Annals of R.S.C.B., ISSN: 1583-6258, Vol. 25, Issue 5, 2021, Pages. 5323 - 5332
Received 15 May 2021; Accepted 20 May 2021.

Assessment of Prevalence of Depression During Covid-19 among People in Greater Noida, Uttar Pradesh State, India

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ABSTRACT

The COVID-19 pandemic has had a huge effect on mental health in the general population. As a result, during a crisis like a pandemic, surveillance and management of the population's mental health is obligatory. The objective of this study is to evaluate the level of depression among the selected population. In thiscross-sectional study, random sampling technique was used to recruit the study subjects from 10th June 2020 to 10th October 2020. PHQ-9 questionnaire was used to assess the prevalence of depression. Data was collected through online survey. SPSS was used for data analysis.A total of N=412 participants were included in this study. The mean age of the participants is 24.9 years (SD±6.26. Majority (56%) of the participants are females while 44% are males. 43% are graduates, 27% postgraduates and 29% selected the option "other". The mean PHQ-9 score was 6.32± 6.01. Majority (48%) are normal, 23% with mild depression, 21% with moderate depression, as few as 6% & 3% with moderately severe and severe depression respectively. Scores ≤ 10 were considered normal while scores ≥ 10 were categorised as having depression. 70% scored ≤ 10 while as low as 30% scored ≥ 10. Logistic regression analysis found a significant relationship between gender ($p<0.02$) and depression and no significant relationship between age and educational qualification ($p>0.05$)**.** In conclusion**,** many of the people in this sample had depressive symptoms. The Indian government should make it a top priority to resolve the people's mental health needs. In the event of a pandemic, this finding suggests that mental health services should be made available to all members of society. Appropriate measures for promoting people's mental wellbeing should also be taken.

Keywords: Mental Health, COVID19, Depression, India

Introduction

The surfacing and rapid rise in the incidence of cases of coronavirus disease 2019 (COVID-19), an infectious disease caused by the coronavirus 2 that causes serious acute respiratory syndrome, pose complex challenges to the global public health, research, and medical communities (Li et al., 2020). The World Health Organization has declared COVID-19 a public health emergency of international concern. COVID-19 had been confirmed in more than 3.7 million people in more than 200 nations, regions, and territories as of May 6, 2020, with more than 250,100 deaths.(Cucinotta& Vanelli, 2020)

On January 27, 2020, the first case of COVID-19 infection in India was identified in Kerala.(Andrews et al., 2020). To alleviate the threats and effects of the COVID-19 pandemic, the Indian government has implemented

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a number of drastic public health steps, including mandatory quarantines for people returning from abroad, work-from-home arrangements, school adjournments, and the closure of non-essential services (*This Is How Modi Govt Plans to Resume Classes in Schools in April despite Lockdown*, n.d.)(*Coronavirus Outbreak Updates: NPR to Be Deferred amid COVID-19 Lockdown, Say Reports; Positive Cases Rise to 536 in India - Health News , Firstpost*, n.d.). Surgical masks, food stuffs and other products have also been stockpiled by people in India. Such dramatic changes in one's everyday routine are risk factors that can have a negative effect on one's mental health. Pandemics have been related to certain psychosocial stressors, such as risks to one's own or loved ones' health.(*The Psychology of Pandemics : Preparing for the next Global Outbreak of Infectious Disease (EBook, 2019) [WorldCat.Org]*, n.d.)**.** Routines have been seriously disrupted, as well as isolation from family and friends, shortages of basic needs, pay reductions, social isolation and school closures. Feelings of fear or fatigue, an overestimation of the risk of infection, and the excessive and inadequate implementation of precautionary measures are all examples of psychosocial reactions to infectious disease outbreaks(Koh et al., 2005) As well as a surge in demand for health-care services during a time of scarcity**.**(Rosling& Rosling, 2003)

