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Pschycological Impact of Covid-19 Globally: A Multicentric Study

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Abstract

Background: COVID-19 has spread all over the world and is listed as a pandemic by the World Health Organization. It started surfacing in China in November 2019 and has been on the rise in all major parts of the world. On 30th January, 2020, the first case of coronavirus pandemic in India was reported. During such state, citizens must stay confined at home with few justified exceptions. This whole situation drastically changed the life of the population, which can cause a wide range of psychosocial impacts. The main aim of the study was to assess psychological impact of covid-19 globally

Method: Cross-sectional, observational, web-based survey conducted during the peak of the pandemic to assess psychological impact of COVID-19 globally. By using Google forms, an online structured questionnaire with annexed informed consent form was developed. The survey link was generated and was sent through online platforms like WhatsApp, e-mails and Facebook to the contacts of the investigators. Chi square test and multiple logistic regression analysis were used to analyze the data.

Result: The study population comprised total 839 participants including 345 (41.1%) males and 494 (58.9%) females. In this study, we found that about one fourth of participants around the globe showed moderate psychological stress, and about 45.7% participants showed high psychological stress. We also found that females, who were younger and unmarried showed high psychological stress.

Conclusion: Individuals who were younger, female or unmarried, were more vulnerable to psychological distress. The covid-19 pandemic had negative psychological eff ects globally.

Keyword: psychological, covid-19, stress

Introduction

The COVID-19 pandemic has threatened the health and lives of millions of people across the globe. On 30th January 2020, the World Health Organization declared a public health emergency of international concern.[1]. On March 11 2020, the WHO upgraded the status of the COVID-19 outbreak from epidemic to pandemic[2].The coronavirus disease (COVID-19) pandemic is the greatest public health threat that the world has seen in the last 100 years. [3] [4] It is well known that quarantine/isolation for any cause and in the context of a pandemic (severe acute respiratory distress syndrome/SARS, 2003) had been reported to be associated with significant mental health problems ranging from anxiety, fear, depressive symptoms, sense of loneliness[5].The COVID-19 pandemic led to a prolonged exposure to stress. Some segments of the population seem to be more exposed to the risk of anxious, depressive, and post-traumatic symptoms because they are more sensitive to stress.[6] The psychological consequences of infectious diseases have been reported to include depressed mood, anxiety, poor sleep, and increased fear and stress level[7, 8], with posttraumatic stress disorder (PTSD) and depressive disorders being the most prevalent long-term psychological conditions[9].To the best of our knowledge, the psychological impact and mental health of the general population living during the COVID-19 pandemic is unknown. There is an urgent need to deepen

our knowledge about mental global health as a first step to develop psychological interventions, so that the lasting psychological negative consequences of the pandemic can be reduced. This survey was therefore planned to assess psychological impacts of the COVID-19 globally.

Material And Materials

This survey was conducted across the globe in the month of May 2020. Due to the national lockdown, social media was used to conduct the survey across various countries.

Study design and participants

It was a cross sectional, observational web based study in which snowball sampling technique was used to pool the initial eligible respondents who could potentially recruit more respondents from their acquaintances. Study was conducted among general population across the globe.

Inclusion criteria

- General population across world
- Age 18-60 years & above
- Having good understanding of English language
- Having access to internet, and
- Those who were willing to take part in the survey.

Exclusion criteria

- Those who were not willing to take part in the survey.

Ethical committee clearance

Ethical clearance was obtained from Institutional Review Board.

Data collection

By using Google forms, an online semi-structured questionnaire with annexed informed consent form was developed. The survey link was generated and was sent through online platforms like WhatsApp, e-mails and Facebook to the contacts of the investigators. The link was first circulated at 11:00 IST on 1st May 2020 and kept open for responses till 11:00 IST on 31st May 2020. The respondents were motivated to refer links to their contacts for participation. The participants were auto-directed to the survey on clicking the link. The survey questionnaires would take around 5-7 minutes to complete. Total 839 responses were received by the stipulated time.

