



## PREVALENCE OF ANXIETY AND ITS ASSOCIATED FACTORS DURING COVID-19 PANDEMIC AMONG ADULT POPULATION OF GHAZIABAD, UTTAR PRADESH

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### ABSTRACT

**Background:** COVID-19 pandemic started in India on 30<sup>th</sup> January 2020. A nationwide lockdown was enforced from 24<sup>th</sup> March onwards, and most citizens were confined to their homes causing many psychosocial problems.

**Objective:** To find the prevalence of anxiety and its associated factors during COVID-19 pandemic.

**Methods:** 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 individuals surveyed, 36 people (9.1%) had a confirmed or suspected infection with COVID-19. One-fifth of the participants (20.9%) participants suffered from anxiety, with severity ranging from mild (13.9%, 55 people), moderate (4.8%, 19 people), to severe anxiety in 9 (2.3%) individuals. Females had a higher prevalence of anxiety as compared to males (23.8% vs 9.3%, females: males = 2.5:1). More than half of the individuals living alone (55%, 11 people) suffered from anxiety. Regression analysis showed that anxiety was twice as common among married people as compared to unmarried people (OR 2.29 [95% CI, 1.14-4.5]). Participants having a family member or friend who succumbed to COVID-19, showed a weak association for being anxious (OR 2.06 [95% CI 0.99-4.28]).

**Conclusions:** The COVID-19 pandemic has a major mental health impact and identifying vulnerable people will help prevent and/or reduce the morbidity due to anxiety both in India and the world.

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### INTRODUCTION

The pandemic caused by Corona virus (COVID-19) has had unforeseen effect on all aspects of human lives. The psychological and social consequences of Corona virus disease, having an impact on mental health have been recognised universally.<sup>1</sup>

COVID-19 was declared a pandemic on 11<sup>th</sup> March 2020, by the WHO, and continues to be an international public health emergency.<sup>2</sup> By 7<sup>th</sup> September, India became the world's second most affected nation with 4.2 million confirmed cases of corona virus and 71,642 deaths. The state of Maharashtra was the most affected state in India contributing 21.6% of the total cases, followed by Andhra Pradesh and Tamil Nadu, with 11.8% and 11% of the total cases, respectively.<sup>3</sup> Due to the rapid spread of the virus, the lack of definitive cure, and the severity of the disease among some of the patients, thousands of deaths were recorded every day. These factors forced nations to impose national lockdown and brace for the worst health outcome and economic jolt.<sup>4</sup>

Following the SARS outbreak in 2003 and the Ebola virus outbreak in 2014, the mental health impact of quarantine and

isolation was investigated, and it was found that the consequences can be severe and long-term for some individuals.<sup>5</sup> The common mental health side effects of quarantine and isolation include anxiety, acute stress disorder, irritability, low concentration, and depressive symptoms. The main stressors identified were the long duration of isolation and quarantine, fears of contamination, irritation and boredom, inadequate supplies, and insufficient knowledge.<sup>6</sup> Also, there are negative effects on mental health of individuals if they are forced to undergo social distancing for a longer duration.<sup>7</sup>

The prevalence of anxiety disorder has been found to be varied (from 8.3% to 35.1%) among the general population during the COVID-19 pandemic.<sup>4</sup> Data on the pre-existing factors that could predict mental health outcomes during an outbreak and quarantine period are conflicting.<sup>3</sup> Also, the role of economic setback for individuals and families has not been elucidated.

In our study, we aim to examine the prevalence of anxiety during the Covid-19 pandemic, and determine its associated factors, so as to help identify susceptible individuals, and to reduce and/or prevent morbidity in the population, and suggest positive measures to help individuals cope with anxiety.

