ORIGINAL ARTICLE OPEN ACCESS

Prevalence of Depression and It's Associated Factors During COVID-19 Pandemic in Adult Population of Ghaziabad, Uttar Pradesh

Anupama Singh[1*], Deepika Agrawal[2], Namrata Soni[3]
[1,2,3] Department of Community Medicine, Santosh Medical College
Email ID: dranupamasingh2@gmail.com

ABSTRACT

COVID-19 pandemic started in India on 30th January 2020. A nationwide lockdown was enforced from 24th March onwards, and most citizens were confined to their homes causing many psychosocial problems. To find the prevalence of depression and its associated factors during COVID-19 pandemic. A community based cross-sectional study, conducted among the adult population of urban Ghaziabad, Uttar Pradesh, India. Information was collected using a predesigned questionnaire with a sample size of 396 consenting individuals. Results: Of the 396 participants, 99 (25%) had depression; with mild, moderate, and severe depression found in 20.45%, 3.53% and 1% individuals, respectively. Females were affected more than males (32.1% vs 18.2%). Prevalence of depression was 50% among individuals living alone, 34.7% among unemployed people, and 30% among individuals whose income was reduced during the lockdown period. Individuals who were quarantined due to positive/suspected COVID-19 infection had a 45.5% prevalence of depression. Individuals who were divorced or separated, had an increased prevalence of depression [OR 9.2, (95% CI 1.2-73.7)]. People who practiced meditation during the lockdown period had lesser prevalence of depression [OR 2.87, (95% CI 1.1- 7.7)] than those who did not. The COVID-19 pandemic has had a major psycho-social impact on people. The findings from this study can help identify vulnerable individuals and prevent and/or reduce the morbidity of depression in future, both in India and other parts of the world.
KEYWORDS: Covid-19, Pandemic, Depression, Quarantine, Lockdown

INTRODUCTION

The first case of COVID-19 in India was reported on 30th January 2020, and on 11th March 2020, the World Health Organization declared it as a pandemic [1-2]. Due to the highly infectious potential of the disease, and lack of emergency preparedness in our country; from 24th March onwards, a nationwide lockdown was enforced which continued for nearly 70 days [3]. While the world battled a physical health crisis, the lockdown and social distancing practices were advised to reduce the spread of COVID-19, affected the mental health of individuals. The natural history of COVID-19 is well elucidated with abundant research in this field; however, little is known about the psychological impact, stress, anxiety, and depression occurring during this pandemic. Quarantine and isolation are highly effective containment tools for the COVID-19 pandemic. Various studies have reported that the health-care providers and contacts of COVID-19 patients, experience variable degrees of fear, anxiety, anger, and depression [4-6]. The data concerning the prevalence of depression among the general population of India due to COVID-19 pandemic is lacking. Therefore, we aimed to assess the prevalence of depression during the COVID-19 pandemic, and assess its relationship with family structure, quarantine/isolation, the fear of contracting the disease, the economic setback, and physical activities in the general population of urban areas in district Ghaziabad, in the state of Uttar Pradesh, India.

MATERIAL AND METHODS

This observational cross-sectional study was conducted from 1st April 2020 to 15th July 2020 among the adult population of urban Ghaziabad through a house-to-house survey, using a pre-designed, semi-structured questionnaire. Approval was taken from the medical ethics committee of Santosh Medical College prior to starting the survey. The data for the prevalence of depression among the general population of India during the coronavirus pandemic was lacking, and global data varied from 12.7% to as high as 52.4% [7-8]. To calculate the sample size, we assumed that the prevalence of depression among

the general population during the COVID-19 pandemic as 50%. With 5% degree of precision, the sample size was calculated to be 384. Ghaziabad district comprises of 5 zones, 80 houses were selected randomly from each zone. We decided to randomly choose an adult participant from each house; thereby, 400 adults residing in Ghaziabad city were planned to be interviewed. We excluded those people who refused to give consent for the study, and/or those who had not completed 18 years of age. Thus, information was collected from 396 participants. The questionnaire consisted of 4 sections to gather socio-demographic information, pandemic-related information, quarantine conditions and social attitudes during the COVID-19 pandemic, lastly a standardized scale – the Patient Health Questionnaire -9 (PHQ-9) [9]. The total scores of the PHQ – 9 were interpreted as follows: - normal (0-4), mild (5-9), moderate (10-14), and severe depression (15- 27). The information we gathered was analyse during the SPSS trial version 16. Appropriate statistical tests of significance were used to determine the results, and multinomial logistic regression analysis was used to determine relation between various factors and depression.