Questionnaires

As it was an online survey in English, individuals with age ≥18 years, internet access and those who were able to read and understand English were recruited. These online questionnaires contained a total of 41 questions consisting of 4 sections with several questions appearing sequentially in order of (1) General information including age, country, sex, marital status, occupation etc (2) Knowledge of COVID-19 (3) Psychological assessment using Kessler Psychological Distress Scale (4) Ways to cope up with the COVID-19 stress. The main outcome measure reported in this study was nonspecific psychological distress as measured by the Kessler Psychological Distress Scale[10]. This measure comprised 10 questions that asked respondents how often they had experienced certain symptoms during the preceding four weeks and responses were scored on a scale of 1 to 5 depending on how frequently each symptom was experienced, where 1 = 'none of the time', and 5 = 'all of the time'. Thus, a minimum score was 10, indicating no psychological distress, and a maximum score was 50, indicating the most severe level of psychological distress. Scores on the K10 were subsequently categorized into four levels: low (scores of 10–15); moderate (scores of 16–21); 'high' (scores of 22–29) and 'very high' (scores of 30–50).

Data analysis

Data was recorded, tabulated, and statistically analyzed using IBM SPSS version 20. Simple binary logistic regression and backward stepwise multiple logistic analyses were performed to identify factors influencing high psychological distress. A binary coding of psychological distress was used in which high psychological distress was a combination of 'high' + 'very high' levels of psychological distress = 1 (i.e. K10 scores of 22 or greater) and low psychological distress was a combination of 'low' + 'moderate' levels of psychological distress = 0 (i.e. K10 scores of 21 or less). Chi square test were performed to identify prevalence of psychological distress among study participants. All variables were entered into the model initially, with the factors influencing high least significant variables removed one at a time until only significant variables associated with values of $p \leq 0.05$ remained.

Results

In total 839 respondents completed the online survey and of these majority of participants were females (58.9%), single (60%) and belonged to 21-30 years of age group. A total of 46.1% of the participants had graduate level of educational qualification and more than half of participants i.e. (55.9%) were belonged from professional background [Table 1]. Knowledge among study participants regarding COVID-19 were listed in Table 2.The prevalence of four level of psychological distress for the whole sample were showed in Table 3. The greatest prevalence of ‘very high’ psychological distress was reported for those in the 21-30 years age group (22.9%).

With regard to the remaining socio-demographic variables the highest prevalence of 'very high' psychological distress were recorded for those respondents who were married (18.8%), those with family and dependents (20.6%), and those with PhD and above (26.4%) educational qualifications.The prevalence of 'very high' psychological distress was greater for respondents from Europe (32.8%) with prevalence figures being slightly lower for respondents from Africa (23.7%) and lower again for respondents from North America (20.3%) and Asia (15.6%).

Multiple linear regression analysis

All factors’ values in the multiple linear regression analysis were listed in Table 4.

Univariate analysis

Analysis by gender indicated a higher risk for high psychological distress for females (OR=1.00) compared to men (unadjusted: OR = 1.00; 95% CI: 0.66–1.31), however this difference was not significant (p = 0.689). Analysis by age indicated a generally decreasing trend in risk of high psychological distress with age, respondents in the youngest age categories (18-20, 21-30 years) had a higher risk of high psychological distress when compared to all other age groups.According to marital status, married people showed a high psychological distress (adjusted: OR =1.348, 95% CI: 0.006-0.090; p = 0.000) and the results were found to be statistical significant (p=0.000) The respondents having diploma degree had higher psychological distress (unadjusted: OR = 2.420, 95% CI: 0.969-6.046; p = 0.050).Compared to respondents in Europe (unadjusted: OR = 2.011, 95% CI: 0.129-0.678–; p=0.004), Africa (unadjusted: OR = 1.851, 95% CI: 0.108–0.958; p =0.040), Asia (unadjusted: OR = 1.252, 95% CI: 0.197–0.108.; p =0.000) were at greater risk of high psychological distress than those in Australia (unadjusted: OR = 0.376, 95% CI: 0.137–1.278; p =0.12) .

Multivariate Analysis

As compared to < 30 years age group, the following age groups: 31-40; 41-50; 51 & above were protective against high psychological distress (adjusted: OR = 1.5, 95% CI: 0.61-3.79; p = 0.365; adjusted: OR = 0.66, 95% CI: 0.21-2.045; p = 0.480; adjusted: OR = 1 respectively). Compared to respondents in North America, respondents in Europe (adjusted: OR = 2.00, 95% CI: 0.124–0.645; p=0.003), Africa (adjusted: OR = 1.831, 95% CI: 0.368–0.143; p=0.039) and Asia ((adjusted: OR = 1.151, 95% CI: 0.110–0.365;

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p=0.000) were at greater risk of high psychological distress, as were respondents in Australia (adjusted: OR = 0.389, 95% CI: 0.137–1.284; p = 0.000) **.**Response of participants for intervention questions regarding Psychological Distress Level were shown in Table 5.Psychological distress among different continent were shown by graph in Figure 1.