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**MATERIAL AND METHODS**

This observational cross-sectional study was conducted from 1<sup>st</sup> April to 1<sup>st</sup> June among the adult population of urban areas in Ghaziabad city 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. Assuming the prevalence of COVID-19 as 50% the sample size was calculated to be 384. Ghaziabad district comprises of 5 zones and 80 houses were selected randomly from each zone. A total of 400 adults, residing for over a year in Ghaziabad city were interviewed, four of whom refused to give written informed consent; thus, information was collected from 396 individuals. The questionnaire had four parts. Socio-demographic information; the second section collected pandemic-related information. The third section collected information regarding evaluated isolation conditions and social attitudes during the COVID-19 pandemic. The fourth part of the questionnaire consisted of a standardized scale – the Hamilton Anxiety Scale, which was used to grade the symptoms of anxiety.<sup>8,9</sup> The total scores of the Hamilton Anxiety scale were interpreted as follows: - normal (0-7), mild (8-14), moderate (15-23), and severe anxiety (>/=24).

**Statistical Analysis**

The information gathered was analysed using the SPSS trial version 16, and appropriate statistical tests of significance were used.

**RESULTS**

**Demographic characteristics**

Of the total 396 individuals interviewed, there were 203 males (51.3%) and 193 females (48.7%). The mean age (SD) of participants was 38.2 (12.7) years, and 143 people (36.1%) were in the 18 to 30-year age group. Majority of the participants 274 (69.2%) lived in nuclear families; and 137 individuals (34.6%) had a monthly family income of less than fifty thousand rupees (INR). We found that 48 individuals (12.1%) were government employees, 131 people (33.1%) were holding a private job, 79 (19.9%) were self-employed and 138 (34.8%) were unemployed. Majority of the respondents (79.5%) were graduate or post graduate. Out of the total participants, 303 (76.5%) were married. The socio-demographic characteristics are shown in table 1.

**Table 1** Socio-demographic characteristics

	Number (n=396)	Percentages (%)
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)		
less than 50000	137	34.6
50000 – 100000	73	18.4
100000 – 200000	75	18.9
200000 and above	111	28.0
Education		
Up to Primary school / Illiterate	9	2.3

	Number (n=396)	Percentages (%)
Up to middle school	6	1.5
Up to 12 class	66	16.7
Graduate	166	41.9
Post graduate	149	37.6
Marital status		
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
Unemployed	138	34.8

**COVID-19 pandemic related statistics**

This survey included data from 36 individuals (9.1%) who had confirmed or suspected infection with COVID-19. Nearly one-third individuals (32.3%) had some family member or friend who were infected with COVID-19; and 68 individuals (17.2%) reported that someone in their family or friends had succumbed to COVID-19. Of the total respondents, 59 (14.9%) were frontline workers, and 41 (10.4%) of these people were directly exposed to COVID-19 patients. There were 58 (14.8%) people who had at least one family member who was a frontline COVID-19 worker. We found that 55 respondents (13.9%) had undergone quarantine, and 62 individuals (15.7%) reported that a household member was quarantined at least once during the COVID-19 pandemic. Table 2 shows COVID-19 pandemic-related statistics of the total participants.

**Table 2** COVID-19 pandemic-related statistics

	Number (n=396)	Percentages (%)
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 among your family/ friends/ in neighbourhood		
Yes	68	17.2
No	328	82.8
Contact with patients of Covid-19		
Yes	59	14.9
No	337	85.1
Front line COVID-19 worker		
Yes	59	14.9
No	337	85.1
Family member is a front line COVID-19 worker		
Yes	63	15.9
No	333	84.1
Exposed to COVID-19 infected patients at work		
Yes	41	10.4
Exposure to general population	140	35.4
Working from home	91	23
None	124	31.3
Quarantine due to COVID -19 infection or suspected infection.		
Yes	55	13.9
No	341	86.1
Immediate family had to quarantine due to Covid-19 infection or suspected infection?		
Yes	62	15.7
No	334	84.3

### Factors associated with symptoms of Anxiety

We found that 83 (20.9%) participants were suffering from anxiety, with severity ranging from mild anxiety in 55 (13.9%) people, moderate anxiety in 19 (4.8%) individuals, and 9 (2.3%) individuals suffered from severe anxiety. Females had a higher prevalence of anxiety as compared to males (23.8% vs 9.3%, females: males = 2.5:1).