Depression and anxiety are two of the most common mental illnesses. Because of their negative impact on people's ability to function and succeed, mental illnesses are gaining more global attention.(Zhu et al., 2018). For a variety of reasons, a deeper and more timely understanding of the community's psychological reactions to COVID-19 outbreaks is critical. Individuals who are actively or indirectly subjected to life-threatening circumstances such as contracting coronavirus, for example, have been found to have a high incidence of psychological morbidity**.**(Weiss et al., 1995)(Catalan et al., 1996)(Chen et al., 2020)**.** Furthermore, the presence of such psychological morbidities in a large proportion of the population can have a significant effect on the affected individuals' everyday functions and have immediate social and economic effects, such as reduced productivity and financial distress. It is critical to protect a population's psychological wellbeing through practical mental health interventions in order to help avoid or mitigate delays in health care delivery during outbreaks.(Low & Wilder-Smith, 2005)**.** The COVID-19 outbreak is unquestionably stressful for individuals and populations. During an outbreak, fear of infection is very common. People were also worried that the health-care system would be overwhelmed by the COVID-19 outbreak (Thombs et al., 2020) There were inadequate hospital beds and ventilators to handle the growing number of COVID-19 cases anticipated. Furthermore, people were afraid that the global economy would deteriorate. The fear and anxiety associated with the COVID-19 pandemic can be debilitating, resulting in strong feelings. Furthermore, poor mental wellbeing during infectious disease outbreaks may be linked to misinterpretation of health-related stimuli including bodily sensations and shifts. People can misinterpret seemingly innocuous bodily sensations or changes as signs of infection, causing them unnecessary distress (*The Psychology of Pandemics : Preparing for the next Global Outbreak of Infectious Disease (EBook, 2019) [WorldCat.Org]*, n.d.).

Several studies have been performed on people's mental health during pandemic containment conditions such as lockdown, isolation, and quarantine. They discovered that when people are confined to a certain type of environment, their mental health suffers. In a study conducted during the Middle East respiratory syndrome (MERS) outbreak, Jeong et al (2016) found that 7.6% of 1,656 patients in Korea had anxiety symptoms and 16.6% had feelings of frustration during the isolation period(Jeong et al., 2016). Similar findings were discovered in the Canadian population who were quarantined during the 2003 SARS outbreak (Reynolds et al.,