Table 1: Demographic details of participants (n=839)

Demographic variable		N	%
Gender	Female	41.1	345
	Male	58.9	494
Age category (in years)	18-20	62	7.4
	21-30	485	57.8
	31-40	193	23.0
	41-50	60	7.2
	51 and above	39	4.6
Marital status	Married	321	38.3
	Single /unmarried	503	60.0
	Divorced	15	1.8
Family and dependents	Yes	734	87.5
	No	105	12.5
Educational qualification	Diploma	33	3.9
	Graduate	387	46.1
	High school	74	8.8
	PhD and above	72	8.6
	Post graduate	273	32.5
Occupation	Professional	469	55.9
	Semi professional	26	3.1
	Clerical	2	0.2
	Skilled	30	3.6
	Unemployed and retired	312	37.2
Continent	Africa	38	38
	Asia	639	639
	Australia	25	25
	Europe	58	58
	North America	79	79
Score of Kessler psychological	0-14 (low)	287	34.2
	15-25 (moderate)	212	25.2
	26-31 (high)	195	23.24
	32-40 (very high)	145	17.2

TABLE 2- Knowledge among study participants regarding COVID-19

QUESTIONS	RESPONSE RATE	N(%)
1. Are you aware of COVID 19?	Yes	839(100%)
	No	0 (0.0%)

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2. COVID 19 is	Pandemic Epidemic Don't know	826(98.4%) 10 (1%) 3 (0.6%)
3. COVID19 pandemic will have impact on	People contacting the virus Immediate family of patients Everyone around the globe Don't know	279 (33.3%) 12 (1.9%) 539 (64.3%) 9 (1%)
4. The impact of this pandemic according to you will be	Transient Long lasting Permanent	160(18.8%) 654 (77.6%) 25 (3.6%)
5. What kind of impact can be seen of COVID 19?	Physical stress Psychological stress Economic stress Social stress All of above	15 (1.9%) 31 3.7%) 13 (1.5%) 20 (2.4%) 759 (90.5
6. Do you think media adds on to people anxiety?	Yes No Sometimes	457 (54.5) 315 (37.6) 67 (7.9%)

Table-3 Prevalence of psychological distress by demographic details

		Psychological Distress Level (K10 Score)					
		Low (10-15) (%)	**Moderate (16-21) (%)**	**High (22-29) (%)**	**Very high (30-50) (%)**	**Total (%)**	***p*-value**
Gender	Male Female	35.4 33.2	24.9 25.7	22.3 23.9	17.4 17.2	100 100	0.909

Age category (in years)	18-20 21-30 31-40 41-50 51 and above	21.0 33.6 30.6 41.7 66.7	35.5 22.9 29.0 33.3 10.3	37.1 20.6 29.0 25.0 2.6	6.5 22.9 11.4 0.0 20.5	100 100 100 100 100	**0.000***
Marital status	Married Single Others	32.4 36.4 66.7	25.1 26.3 0.0	25.9 18.5 33.3	16.6 18.8 0.0	100 100 100	0.092
Family and dependents	No Yes	34.6 34.0	20.6 26.1	24.3 23.1	20.6 16.8	100 100	0.582
Education	Diploma Graduate High school PhD. & above Post graduate	27.3 34.6 23.0 38.9 35.9	24.2 24.3 29.7 16.7 28.2	39.4 22.5 29.7 18.1 22.0	9.1 18.6 17.6 26.4 13.9	100 100 100 100 100	**0.050***
Occupation	Professional Semi professional Clerical Skilled Unemployed and retired	38.4 38.5 50.0 26.7 27.9	25.2 7.7 0.0 30.0 26.9	21.5 26.9 0.0 23.3 25.6	14.9 26.9 50.0 20.0 19.6	100 100 100 100 100	0.107
Continent	Africa Asia Australia Europe North America	31.6 39.0 20.0 8.6 19.0	15.8 24.6 40.0 39.7 21.5	28.9 20.8 36.0 19.0 39.2	23.7 15.6 4.0 32.8 20.3	100 100 100 100 100	**0.000***

The chi-square test was used to estimate p-values (*<0.05)

Table-4 Factors associated with high psychological distress: Adjusted and Unadjusted Odds Ratios

