirus disease (COVID-19) pandemic is a serious global threat and a major challenge to the mental health of humankind. Non-pharmaceutical interventions (NPIs) are aimed at reducing the contact rates in the population and thereby reducing transmission of the virus which primarily includes mandatory social distancing measures. Hence India has been going through a nationwide lockdown since March 24, 2020 which is an effective strategy of social distancing warranting the need to reduce, as far as possible, the negative effects associated with it. The present study aimed to assess the mental health status of the general population of India during Coronavirus disease 19 (COVID-19) pandemic and its associated factors during the nationwide lockdown. A web-based cross-sectional survey was done from May 1, 2020 to May 31, 2020 through an anonymous online questionnaire. Mental health status was assessed using DASS 21 questionnaire and other associated stress factors were also assessed. Binary logistic regression analysis was done. Out of 392 respondents, 143 (36.5%) individuals were males and 249 (63.5%) were females. 44.9% of them showed depression, 29.3% showed anxiety whereas 15.6% were stressed. Mental health issues were significantly associated with male gender, younger age group, lone people, people with financial crisis, who find difficulties in purchase of essentials, inaccessibility to health care services, excessive smartphone users, people facing familial disharmony. The mental health of people should be considered during such difficult times and sufficient measures to be taken to address mental health issues.

KEYWORDS

COVID-19, depression, anxiety, stress

INTRODUCTION:

The World has been facing a global threat ever since the first case of 2019 novel Corona Virus (nCoV) or Severe Acute Respiratory Syndrome Corona virus 2 (SARS CoV-2) or Corona Virus Disease 2019 (COVID-19) as it is now called, to be the cause of an outbreak of pneumonia in Wuhan City, Hubei Province, China in late December 2019.¹ Considering the alarming levels of spread and severity globally, a Public Health Emergency of International Concern (PHEIC) was declared by World Health Organization (WHO) on January 30, 2020 and further characterized COVID 19 as a pandemic on March 11, 2020. In the absence of a COVID-19 vaccine, there is evidence in the potential role of a number of public health measures called non-pharmaceutical interventions (NPIs) which are aimed at reducing the transmission of the virus.² These interventions include hand hygiene, respiratory etiquette, use of masks and other personal protective equipment, human surveillance and case reporting, rapid viral diagnosis, isolation of the sick, travel restrictions, school and workplace closures, limitations on public events and mandatory social distancing measures.³

The first case of the COVID-19 in India was reported on 30 January 2020 in Kerala, originating from China after which there was a tremendous increase in numbers subsequently. On 24 March 2020, the Government of India under Prime Minister ordered a nationwide lockdown for 21 days, limiting movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic from March 25, 2020 which was ordered after a 14-hour voluntary public curfew on March 22, 2020. The lockdown subsequently extended till May 31, 2020 which was further prolonged in the containment zones declared.

While lockdown can be an effective strategy of social distancing, at the same time, it can also have an impact on the mental health of the public. Quarantine or social isolation is often an unpleasant experience for those who undergo it. Duration of quarantine, fear of infection, frustration, loneliness, boredom, separation from loved ones, inadequate supplies and financial loss, can on occasion create dramatic effects.⁴ There is evidence from previous infectious outbreaks and pandemics that demonstrates the deleterious effects of social isolation such as depression, anxiety, self-harm, insomnia, increased substance use, gambling, suicide, domestic violence and child abuse.⁵ The Times of India news media reported that the National Commission for Women (NCW) saw a significant increase in the number of complaints from women seeking protection from domestic violence in April and May, 2020 when compared with the pre-lockdown period and as a result, the National Legal Services Authority (NALSA) has decided to

open online legal assistance services by a panel of women lawyers in each district to come to the aid of victims of domestic violence and child abuse.^{6,7}

Therefore, with the given developing situation, the present study aimed to assess the mental health status of the general population of India during Coronavirus disease 19 (COVID-19) pandemic and its associated factors during the nationwide lockdown.