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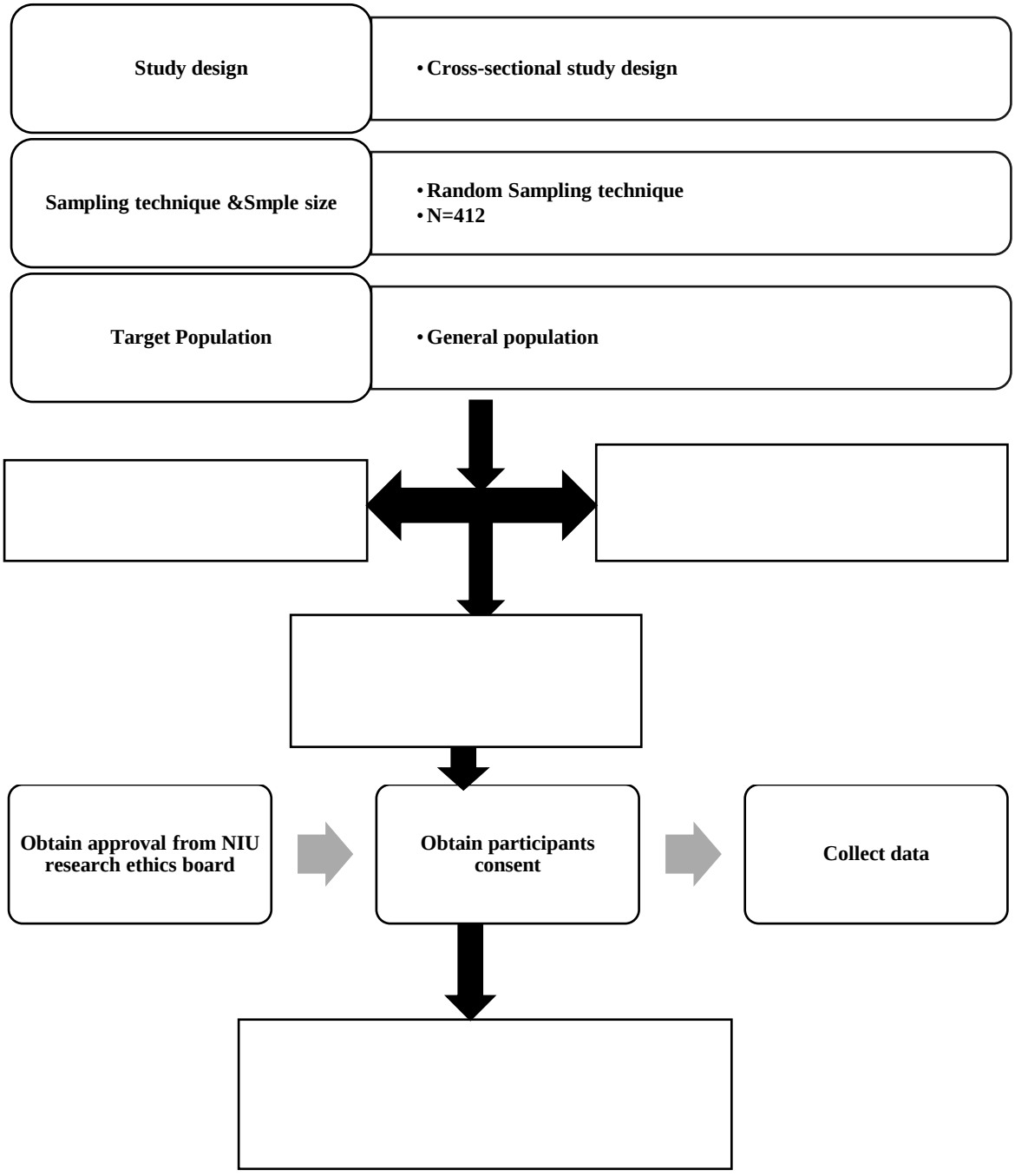
2008**).** In another study, Posttraumatic stress disorder was observed in 25% of quarantined or isolated parents and 30% of isolated or quarantined children, according to Sprang and Silman (2013) (Sprang & Silman, 2013). People now have a better understanding of the scope of the pandemic after a year has passed after the first reported case of COVID-19 in India. It's past time to assess COVID-19's impact on people's mental health. As a result, the current study's aim was to assess the prevalence of depression among people in India during the COVID-19 pandemic.

Methodology



Study Design

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A cross-sectional study was conducted in general population in Greater Noida. The data collection was conducted for a period of five months, from 10th June 2020 to 10th October 2020

Setting and Participants

Eligibility criteria included (i) currently living in greater Noida, India (ii) Having access to internet and (iii) able to read and understand English. Respondents were randomly recruited via their mobile phone numbers and email addresses. A participant's consent form was attached together with a self-administered online survey link sent to the participants through e-mail and WhatsApp. Snowball sampling technique was also used to ensure the questionnaire link reaches to more participants whose email and phone numbers were not recorded prior to the survey.

Study tool or instrument

Part one of the questionnaire gathered socio-demographic variables. Participants were requested to write their age; two options were provided for gender (Male & Female). The question "what is your educational qualification" with options "Graduate", "Post Graduate" & "Others" was used gather information of the participant's level of education.

The patient health questionnaire-9 (PHQ-9) was used in this study (Yu et al., 2012) The PHQ-9 is focused on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition's diagnostic criteria for depression (DSM-IV). The response options were: 0 = "not at all", 1 = "several days", 2 = "more than half the days" and 3 = "nearly every day". The total score ranged from zero to 27, with a higher score indicating greater self-reported depression.). Scores between 0 to 4 were considered normal, 5 – 9 as mild depression, 10 – 15 as moderate depression, 15 to 19 is moderately severe and higher scores from 20 to 27 was considered severe depression. A total score of ≥10 indicated possible major depression, with s a sensitivity of 80% and specificity of 92% (Manea et al., 2012)**.** The psychometric properties of the PHQ-9 have been previously confirmed in Indian populations [10]. A cut off score of greater or equal to 10 was used to classify participants who were likely to meet the criteria for depressive disorder. This cut off has sufficient sensitivity (0.85) and specificity (0.89), responds to moderate levels of depression, and is used to define a depression level that may need psychiatric intervention. The PHQ-9 scores' psychometric properties have been generally endorsed.