Regression analysis showed that anxiety was twice as common among married people as compared to unmarried people (OR 2.29 [95% CI, 1.14-4.5]). Participants who disclosed that a family member or friend succumbed to COVID-19, showed a weak association for being anxious (OR 2.06 [95% CI 0.997-4.28]). Table 3 summarizes the results of regression analysis for factors found to be associated with anxiety.

**Table 3** Factors associated with Anxiety

		P-value	OR	95% CI
Marital status	Divorced or Separated	<.001	-	-
	Married		2.29	1.14-4.5
	Unmarried		-	-
Type of Family	Joint	<.001	-	-
	Living Alone		-	-
Income per month	Nuclear < 50,000		1.37	0.57-3.25
	50,000-100000	<.001	-	-
	100000-200000		-	-
Have any of your family and friends been infected?	200000 and above		-	-
	No	<.001	1.59	0.84-3.02
Have you come in contact with patients of Covid-19?	Yes		-	-
	No	<.001	2.04	0.82-5.06
Did anyone in your immediate family (living with you) had to quarantine due to Covid-19 infection or suspected infection?	Yes		-	-
	No	<.007	1.61	0.71-3.65
Any history of Covid-19 related death among your family/ friends/ in neighbourhood?	Yes		-	-
	No	<.001	2.06	0.99-4.28
Are you likely to be exposed to other infected people at work?	Exposed to Covid-19 patients		2.61	0.82-8.3
	Exposed to general population working with/without exposure	<.001	-	-
	No exposure/ Working from home		-	-
	Unemployed/House wife		-	-

### DISCUSSION

This study investigated the prevalence of anxiety and its associated factors among the urban population in Ghaziabad during the COVID-19 pandemic. Nearly one-fifth (20.9%) of the respondents exhibited symptoms of anxiety, which far exceeded the baseline anxiety prevalence of 3.3% among Indian population.<sup>10</sup> This indicates the significant impact of the pandemic on the mental health of the population. The prevalence of anxiety during the COVID-19 pandemic in an Italian study (23.2%) was found comparable to our result, but the highest reported prevalence of anxiety was 35% in a similar study in China.<sup>11,12</sup> Moderate to severe anxiety was found to be slightly lesser in our study (7.1%) as compared to similar studies which reported a prevalence of 10.4%.<sup>13</sup> We

found that females suffered from anxiety more than males (females: male = 2.5:1), which was greater than the global trend of gender distribution (ranging from 1.9 to 2.1:1).<sup>14, 15</sup> Participants who were married were twice as likely to have anxiety disorder as compared to unmarried individuals (OR 2.29 (95% CI 1.1- 4.5), possibly due to concern for their partner and family. People who had a positive or suspected COVID-19 infection comprised 9.1% of the total participants which was higher compared to similar studies (0.2%) conducted in the general population, however the prevalence of anxiety among the cases was significantly lesser in our study (22.2% as compared to 71%).<sup>13</sup> This could be due to the reason that our study was conducted later in the course of the pandemic wherein the number of cases have increased, along with improvement in treatment and recovery rates. Frontline COVID-19 workers and their household members were more anxious than the general population, a trend which is reflected across all studies.<sup>12,13</sup> Individuals who had close contact with COVID-19 patients, and family members of COVID-19 patients had higher prevalence of anxiety than the general population; similar to global statistics.<sup>13</sup> Individuals who had to undergo quarantine / isolation, had a 30.9% prevalence of anxiety which was lesser than similar studies across the world (anxiety prevalence ranging from 36.4% to 47.2% in quarantined population).<sup>13,16</sup> This indicates that Indians coped better with anxiety during quarantine and isolation than the rest of the world, a finding which needs further research on a large and varied population base. We studied anxiety in individuals whose family members/friends succumbed to COVID-19, and found a 35.3% prevalence of anxiety disorder. The long-term mental health effects of anxiety during lockdown, quarantine/ isolation, and that arising by practicing social distancing, will become evident as further studies are done to explore these facets.

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