MATERIALS & METHODS:

A web-based cross-sectional survey was done among the general population of India during the nationwide lockdown from May 1 to May 31, 2020. Sample size was calculated using Survey Monkey, an online survey software, which was found to be 385 considering the total population of India as 1.3 billion with a confidence interval of 95% and margin of error 5%. Due to the prevailing norms on social distancing and recommendations to minimize face to face interaction, the study was conducted using anonymous online questionnaire in Google Forms and the proforma was provided in three languages viz. English, Tamil and Hindi. It was clearly stated at the beginning of the survey that participation implies informed consent and was purely voluntary. All respondents provided informed consent. A snowball sampling technique was adopted where an electronically generated invitation was first circulated through WhatsApp and e-mails to college students and was encouraged to pass on to others. A total of 392 responses were received in the stipulated time period. Ethical approval was obtained from the institution.

Contents of the questionnaire:

A structured questionnaire containing the following was used in the study.

- 1) Sociodemographic data of the study participants.
- 2) Mental health status was evaluated using the Depression, Anxiety and Stress Scale - 21 Items (DASS-21) with 7-items under each of the three subscales. The rating for each item was from 0 which implied "did not apply to me at all" to 4 which implied "applied to me very much or most of the time". The scores from each subscale need to be multiplied by 2 to calculate the final score. The total depression subscale score was divided into normal (0-9), mild depression (10-13), moderate depression (14-20), severe depression (21-27), and extremely severe depression (28-42). The total anxiety subscale score was divided into normal (0-7), mild anxiety (8-9), moderate anxiety (10-14), severe anxiety (15-19), and extremely severe anxiety (20-42). The total stress subscale score was divided into normal (0-14), mild stress (15-18), moderate stress (19-25), severe stress (26-33), and

extremely severe stress (34–42). The DASS-21 scale has been demonstrated to be a reliable and valid measure in assessing mental health in the Indian population and was previously used in research during various other outbreaks.⁸

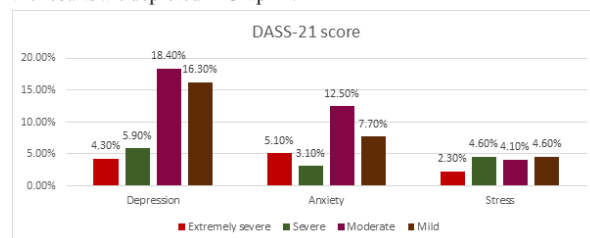
- 3) Other common stressors during lockdown regarding availability of utilities and frustrations associated with confinement.

Statistical Analysis: Data was entered in Microsoft excel 2019 and data analysis was done using SPSS Statistics 20.0 (IBM SPSS Statistics, New York, United States). Descriptive statistics was employed in the study. Association of each of the categorical variable with Mental health status was assessed using Chi-square test. The variables that were significantly associated with poor mental health were simultaneously subjected to the Binary logistic regression model to determine the significant independent factors of mental health.

RESULTS:

Among the 392 subjects who participated in our study, 143 (36.5%) were males and 249 (63.5%) were females ranging from 15 to 78 years of age. 171 (43.6%) of them were married of which 139 (81.3%) had at least one child. Majority of the participants were graduates (83.2%), 14.5% had attained higher secondary education, 1.3% with primary/middle school education. Among the participants, 42.9% were students, 35.5% were employed, 18.6% were unemployed, 2.3% were retired from their jobs. 25.8% of the respondents were health workers. Only 146 (37.2%) participants had an active medical health insurance

whereas 246 (62.8%) did not have one at all. Respondents were from 17 states all over the country which included the states with higher prevalence of COVID-19 namely Maharashtra, Tamil Nadu, Delhi, Gujarat, Uttar Pradesh, West Bengal and more. The mental health status of the study participants was assessed using DAS- 21 scale and the results are depicted in Graph 1.



Graph 1: Proportion of study subjects with Depression, Anxiety, stress (n=392)

The mean score of depression was 9.44 ± 8.8 . Nearly half of the total respondents (44.9%) showed symptoms of depression whereas 55.1% were normal. The mean score of anxiety was 5.21 ± 6.9 where 28.3% of them showed symptoms of anxiety and the remaining 71.7% were found to be normal. A lesser proportion (15.6%) of the individuals exhibited symptoms of stress whereas 84.4% were normal with a mean score of 7.27 ± 9.2 . (Graph 1)

Table 1 Sociodemographic correlates of Depression, Anxiety, Stress during COVID 19 nationwide lockdown (n= 392)