RESULTS AND DISCUSSION

Demographic characteristics: There were 203 males (51.3%) in this study. The mean age (SD) of the respondents was 38.2 (±12.7) years. Majority of the participants 274 (69.2%) lived in nuclear families; and 210 individuals (53%) had a monthly family income of less than one lac rupees (<675 USD). Out of the total participants, 303 (76.5%) were married. Complete socio-demographic characteristics are depicted in table 1 below.

Table1: Socio-demographic characteristics of the study population

Socio-demo graphic characteristics	Number(n=396)	Percentage(%)
Gender		
Male	203	51.3
Female	193	48.7
Age (in years)		
18-30	143	36.1
31-40	92	23.2
41-50	96	24.2
51-60	44	11.1
61 and above	21	5.3
Type of family		
Nuclear	274	69.2
Joint	102	25.8
Living Alone	20	5.1
Family income per month (in INR)		
lessthan 50000 [<675 USD]	137	34.6
50000– 100000 [675-1349 USD]	73	18.4
100000– 200000 [1349 – 2697 USD]	75	18.9
200000and above [>2697 USD]	111	28.0
Education		
up to Primary school /Illiterate	9	2.3
up to middle school	6	1.5
Upto 12 class	66	16.7
Graduate	166	41.9
Postgraduate	149	37.6
Maritalstatus		
Married	303	76.5
Unmarried	86	21.7
Divorced or separated	7	1.8
Employment		
Government job	48	12.1
Private job	131	33.1
Self employed	79	19.9

COVID-19 pandemic-related statistics: We found that 36 respondents (9.1%) had a confirmed or suspected infection with COVID-19. Nearly one in three participants (128 people, 32.3%) reported that someone in their family or friend circle was infected with COVID-19; and 68 individuals (17.2%) had lost someone in their family or friends. We found that 55 respondents (13.9%) had undergone quarantine at

least once during the pandemic. Table 2 summarizes the complete COVID-19 pandemic related statistics below.

Table 2. COVID-19 pandemic related statistics of the study population

COVID-19 pandemic-related statistics	Number (n=396)	Percentage (%)
Infected with COVID-19		
Yes	**10**	**2.5**
Suspected	**26**	**6.6**
No	360	90.9
Family and friends infected with COVID-19		
Yes	**128**	**32.3**
No	**268**	**67.7**
Covid-19 related death: -family/friends/neighbors		
Yes	**68**	**17.2**
No	**328**	**82.8**
Frontline COVID-19 worker		
Yes	**59**	**14.9**
No	**337**	**85.1**
Family member is afrontlineCOVID-19 worker		
Yes	**63**	**15.9**
No	**333**	**84.1**
Quarantine (positive/suspected COVID infection)		
Yes	**55**	**13.9**
No	341	86.1
Immediate family members quarantined due to Covid-19 infection or suspected infection?		
Yes	**62**	**15.7**
No	**334**	**84.3**

Factors associated with symptoms of Depression: We found that 99 (25%) participants were suffering from depression, with severity ranging from mild depression in 81 (20.5%) people, moderate depression in 14 (3.5%) individuals, to severe depression in 4 (1%) individuals. Females had a higher prevalence of depression as compared to males (32.1% vs 18.2%; females: males = 1.7:1). Depression was significantly higher in individuals who had either suspected or confirmed COVID-19 infection (38.8% vs 23.6%, p value<0.03). Those participants who had a household member or friend infected with COVID-19 had significantly higher prevalence of depression (38.2% vs 18.6%, p value <0.001). We analyzed the association of various factors with depression using multinomial logistic regression analysis. Females were affected twice as much as males (OR 2.12 [95% CI 1.33-3.38]). We found that depression was ten times higher among divorced/separated individuals (OR 10.78 [95% CI 2.04 – 57.02]) as compared to married people. Individuals who reported a substantial reduction in their family income during COVID-19 pandemic were twice as likely to be depressed (OR 2.09 [95% CI 1.26 – 3.46]). Respondents who were suspected or tested positive for COVID-19 infection had double the risk of depression (OR 2.06 [95% CI 1.01 – 4.2]) than those who were unaffected. Participants who underwent quarantine during the COVID-19 pandemic had thrice the risk of having depression (OR 3.0 [95% CI 1.66 – 5.42. People whose family member or friend succumbed to COVID-19 disease were more than three times likely to be depressed (OR 3.43 [95% CI 1.9 – 5.8]). Exercising at home/ practicing yoga regularly, and pursuing hobbies during lockdown, had no significant effect on depression; however, individuals who practiced meditation regularly during the lockdown period had reduced risk of being depressed (OR 0.20 [95% CI 0.07 – 0.59]). Table 3 summarizes the results of regression analysis for factors associated with depression.