Statistical Analysis

The respondents' socio-demographic characteristics were defined using descriptive statistics, presented in frequency and percentage. The mean scores of the PHQ-9 and the prevalence of depression (PHQ-9 score ≥ 10) were analysed and reported

Sample size estimation

The Cochrane formula was used to estimate the required sample size for this study.

$$n_0 = \frac{Z^2 pq}{e^2}$$

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Where, e is the desired level of precision (i.e. the margin of error), p is the (estimated) proportion of the population which has the attribute in question, q is 1 – p. The z-value is found in a Z table. To get 95% confidence, and at least 5 percent—plus or minus—precision. A 95 % confidence level gives us Z values of 1.96, per the normal tables, Therefore ((1.96)2 (0.5) (0.5)) / (0.05)2 = 385. Therefore. a random sample of 385 Participants in our target population is sufficient to give us the confidence levels required. 412 participants who completed the survey were included in this study.

Ethical clearance

The Noida International University's research and review board's Ethical Committee gave their approval to this research. Before participating in the survey, survey participants were told of the study's intent and were given the option to exit at any time. All procedures in studies involving human subjects were carried out in compliance with the institutional and/or national study committee's ethical guidelines, as well as the 1964 Helsinki declaration and its subsequent revisions or equivalent ethical standards. Each respondent signed an electronic consent form.

Data Analysis

Data analysis was done using SPSS version 22, results are presented in descriptive and inferential statistics.

Result

A total of N=412 participants were included in this study. The mean age of the participants is 24.9 years (SD±6.26). Gender wise, majority (56%) of the participants are females while 44% are males. Based on educational qualifications, 43% are graduates, 27% postgraduates and 29% selected the option “other”.

Table 1: A frequency percentage distribution table of socio-demographic variables

Socio-Demographic variables	Frequency (%) N=412	P-Value
Gender		
a) Female	213(56)	0.02
b) Male	181(44)	
Total	412(100)	
Education Qualification		
a) Graduate	179(43)	0.25
b) Postgraduate	112(27)	
c)Other	121(29)	
Total	412(100)	
Level of Depression		
a)Scores ≤10	290(70)	0.54
b) Scores ≥10	122(30)	
Total	412(100)	

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Analysis of the participant's responses to the PHQ-9 depression assessment tool revealed that, the mean PHQ-9 score was 6.32± 6.01. Majority (48%) are normal, 23% with mild depression, 21% with moderate depression, as few as 6% & 3% with moderately severe and severe depression respectively. Scores ≤ 10 were considered normal while scores ≥ 10 were categorised as having depression. 70% scored ≤ 10 while as low as 30% scored ≥ 10. Therefore, the level of depression in this study participants is low.

Table 2: A frequency percentage distribution of level of depression among study subjects.

Range	Level of Depression	Frequency(N=412)	Percentage (%)
0 – 4	Normal	196	48%
5 – 9	Mild depression	94	23%
10 – 15	Moderate depression	85	21%
16 – 19	Moderately severe	26	6%
20 - 27	Severe depression	11	3%