		Unadjusted OR				**Adjusted OR**			
		OR	**95% CI**		**p- value**	**OR**	**95% CI**		**p-value**
Gender	Male Female	0.932 1.00	0.661	1.315	0.689	-	-	-	

Age category (in years)	18-20 21-30 31-40 41-50 51-above	2.803 3.808 1.546 0.682 1.00	1.022 1.581 0.620 0.222	7.685 0.172 3.857 2.094	**0.045*** **0.003*** 0.350 0.504	2.754 3.798 1.525 0.669 1.00	1.007 1.581 0.612 0.219	7.533 9.123 3.797 2.045	**0.048*** **0.003*** 0.365 0.480
Marital status	Married Single Others	1.348 1.024 1.00	0.006 0.097	0.091 1.243	**0.000*** 0.104	1.351 1.023 1.00	0.006 0.096	0.090 1.214	**0.000*** 0.097
Family and dependents	Yes No	1.227 1.00	0.745	2.018	0.422	-	-	-	
Education	Diploma Graduate High school PhD and above Post graduate	2.420 0.950 1.085 1.829 1.00	0.969 0.643 0.574 0.940	6.046 1.404 2.053 3.559	**0.050*** 0.798 0.801 0.075	- - - -	- - - -	- - - -	
Occupation	Professional Semiprofessional Clerical/ Shopowner Skilled worker Unemployed and others	1.009 4.841 1.222 1.137 1.00	0.696 1.814 0.061 0.454	1.462 12.918 24.689 2.846	0.962 **0.002*** 0.896 0.783	1.017 4.716 0.982 1.150 1.00	0.704 1.807 0.050 0.461	1.470 12.311 19.181 2.871	0.927 **0.002*** 0.990 0.765
Continent	Africa Asia Australia Europe North America	1.851 1.252 0.376 2.011 1.00	0.144 0.108 0.137 0.129	0.958 0.359 1.278 0.678	**0.040*** **0.000*** 0.126 **0.004***	1.831 1.151 0.389 2.00 1.00	0.143 0.110 0.137 0.124	0.952 0.365 1.284 0.645	**0.039*** **0.000*** 0.128 **0.003***

OR = odds ratio; CI = confidence interval Multiple logistic regression analysis was used to adjust the ORs for the factors listed in the table.

Table-5 Response of participants for intervention questions regarding Psychological Distress Level

Intervention questions	**Psychological Distress Level (K10 Score)**				
	Low (10-15) **N (%)**	**Medium (16-21)** **N (%)**	**High (22-29)** **N (%)**	**Very high (30-50)** **N (%)**	***p*-value**

Telephonic and online counselling to people can be helpful in this period? Yes No Sometimes	189 (35.9) 17 (28.3) 80 (31.7)	120 (22.8) 19 (31.7) 74 (29.4)	117 (22.2) 15 (25.0) 63 (25.0)	101 (19.8) 9 (15.0) 35 (13.9)	0.174
Health apps can help to decrease anxiety and stress? Yes No Sometimes	139 (37.1) 49 (31.0) 98 (32.0)	89 (23.7) 41 (25.9) 83 (27.1)	75 (25.0) 37 (23.4) 83 (27.1)	72 (19.2) 31 (19.6) 42 (13.7)	0.133
Meditation and Yoga can help in relieving stress? Yes No Sometimes	232 (34.0) 5 (35.7) 49 (34.5)	169 (24.7) 2 (14.3) 42 (29.6)	163 (23.9) 5 (35.7) 27 (19.0)	119 (17.4) 2 (14.3) 24 (16.9)	0.673
Do you feel healthy lifestyle can be helpful? Yes No Sometimes	259 (33.3) 6 (50.0) 21 (42.0)	197 (25.4) 3 (25.0) 13 (26.0)	188 (24.2) 1 (8.3) 6 (12.0)	133 (17.1) 2 (16.7) 10 (20.0)	0.385
Do you think music can help in relieving stress? Yes No Sometimes	233 (33.6) 12 (31.6) 41 (38.0)	180 (26.0) 8 (21.1) 25 (23.1)	159 (22.9) 9 (23.7) 27 (25.0)	121 (17.5) 9 (23.7) 15 (13.9)	0.811
Spending time with family can help in overcoming stress? Yes No Sometimes	252 (35.0) 10 (41.7) 24 (25.5)	179 (24.8) 3 (12.5) 31 (33.0)	167 (23.2) 5 (20.8) 23 (24.5)	123 (17.1) 6 (25.0) 16 (17.0)	0.290