The prevalence of mental health disorders in India in 2017 was 14.3%, with depression constituting 3.3% [10]. The COVID-19 pandemic has resulted in a surge in prevalence of depression which was found to be 25% in our study. This rise during the pandemic is reflected across all studies encountered, ranging from 12.7% to 52.4%. We determined that individuals who were single, divorced/ separated, were more depressed than married people [11]. A finding unique to our study was that people living alone suffered from depression three times more than those living in joint families. Individuals who were unemployed and those who suffered substantial reduction in family income were at twice the risk of depression, confirming that financial loss is a definitive risk factor for depression [12]. It was observed that people infected with COVID-19 were more likely to be depressed, a finding consistent with studies of previous report [13] In contrast to Gasparro *et al*, this study found a significant correlation between the depression and COVID-19 related fatality in family [14]. Individuals who were quarantined were three times more depressed, which confirms that quarantine, though an extremely effective strategy in controlling the

spread during the COVID-19 pandemic, has definite adverse mental health impact [15-16]. Practicing meditation regularly during the lockdown period had a strikingly positive effect on preserving the mental health of the individuals, and depression was kept at bay. This salient finding needs to be explored as an effective tool to combat morbidity due to depression.

Table 3: Multinomial logistic regression analysis for factors associated with depression

Variables under study		Depression		Total (100%)	pvalue	aOR	95% CI
		Present (%)	None (%)				
Age	40 year or younger	67 (28.5)	168 (71.5)	235	0.051	1.6	0.99-2.59
	>40 year	32 (19.9)	129 (80.1)	161		Reference	
Gender	Female	62 (32.1)	131 (67.9)	193	0.001	2.12	1.33-3.38
	Male	37 (18.2)	166 (81.8)	203		Reference	
Marital status	Divorced or separated	5 (71.4)	2 (28.6)	7	<0.001	10.78	2.04-57.45
	Unmarried	37 (43)	49 (57)	86		3.25	1.94-5.45
	Married	57 (18.8)	246 (81.8)	303		Reference	
	Living alone	10 (50)	10 (50)	20		3.43	1.2-9.4
Type of family	Nuclear	66 (24.1)	208 (75.9)	274	<0.001	1.09	0.63-1.87
	Joint	23 (22.5)	79 (73.5)	102		Reference	
Employment	Not employed	48 (34.8)	90 (65.2)	138	0.001	2.16	1.35-3.44
	Employed	51 (13.8)	207 (80.2)	258		Reference	
Income per month in rupee (INR)	<50,000	23 (16.8)	114 (83.2)	137	<0.010	0.628	0.33-1.17
	50,000- 1,00,000	27 (37)	46 (63)	73		1.82	0.96-3.47
	1,00,000- 2,00,000	22 (29.3)	53 (70.7)	75		1.29	0.66-2.49
	2,00,000 and above	27 (24.3)	84 (75.7)	111		Reference	
Substantial reduction in income	Yes	73 (30.0)	170 (70.0)	243	<0.004	2.09	1.26-3.46
	No	26 (17.0)	127 (83.0)	153		Reference	
Infected with COVID-19	Suspected /Confirmed	14 (38.9)	22 (61.1)	36	0.043	2.06	1.01-4.2
	No	85 (23.6)	275 (76.4)	360		Reference	
Family/Friends infected with COVID-19	Yes	49 (38.3)	79 (61.7)	128	<0.001	2.7	1.69-4.33
	No	50 (18.7)	218 (81.3)	268		Reference	
Contact with patient of COVID-19	Yes	25 (42.4)	34 (57.6)	59	0.001	2.61	1.46-4.65
	No	74 (22.0)	263 (78.0)	337		Reference	
Quarantine during COVID-19 pandemic	Yes	25 (45.5)	30 (54.5)	55	<0.001	3.00	1.66-5.42
	No	74 (21.4)	267 (78.3)	341		Reference	
Family/friends had to quarantine	Yes	25 (40.3)	37 (59.7)	62	0.04	1.86	1.02-3.39
	No	74 (22.2)	260 (77.8)	334		Reference	
COVID-19 death among your family/friends	Yes	33 (48.5)	35 (51.5)	68	<0.001	3.43	1.9-5.8
	No	66 (20.1)	262 (79.9)	328		Reference	
Practice meditation regularly	Yes	4 (7.4)	50 (92.6)	54	0.001	0.20	0.07-0.59
	No	95 (27.8)	247 (72.2)	342		Reference	
Pursue any hobby during lockdown	No	49 (24.5)	151 (75.5)	196	0.82	0.95	0.601-1.49
	Yes	50 (25.5)	146 (74.5)	200		Reference	
Exercise/ Practice Yoga regularly	No	69 (26.5)	191 (73.5)	260	0.328	1.27	0.78-2.08
	Yes	30 (22.1)	106 (77.9)	136		Reference	