Variables	n (%)	Depression subscale			Anxiety subscale			Stress subscale		
		Yes	No	p-value	Yes	No	p-value	Yes	No	p-value
Gender				0.001*			0.080			0.942
Male	143(36.5)	80 (55.9)	63(44.1)		48(33.6)	95(66.4)		22(15.4)	121(84.6)	
Female	249(63.5)	96 (38.6)	153(61.4)		63(25.3)	186(74.7)		39(15.7)	210(84.3)	
Age (years)				0.004*			0.000*			0.000*
15-30	253(64.5)	129 (51)	124(49)		74(29.2)	179(70.8)		54(21.3)	199(78.7)	
31-45	72 (18.4)	20 (27.8)	52 (72.2)		16(22.2)	56 (77.8)		7 (9.7)	65 (90.3)	
46-60	58 (14.8)	24 (41.4)	34 (58.6)		12(20.7)	46 (79.3)		0 (0)	58 (100)	
60+	9 (2.3)	3 (33.3)	6 (66.7)		9 (100)	0 (0)		0 (0)	9 (100)	
Status as a parent				0.004*			0.431			0.002*
Has a child	139(35.5)	49 (35.3)	90 (64.7)		36(25.9)	10 (74.1)		11 (7.9)	128(92.1)	
No children	253(64.5)	127(50.2)	126(49.8)		75(29.6)	178(70.4)		50(19.8)	203(80.2)	
Marital status				0.000*			0.318			0.000*
Married	171(43.6)	56 (32.7)	115(67.3)		44(25.7)	127(74.3)		14 (8.2)	157(91.8)	
Unmarried	221(56.4)	120(54.3)	101(45.7)		67(30.3)	154(69.7)		47(21.3)	174(78.7)	
Household size				0.075			0.414			0.127
1 member	8 (2.0)	4 (50)	4 (50)		2 (25)	6 (75)		2 (25)	6 (75)	
2 members	50 (12.8)	15 (30)	35 (70)		5 (30)	35 (70)		3 (6)	47 (94)	
3-5 members	305(77.8)	140(45.9)	165(54.1)		82(26.9)	223(73.1)		4 (16.1)	256(83.9)	
More than 6	29 (7.4)	17 (58.6)	12 (41.4)		12(41.4)	17 (58.6)		7(24.1)	22 (75.9)	
Employment status				0.033*			0.023*			0.129
Unemployed	73 (18.6)	26 (35.6)	47 (64.4)		14(19.2)	59 (80.8)		7 (9.6)	66 (90.4)	
Farmers/Coolie	3 (0.8)	0 (0)	3 (100)		0 (0)	3 (100)		0 (0)	3 (100)	
Student	168(42.9)	89 (53.0)	79 (47)		52(31.0)	116(69.0)		34(20.2)	134(79.8)	
Retired	9 (2.3)	3 (33.3)	6 (66.7)		6 (66.7)	3 (33.3)		0 (0)	9 (100)	
Employed	139(35.4)	58 (41.7)	81 (58.3)		39(28.1)	100(71.9)		20(14.4)	119(85.6)	
Educational attainment				0.578			0.099			0.598
None	4 (1.0)	3 (75)	1 (25)		3 (75)	1 (25)		53 (0)	273 (100)	
Primary/Middle	5 (1.3)	3 (60)	2 (40)		0 (0)	5 (100)		0 (0)	5 (100)	
Higher secondary	7 (14.5)	25 (43.9)	32 (56.1)		16(28.1)	41 (71.9)		8 (14)	49 (86)	
Graduated	326(83.2)	145(44.5)	181(55.5)		92(28.2)	234(71.8)		53(16.3)	273(83.7)	
Medical Health insurance status				0.339			0.089			0.836
Active	146(37.2)	61 (41.8)	85 (58.2)		34(23.3)	112(76.7)		22(15.1)	124(84.9)	
None	246(62.8)	115(46.7)	131(53.3)		77(31.3)	169(68.7)		39(15.9)	207(84.1)	
Health worker				0.879			0.356			0.836
Yes	101(25.8)	46 (45.5)	55 (54.5)		35(24.8)	76 (75.2)		21(20.8)	80 (79.2)	
No	291(74.2)	130(44.7)	161(55.3)		86(29.6)	205(70.4)		40(13.7)	251(86.3)	

Figures in the parentheses indicate percentage (%).