The chi-square test was used to estimate p-values (*<0.05)

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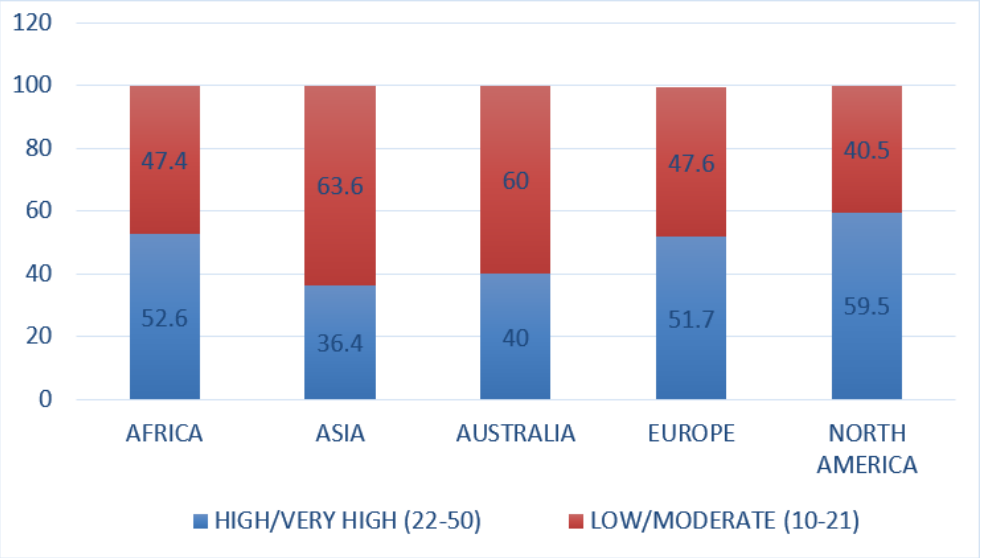

Figure 1 Psychological distress among different continents.

Discussion

We found that about one fourth of participants around the globe showed moderate psychological stress, and about 45.7% participants showed high psychological stress. We also found that females, younger and unmarried showed high psychological stress.

Female were found to be more likely to suffer higher psychological distress. This result was consistent with the previous study which also showed that female might associated with the worse psychological status during COVID-19 pandemic [11]. Females were more likely to have sleep problems, depressive symptoms[12], and more instructive flashbacks as they were more sensitives and resulted in altered immune function and hormonal level [11,13]**.** As of age, the present study showed that younger age reported higher psychological distress than middle age and elderly people in the younger age group as they were usually exposed to financial pressure, problem at work place and personal relationships. Another similar study surveyed by XIO Yang et al[14] in China showed that the middle age group participants reported higher stress.We also found that unmarried respondents were more likely suffering high psychological distress than married. Also, a study by John O Elliott et al [15] showed that family cohesion and marriage quality were associated with higher anxiety and depression.In this study, level of education and occupation were associated to psychological distress. Similarly, Rocio Rodriguez- Rey et al [3] showed that low educational level and occupation were associated to high psychological distress. This might be due to reason that during lockdown many employed were forced to stop working or had lost their job during the lockdown.While assessing the knowledge among study participants 100% participants were aware of the COVID-19 which was in accordance with the study conducted by Kaustav Chakraborty et al.[5]More than half of the participants (54.5%) got more anxious after reading COVID-19 related news or media ads which was in contrast to the study conducted by the Kaustav Chakraborty et al.[5] in which only one fourth of the participants got depressed and anxious after reading COVID related news.There were few limitations in our study. Firstly as it was a online survey it was accessible only to those who could use the internet. Secondly, a potential selection bias existed in our online survey, as snowball sampling was adopted due to lockdown which might reduce the generalizability of the findings to general population across the world. And lastly during lockdown the only feasible option for data collection was web based survey. For this reason, response rate was relatively low and the chances of response bias can not be completely ruled out. Further studies are therefore recommended by taking larger size. Also follow up studies are needed to obtain a clear picture of the magnitude of the psychological impact of COVID-19 pandemic.

Conclusion

Our study suggested that in the general population, individuals who were younger, females or unmarried, were more vulnerable to psychological distress. The COVID-19 pandemic had negative psychological eff ects globally.

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