The lacunae of the study were the limited sample size, and the study being restricted to urban areas in a single district in India, therefore the findings need to be supported by conducting the research upon a larger and varied demographic base. We also need to evaluate the long-term consequences, and the lasting impact of the pandemic upon the mental health attributes in the population.

CONCLUSION

The effect of lockdown and quarantine during the COVID-19 pandemic on depression was significant. Our study will help to identify vulnerable individuals, thereby preventing and/or reducing the morbidity of depression in the community.

REFERENCES

1. Andrews MA, Areekal B, Rajesh K, et al. (2020). First confirmed case of COVID-19 infection in India: A case report. Indian J Med Res.;151(5):490-492.
2. World Health Organization W. (2020). WHO Director-General's opening remarks at the media briefing on COVID-19. WHO Dir Gen speeches.;4.
3. Hebbar N. (2020). PM Modi announces 21-day lockdown as COVID-19 toll touches 12. The Hindu.
4. Chong MY, Wang WC, Hsieh WC, et al. (2004). Psychological impact of severe acute respiratory syndrome on health workers in a tertiary hospital. Br J Psychiatry. 185: 127-133.
5. McAlonan GM, Lee AM, Cheung V, et al. (2007). Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. Can J Psychiatry. 52(4): 241-247.
6. Sim K, Chua HC. (2004). The psychological impact of SARS: A matter of heart and mind. CMAJ. 170(5): 811-812.
7. Garre-Olmo J, Turró-Garriga O, Martí-Lluch R, et al.(2021). Changes in lifestyle resulting from confinement due to COVID-19 and depressive symptomatology: A crosssectional a population-based study. Compr Psychiatry. 104: 152214.
8. Ettman CK, Abdalla SM, Cohen GH, Sampson L, Vivier PM, Galea S. (2020). Prevalence of Depression Symptoms in US Adults Before and During the COVID-19 Pandemic. JAMA Netw open. 3(9): e2019686.
9. Kroenke K, Spitzer RL, Williams JBW. (2001). The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med. 16(9): 606- 613.
10. Sagar R, Dandona R, Gururaj G, et al. (2020). The burden of mental disorders across the states of India: The Global Burden of Disease Study 1990–2017. The Lancet Psychiatry. 7(2): 148-161.
11. Shi L, Lu Z, Que J, et al. (2020). Prevalence of and Risk Factors Associated with Mental Health Symptoms Among the General Population in China During the Coronavirus Disease 2019 Pandemic. JAMA Netw Open. 3(7): e2014053.
12. Findik UY, Ozbaş A, Cavdar I, Erkan T, Topcu SY. (2012). Effects of the contact isolation application on anxiety and depression levels of the patients. Int J Nurs Pract. ;18(4): 340-346.
13. Mazza MG, De Lorenzo R, Conte C, et al. (2020). Anxiety and depression in COVID-19 survivors: Role of inflammatory and clinical predictors. Brain Behav Immun. 89:594- 600.
14. Gasparro R, Scandurra C, Maldonato NM, et al. (2020). nPerceived job insecurity and depressive symptoms among Italian dentists: The moderating role of fear of covid-19. Int J Environ Res Public Health. 17(15):1-12. doi:10.3390/ijerph17155338
15. Reynolds DL, Garay JR, Deamond SL, Moran MK, Gold W, Styra R. (2008). Understanding, compliance and psychological impact of the SARS quarantine experience. Epidemiol Infect. 136(7): 997-1007.
16. Henssler J, Stock F, van Bohemen J, Walter H, Heinz A, Brandt L. (2020). Mental health effects of infection containment strategies: quarantine and isolation—a systematic review and meta-analysis. Eur Arch Psychiatry Clin Neurosci.; 6-13.