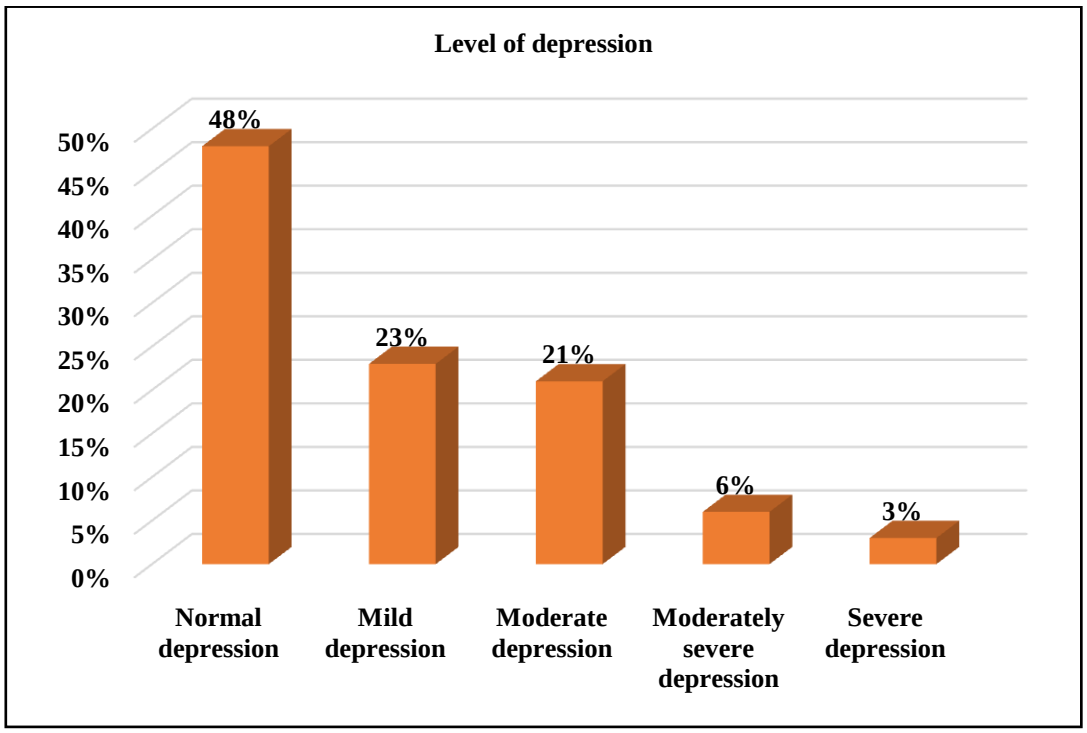

Fig 2: A bar graph showing participants level of depression

A logistic regression analysis was done to determine the relationship between the socio-demographic variables and depression. There is a significant positive relationship between gender and depression, r (410) =0.11, p=0.02, p<0.05. There is no significant relationship between Age r (410) =0.06, p value=0.25 p>0.05 and Educational qualification r(410)=0.03, p=0.54, p>0.05

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Table 3: Logistic regression between social demographic variables and depression

Variables	Pearson's r	P-value	Lower CI	Upper CI
Age	0.06	0.25	-0.15	0.04
Gender	0.11	0.02	-2.55	-0.21
Education Qualification	0.03	0.54	-0.91	0.47

Discussion

This study was conducted to evaluate the prevalence of depression and assess the relationship between socio-demographic variables (Age, Gender and educational qualification) and depression among study subjects during the COVID19 pandemic. mean PHQ-9 score was 6.32± 6. 01.. This study found that 48%, 23%, 21%, 6% & 3% of the participants were normal, mildly depressed, moderately depressed, moderately severely depressed and severely depressed respectively. Scores ≤ 10 were considered normal while scores ≥ 10 were categorised as having depression. 70% scored ≤ 10 while as low as 30% scored ≥ 10. Therefore, the level of depression in this study participants is low. Our findings are in line with Shankey Verma et al.,2020 (Verma & Mishra, 2020), that recorded 25% prevalence of depression among the general Indian population [Depression, anxiety, and stress and socio-demographic correlates among general Indian public during COVID-19**].** Suraj Prakash singh et al also recorded a low level of depression at 14.1% in general population in India during COVID19(Singh & Khokhar, 2021). Williams Wilson et al.,2020**,** also recorded a low prevalence of depression (11.4%) (Wilson et al., 2020) William's prevalence of depression is way lower than this study's probably because it was conducted among health care workers who might be better equipped to handle mental health distresses. 10.5% of the participants had depression in a study by Sandeep et al.,2020 whose goal was to determine the prevalence of depression, anxiety, perceived tension, well-being, and other psychological issues among the general population as a result of the COVID-19 pandemic lockdown(Grover et al., 2020). This study found a significant relationship between gender and depression ($p<0.05$). this finding is similar to that of Sahil Bajaj et al 2020, which reported The female, younger, lower-income, and highly worried populations, respectively, contributed significantly more to the prediction of insomnia than the male, older, higher-income, and less worried populations(Bajaj et al., 2020). Gender was also significantly associated with symptoms of depression in Shankey et al(Verma & Mishra, 2020).