*p<0.05= significant

Note: *Includes unmarried

^bIncludes housewives

^cIncludes Professional, Semi-professional, Skilled, Semi-skilled, Clerks, Elementary occupation

^dIncludes Bachelors, Masters & Doctorate

Table 1 shows that majority of the males (55.9%) had depression when

compared to females (38.6%). The age group of 15 to 30 years showed a higher proportion of depression (51%) and stress (21.3%) than the other age groups. The unmarried respondents showed a significantly higher proportion of depression (54.3%) and stress (21.3%) when compared with those married. A major proportion of the employed group showed relatively higher proportion of depression (41.7%) and anxiety (28.1%) when compared with unemployed. Students showed a higher level of depression (53%), anxiety (31%) and stress (20.2%) in our study. Age, gender, marital status and employment status were significantly associated with depression, anxiety and stress with p value less than 0.05.

Table 2 Stressors of Depression, Anxiety, Stress during COVID 19 nationwide lockdown (n= 392)

Variables	N (%)	Depression subscale			Anxiety subscale			Stress subscale		
		Yes	No	p-value	Yes	No	p-value	Yes	No	p-value
Able to buy groceries/ supplies for daily living				0.346			0.291			0.162
Yes	362(92.3)	165(45.6)	197(54.4)		100(27.6)	26 (72.4)		59(16.3)	303(83.7)	
No	30 (7.7)	11 (36.7)	19 (63.3)		11 (36.7)	19 (63.3)		2 (6.7)	30 (93.3)	
Anxious about availability of groceries/other essentials of daily living				0.000*			0.000*			0.000*
Yes	175(44.6)	105 (60)	70 (40)		73 (41.7)	102(58.3)		42 (24)	133 (76)	
No	217(55.4)	71 (32.7)	146(67.3)		38 (17.5)	179(82.5)		19 (8.8)	198(91.2)	
Purchase groceries/essentials in large quantities sufficient for longer periods				0.366			0.004*			0.308
Yes	195(49.7)	92 (47.2)	103(52.8)		68 (34.9)	127(65.1)		34(17.4)	161(82.6)	
No	197(50.3)	84 (42.6)	11(57.4)		43 (21.8)	1 (78.2)		27(13.7)	170(86.3)	
Wear any protective covering while stepping out of home ^a				0.220			0.147			0.000*
Yes	37 (96.7)	16 (44.3)	211(55.7)		105(27.7)	274(72.3)		54(14.2)	325(85.8)	
No	13 (3.3)	8 (61.5)	5 (38.5)		6 (46.2)	7 (53.8)		7 (53.8)	6 (46.2)	
Frustrated/angry to stay confined at home				0.000*			0.013*			0.000*
Yes	149(38.0)	90 (60.4)	59 (39.6)		53 (35.6)	96 (64.4)		38(25.5)	111(74.5)	
No	243 (62)	86 (35.4)	157(64.6)		58 (23.9)	185(76.1)		23 (9.5)	220(90.5)	
Frustrated/angry when unable to purchase any necessary item/product				0.000*			0.004*			0.007*
Yes	170(43.4)	102 (60)	68 (40)		61 (35.9)	109(64.1)		36(21.2)	134(78.9)	
No	222(56.6)	74 (33.3)	148(66.7)		50 (22.5)	172(77.5)		25(11.3)	197(88.7)	
Frustrated when unable to eat food from outside ^b				0.000*			0.000*			0.000*
Yes	117(29.8)	74 (63.2)	43 (36.8)		48 (41)	69 (59)		30(25.6)	87 (74.4)	
No	275(70.2)	102(37.1)	173(62.9)		63 (22.9)	212(77.1)		31(11.3)	244(88.7)	
Terrified at the thought of "What would I do if something bad happened to me?" ^c				0.000*			0.001*			0.011*
Yes	108(27.6)	71 (65.7)	37 (34.3)		44 (40.7)	64 (59.3)		25(23.1)	83 (76.9)	
No	284(72.4)	105 (37)	179 (63)		67 (23.6)	217(76.4)		36(12.7)	248(87.3)	
More use of mobile phones than used to				0.009*			0.038*			0.026*
Yes	289(73.7)	148(51.2)	141(48.4)		90 (31.1)	199(68.9)		52 (18)	237 (82)	
No	103(26.3)	68 (66)	35 (34)		21 (20.4)	82 (79.6)		9 (8.7)	94 (91.3)	
Irresistible to control usage of mobile phones				0.001*			0.001*			0.035*
Yes	202(51.5)	95 (47)	107 (53)		72 (35.6)	130(64.4)		39(19.3)	163(80.7)	
No	190(48.5)	121(63.7)	69 (36.3)		39 (20.5)	151(79.5)		22(11.6)	168(88.4)	
Bored even after spending so much time on mobile phones				0.000*			0.680			0.064
Yes	248(63.3)	119 (48)	129 (52)		72 (29)	176 (71)		45(18.1)	203(81.9)	
No	144(36.7)	97 (67.4)	47 (32.6)		39 (27.1)	105(72.9)		16(11.1)	128(88.9)	
Experiencing increased no. of arguments between spouses/siblings				0.000*			0.000*			0.000*
Yes	124(31.6)	83 (66.9)	41 (33.1)		57 (46)	67 (54)		33(26.6)	91 (73.4)	
No	268(68.4)	93 (34.7)	175(65.3)		54 (20.1)	214(79.9)		28(10.4)	240(89.6)	
Unable to get regular medical care and prescriptions				0.238			0.999			0.626
Yes	113(28.8)	56 (49.6)	57 (50.4)		32 (28.3)	81 (71.7)		16(14.2)	97 (85.8)	
No	279(71.2)	120 (43)	159 (57)		79 (28.3)	200(71.7)		45(16.1)	234(83.9)	
Facing financial crisis/insufficiency in last 14 days				0.013*			0.341			0.142
Yes	141 (36)	75 (53.2)	66 (46.8)		44 (31.2)	97 (68.8)		27(19.1)	114(80.9)	
No	251 (64)	101(40.2)	150(59.8)		67 (26.7)	184(73.3)		34(13.5)	217(86.5)	
Hours spent daily on smartphone apps				0.000*			0.100			0.000*
Less than 1 hour	35 (8.9)	17 (48.6)	18 (51.4)		6 (17.1)	29 (82.9)		0 (0)	35 (100)	
1-3 hours	115(29.3)	31 (27)	84 (73)		26 (22.6)	89 (77.4)		5 (4.3)	110(95.7)	
4-6 hours	109(27.8)	56 (51.4)	53 (48.6)		36 (33)	73 (67)		19(17.4)	90 (82.6)	
More than 6 hrs	133(33.9)	72 (54.1)	61 (45.9)		43 (32.3)	90 (67.7)		37(27.8)	96 (72.2)	
Level of confidence in own doctor's ability to diagnose/ recognize COVID-19 illness				0.070			0.001*			0.013*
Confident	209(53.3)	83 (39.7)	126(60.3)		43 (20.6)	166(79.4)		22(10.5)	187(89.5)	
Some what confident	148(37.8)	77 (52)	71 (48)		53 (35.8)	95 (64.2)		32(21.6)	116(78.4)	
Not confident	35 (8.9)	16 (45.7)	19 (54.3)		15 (42.9)	20 (57.1)		7 (20)	28 (80)	
Concerns about other family members getting COVID-19				0.055			0.110			0.770
Worried	218(55.6)	114(52.3)	104(47.7)		68 (31.2)	150(68.8)		34(15.6)	184(84.4)	
Somewhat worried	154(39.3)	86 (55.8)	68 (44.2)		41 (26.6)	113(73.4)		25(16.2)	129(83.8)	
Not worried	20 (5.1)	16 (80.0)	4 (20.0)		2 (10)	18 (90)		2 (10)	18 (90)	