Conclusion

Many participants in this study showed signs of depression. The Mental Wellbeing Act of 2017 granted Indians the right to mental health treatment. In these trying times, the Indian government should make addressing the mental health needs of its people a top priority This result indicates that, in the face of a pandemic, mental health services should be made available to all in society. Appropriate steps should also be taken to promote the people's mental health.

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Limitations

This research, like all others, has some limitations. A cross-sectional study design was used. As a result, the findings of this study are unable to assign a causal existence. Furthermore, the researchers were unable to collect data in the field due to the country's lockdown situation. Since the research was performed using Google Forms, only those with internet access were eligible to participate, leaving out certain segments of the population. As a result, the findings of this research cannot be extended to the entire population. The survey's answers were self-reported. It may have resulted in social desirability reporting biases, which could have influenced the outcome.

References

[1] Andrews, M. A., Areekal, B., Rajesh, K., Krishnan, J., Suryakala, R., Krishnan, B., Muraly, C., & Santhosh, P. (2020). First confirmed case of COVID-19 infection in India: A case report. In *Indian Journal of Medical Research* (Vol. 151, Issue 5, pp. 490–492). Wolters Kluwer Medknow Publications. https://doi.org/10.4103/ijmr.IJMR_2131_20

[2] Bajaj, S., Blair, K. S., Schwartz, A., Dobbertin, M., & Blair, R. J. R. (2020). Worry and insomnia as risk factors for depression during initial stages of COVID-19 pandemic in India. *PLOS ONE*, *15*(12), e0243527. https://doi.org/10.1371/journal.pone.0243527

[3] Catalan, J., Burgess, A., Pergami, A., Hulme, N., Gazzard, B., & Phillips, R. (1996). The psychological impact on staff of caring for people with serious diseases: The case of HIV infection and oncology. *Journal of Psychosomatic Research*, *40*(4), 425–435. https://doi.org/10.1016/0022-3999(95)00527-7

[4] Chen, Q., Liang, M., Li, Y., Guo, J., Fei, D., Wang, L., He, L., Sheng, C., Cai, Y., Li, X., Wang, J., & Zhang, Z. (2020). Mental health care for medical staff in China during the COVID-19 outbreak. In *The Lancet Psychiatry* (Vol. 7, Issue 4, pp. e15–e16). Elsevier Ltd. https://doi.org/10.1016/S2215-0366(20)30078-X

[5] *Coronavirus Outbreak Updates: NPR to be deferred amid COVID-19 lockdown, say reports; positive cases rise to 536 in India - Health News , Firstpost*. (n.d.). Retrieved March 30, 2021, from https://www.firstpost.com/health/narendra-modi-on-coronavirus-speech-live-updates-streaming-watch-india-pm-address-to-nation-on-covid-19-today-latest-news-lockdown-janata-curfew-8182241.html

[6] Cucinotta, D., & Vanelli, M. (2020). WHO declares COVID-19 a pandemic. In *Acta Biomedica* (Vol. 91, Issue 1, pp. 157–160). Mattioli 1885. https://doi.org/10.23750/abm.v91i1.9397

[7] Grover, S., Sahoo, S., Mehra, A., Avasthi, A., Tripathi, A., Subramanyan, A., Pattojoshi, A., Rao, G., Saha, G., Mishra, K., Chakraborty, K., Rao, N., Vaishnav, M., Singh, O., Dalal, P., Chadda, R., Gupta, R., Gautam, S., Sarkar, S., … Janardran Reddy, Y. (2020). Psychological impact of COVID-19 lockdown: An online survey from India. *Indian Journal of Psychiatry*, *62*(4), 354–362. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_427_20