Note: *p<0.05= significant

^aMasks/gloves/goggles^bBakery/junk/hotel food^cReasons like no vehicles, staying alone, etc.

Table 3: Association of depression, anxiety and stress subscales with significant socio-demographic and other common stressors during lockdown using binary logistic regression

S. No	Variables	Depression subscale			Anxiety subscale			Stress subscale		
		Exp (B)	95% CI for Exp (B)	Significance p-value	Exp (B)	95% CI for Exp (B)	Significance p-value	Exp (B)	95% CI for Exp (B)	Significance p-value
1	Gender Male Female	2.913 1	1.678-5.057	0.000*	1.482 1	0.851- 2.580	0.164	1.301 1	0.651- 2.600	0.456
2	Age (years) Less than 40 More than 40	1.194 1	0.473- 3.014	0.707	0.885 1	0.340- 2.307	0.803	1.928 1	1.265- 3.406	0.996
3	Status as a parent No children Has a child	1.000 1	0.370-2.702	1.000	0.880 1	0.338- 2.291	0.793	0.913 1	0.250- 3.341	0.891
4	Marital status Unmarried Married	3.074 1	1.064- 8.876	0.038*	0.985 1	0.363- 2.291	0.976	0.989 1	0.300- 3.267	0.986
5	Employment status Farmers/Coolie Student Retired Employed Unemployed	1.190 1.466 1.202 1.785 1	0.548- 2.583 1.234- 2.268 0.562- 2.571 1.273- 11.67	0.660 0.999 0.636 0.041*	1.242 1.181 1.197 1.199 1	0.545- 2.828 0.667- 3.306 0.559- 2.563 1.037- 2.079	0.606 0.999 0.641 0.039*	1.755 1.365 1.407 0.755 1	0.552- 5.582 1.134- 1.879 0.590- 3.353 0.567- 3.987	0.341 1.000 0.441 1.000
6	Medical Health insurance status Active None	0.652 1	0.382- 1.113	0.117	1.467 1	0.838- 2.568	0.179	0.646 1	0.319- 1.308	0.225
7	Physical symptoms suggestive of COVID-19 Present Absent	2.683 1	1.187- 6.061	0.018*	3.657 1	1.724- 7.755	0.001*	1.406 1	0.554- 3.572	0.473
8	Consultation with doctor in the clinic in the past 14 days Yes No	1.194 1	0.473- 3.014	0.999	0.136 1	0.009- 2.085	0.152	2.573 1	0.268- 24.666	0.413
9	Recent quarantine in the past 14 days Yes No	1.186 1	0.540- 2.606	0.671	1.179 1	0.539- 2.581	0.679	1.316 1	0.538- 3.216	0.547
10	Contact history**** Present Absent	1.359 1	0.351- 5.254	0.657	0.637 1	0.175- 2.320	0.494	1.174 1	0.315- 4.374	0.812
11	Concerns about other family members getting COVID-19 infection Worried Somewhat worried Not worried	1.172 4.069 1	0.693- 1.985 1.136- 18.70	0.554 0.033*	1.098 4.004 1	0.640- 1.882 0.816- 19.64	0.734 0.087	0.856 0.745 1	0.436- 1.680 0.121- 4.594	0.651 0.751
12	Frustrated/angry to stay confined at home Yes No	1.233 1	0.692- 2.197	0.477	0.774 1	0.422- 1.420	0.408	1.666 1	0.781- 3.554	0.186
13	Frustrated/angry when unable to purchase any necessary item/product Yes No	1.462 1	0.824- 2.593	0.194	1.007 1	0.552- 1.835	0.982	0.791 1	0.378- 1.655	0.534
14	Frustrated/ angry when unable to eat food from outside** Yes No	1.434 1	0.784- 2.624	0.242	1.932 1	1.045- 3.568	0.036*	1.379 1	0.648- 2.932	0.404
15	Terrified at the thought of 'What would I do if something bad happened to me?'*** Yes No	2.803 1	1.506- 5.217	0.001*	1.608 1	0.883- 2.928	0.120	1.992 1	1.919- 4.316	0.041*
16	More use of mobile phones than used to Yes No	1.113 1	0.557- 2.225	0.762	1.120 1	0.533- 2.354	0.764	0.863 1	0.313- 2.377	0.775
17	Irresistible to control usage of mobile phones Yes No	1.235 1	0.681- 2.241	0.487	1.365 1	0.729- 2.557	0.331	0.587 1	0.265- 1.300	0.189

18	Experiencing increased no. of arguments between spouses/siblings									
	Yes	3.094	1.731- 5.530	0.000*	3.677	2.029- 6.663	0.000*	2.559	1.249- 5.244	0.010*
	No	1			1			1		
19	Unable to get regular medical care and prescriptions									
	Yes	0.876	0.483- 1.588	0.662	1.567	1.096- 2.187	0.048*	0.859	0.386- 1.913	0.710
	No	1			1			1		
20	Facing financial crisis/insufficiency in last 14 days									
	Yes	1.695	1.112- 2.907	0.05*	1.175	0.677- 2.039	0.566	1.815	1.907- 3.632	0.042*
	No	1			1			1		
21	Hours spent daily on smartphone apps									
	1-3 hours	0.546	0.184- 1.622	0.296	2.195	0.608- 7.921	0.869	1.686	0.346-3.334	0.997
	4-6 hours	1.348	0.604- 3.011	0.466	1.074	0.461- 2.501	0.359	4.400	1.335- 14.500	0.015*
	More than 6 hours	0.851	0.442- 1.637	0.628	0.737	0.384- 1.414	0.841	4.948	1.897- 6.231	0.032*
	Less than 1 hour	1			1			1		

*significant predictors of Depression, Anxiety and Stress

There was a higher proportion of depression, anxiety and stress among (i) individuals who were worried about the availability of groceries and other essentials for daily living ($p<0.001$), (ii) individuals who felt frustrated and angry to stay confined at home ($p<0.005$); who were unable to purchase any item/ product when necessary ($p<0.05$) and when unable to eat food from hotels or bakeries ($p<0.001$) (iii) individuals who were terrified at the thought of something bad happening to them like an emergency situation necessitating prompt support, under the context of staying alone or minimal vehicular movement during lockdown ($p<0.05$), (iv) individuals who used mobile phones more often than they used to ($p<0.05$) and in those who found it irresistible to control its usage ($p<0.05$) and (v) individuals who experienced increased number of arguments between spouses or siblings ($p<0.05$). A significant proportion of individuals who were facing a financial crisis or insufficiency during this lockdown were found to be more depressed ($p=0.013$). Higher levels of stress and depression were seen among individuals who spent more than 6 hours on smartphone applications ($p<0.005$). Those individuals who had less confidence in their doctor's own ability to diagnose or recognize COVID-19 illness were significantly associated with stress and anxiety ($p<0.05$). (Table 2)

All the significant socio-demographic factors and stressors of Depression, Anxiety and Stress were run through a binary logistic regression model to determine the significant predictors of depression, anxiety and stress.

Males were found to have 2.913 times (OR= 2.913, 95% CI= 1.678- 5.057) higher odds of having depression when compared to females and those who were unmarried had 3.074 times (OR= 3.074, 95% CI=1.064- 8.876) more odds of developing depression when compared to those who were married. Individuals who were employed were 1.785 times (OR= 1.785, 95% CI= 1.273- 11.671) at higher odds of having depression and 1.199 times (OR= 1.199, 95% CI= 1.037- 2.079) more of odds of having anxiety when compared to the unemployed. Individuals with at least one physical symptom suggestive of COVID-19 had 2.683 times (OR= 2.683, 95% CI= 1.187- 6.061) more odds of developing depression and had 3.657 times (OR= 3.657, 95% CI=1.724- 7.755) more odds of developing anxiety. Individuals who were worried about their family members getting COVID-19 infection had 4.069 times (OR= 4.069, 95% CI= 1.136- 18.70) higher odds of being depressed than those who not concerned about it. Those who felt frustrated or angry when they were unable to eat food from hotel, bakeries or junk food had 1.932 times (OR.1.932, 95% CI=1.045- 3.568) higher odds of anxiety when compared to those who were not frustrated. People who were terrified at the thought of what they would do if something bad happened to them were 2.803 times (OR= 2.803, 95% CI= 1.506- 5.217) higher odds of having depression and 1.992 times (OR= 1.992, 95% CI= 1.919- 4.316) more odds of being stressed than those who were not terrified. Individuals who experienced increased number of arguments either between spouses or siblings were at 3.094 times (OR= 3.094, 95% CI= 1.731- 5.530) more odds of developing depression, 3.677 times (OR= 3.677, 95% CI= 2.029- 6.663) more odds of being anxious and were 2.599 times (OR= 2.599, 95% CI=1.249- 5.244) at a higher odds of being stressed when compared to those individuals who had no such increase

in number of arguments. Those individuals who were unable to get regular care and prescriptions were 1.567 times (OR= 1.567, 95% CI=1.096- 2.187) at a higher odd of being anxious than those who were able to. Individuals who faced a financial crisis or insufficiency during the lockdown period had 1.695 times (OR= 1.695, 95% CI=1.112- 2.907) more odds of being depressed while they were 1.815 times (OR= 1.815, 95% CI= 1.907- 3.632) at higher odds of being stressed when compared to those who did not face any financial crisis. Those people who used smartphone applications for more than 6 hours every day had 4.948 times (OR= 4.948, 95% CI=1.897- 6.231) higher odds of being stressed than those who used them for less than an hour each day. (Table 3)

DISCUSSION:

Pandemics come with associated mental health problems caused by widespread panic, isolation and lockdown-associated difficulties most commonly due to the looming uncertainty of the future and helplessness. Maintaining a healthy mind and a healthy lifestyle in the middle of a crisis seems to be a big ordeal. In our study, males were 2.913 times more vulnerable to develop depression showing a higher prevalence of depression as compared to females which corresponds to a study done by Kazmi et al.⁷ done in Uttar Pradesh, India which may due to the uncertainty about the job after lockdown being the wage earner of the family, unaccustomed to the continual stay at home unlike women especially housewives and lack of social interactions. The prevalence of depression and stress was more common among the younger age group (15-30 years) which was similar to the findings in the study done by Huang and Zhao in China¹⁰ and the student group also showed higher levels of depression, anxiety and stress¹¹ which corresponds to a study done by Wang et al.¹¹ This may be due to the restrictions imposed by lockdown making them homebound with their family where a few may be stranded at their job or study locality far from home, loss of social time and relationships, lack of entertainment like movies or sport, uncertainty about studies and job opportunities, thus making them highly vulnerable. The unmarried population showed a significant association with stress and depression by 3.074 times which was similar to the study findings of Amir Vahedian-Azimi et al.¹² and also those having no children were found to be associated with higher levels of depression and stress than with those having at least one child. This is similar to the study done by Mazza et al.¹³ in Italy. The reason for these high levels can be attributed to need of tenderness and warmth of families, lack of social and emotional support, postponement of marriages due to restricted movement during lockdown, difficulties in obtaining food and other essentials and frustrations related to confinement. On the other hand, relationships have a buffering effect giving confidence, support and time with valuable ones which is although lacking in the contemporary urbanized society. This study shows that the individuals who were employed prior to the outbreak have 1.785 times of increased risk of developing depression whereas the chances of developing stress was higher by 1.199 times in comparison to the unemployed which may be due to interruption to their work with no advanced planning. The prevalence of depression is higher among those who are worried about their family members contracting COVID-19 which is similar to the study findings by Wang et. Al¹¹ which may be because of the fear of quarantine for 14 days at the institution or home, fear of death or loss of a family member. The present study shows that financial insufficiency during the period of lockdown has a significant relationship with

depression and are 1.695 times more prone to develop depression and the chances of developing stress is higher by 1.815 times. This is similar to a study done by Chakraborty K and Chatterjee M in West Bengal where majority of the respondents were worried about the financial loss they were incurring during the lockdown.¹⁴ Another notable finding in our study is that the respondents experienced increased number of arguments between spouses or siblings which was associated with the presence of depression, anxiety and stress. This can be attributed to the increased hours of family time resulting in frequent quarrels and misunderstandings. Those people who used smartphone apps for more than 6 hours every day had 4.948 times more chances of being stressed than those who used them for less than an hour each day. Literature suggests adequate association between internet addiction and poor mental health as in studies by Bryan Adrian Garcia-Priego¹⁵ and Aman Gupta et al.¹⁶ Furthermore, in our study other common stress factors during lockdown like inability to get regular medications and prescriptions, fear of something bad happening to themselves and frustrations due to home confinement were highly associated with depression, anxiety and stress among the population.

Our study is among the first of its kind to assess the mental health status of the general population and its associated stressors during the COVID-19 pandemic. However, our study is subjected a few shortcomings such as convenient sampling technique restricted to people with an internet connection resulting in selection bias, thus limiting its generalisability. Since the data collected is subjective and based on a cross sectional design, it is difficult to make causal inferences. Hence, it would be ideal to conduct a prospective study, preferably on the same group of participants, which would not be possible in our study due to the anonymity of the respondents.

CONCLUSION:

The COVID-19 pandemic was significantly associated with mental health issues like depression, anxiety and stress and our study highlights the fact. Special attention has to be given to the younger age group, lone people, people with financial crisis, who find difficulties in purchase of essentials, inaccessibility to health care services, excessive smartphone users, people facing familial disharmony. The mental health of people and its factors should be borne in mind while decision making in order to tackle the ongoing pandemic by weighing the potential benefits of home confinement against the possible psychological costs and it should also be a vital part in the emergency preparedness measures taken in case of a pandemic. Staying in touch with friends with the help of growing technology, maintaining good relations with family members, getting involved in extracurricular activities, appropriate use of internet and maintaining a regular sleep can ward off mental health issues; though financial crisis during this time is a difficult stressor to eliminate which requires pre- planning in investment and savings.

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