[8] Jeong, H., Yim, H. W., Song, Y. J., Ki, M., Min, J. A., Cho, J., & Chae, J. H. (2016). Mental health status of people isolated due to Middle East Respiratory Syndrome. *Epidemiology and Health*, *38*, e2016048. https://doi.org/10.4178/epih.e2016048

[9] Koh, D., Meng, K. L., Sin, E. C., Soo, M. K., Qian, F., Ng, V., Ban, H. T., Kok, S. W., Wuen, M. C., Hui, K. T., Ng, W., Muttakin, Z., Emmanuel, S., Ngan, P. F., Koh, G., Chong, T. K., Tan, K. B. C., & Fones, C. (2005). Risk perception and impact of severe acute respiratory syndrome (SARS) on work

and personal lives of healthcare workers in Singapore: What can we learn? *Medical Care*, *43*(7), 676–682. https://doi.org/10.1097/01.mlr.0000167181.36730.cc

[10] Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., Ren, R., Leung, K. S. M., Lau, E. H. Y., Wong, J. Y., Xing, X., Xiang, N., Wu, Y., Li, C., Chen, Q., Li, D., Liu, T., Zhao, J., Liu, M., … Feng, Z. (2020). Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia. *New England Journal of Medicine*, *382*(13), 1199–1207. https://doi.org/10.1056/nejmoa2001316

[11] Low, J. G. H., & Wilder-Smith, A. (2005). Infectious respiratory illnesses and their impact on healthcare workers: A review. In *Annals of the Academy of Medicine Singapore* (Vol. 34, Issue 1, pp. 105–110). https://europepmc.org/article/med/15726228

[12] Manea, L., Gilbody, S., & McMillan, D. (2012). Optimal cut-off score for diagnosing depression with the Patient Health Questionnaire (PHQ-9): A meta-analysis. *CMAJ*, *184*(3). https://doi.org/10.1503/cmaj.110829

[13] Reynolds, D. L., Garay, J. R., Deamond, S. L., Moran, M. K., Gold, W., & Styra, R. (2008). Understanding, compliance and psychological impact of the SARS quarantine experience. *Epidemiology and Infection*, *136*(7), 997–1007. https://doi.org/10.1017/S0950268807009156

[14] Rosling, L., & Rosling, M. (2003). Pneumonia causes panic in Guangdong province. *BMJ (Clinical Research Ed.)*, *326*(7386), 416. https://doi.org/10.1136/bmj.326.7386.416

[15] Singh, S. P., & Khokhar, A. (2021). Prevalence of Posttraumatic Stress Disorder and Depression in General Population in India During COVID-19 Pandemic Home Quarantine. *Asia-Pacific Journal of Public Health*, *33*(1), 154–156. https://doi.org/10.1177/1010539520968455

[16] Sprang, G., & Silman, M. (2013). Posttraumatic stress disorder in parents and youth after health-related disasters. *Disaster Medicine and Public Health Preparedness*, *7*(1), 105–110. https://doi.org/10.1017/dmp.2013.22

[17] *The psychology of pandemics : preparing for the next global outbreak of infectious disease (eBook, 2019) [WorldCat.org]*. (n.d.). Retrieved March 30, 2021, from https://www.worldcat.org/title/psychology-of-pandemics-preparing-for-the-next-global-outbreak-of-infectious-disease/oclc/1124596257

[18] *This is how Modi govt plans to resume classes in schools in April despite lockdown*. (n.d.). Retrieved March 30, 2021, from https://theprint.in/india/education/this-is-how-modi-govt-plans-to-resume-classes-in-schools-in-april-despite-lockdown/391287/

[19] Thombs, B. D., Bonardi, O., Rice, D. B., Boruff, J. T., Azar, M., He, C., Markham, S., Sun, Y., Wu, Y., Krishnan, A., Thombs-Vite, I., & Benedetti, A. (2020). Curating evidence on mental health during COVID-19: A living systematic review. In *Journal of Psychosomatic Research* (Vol. 133, p. 110113). Elsevier Inc. https://doi.org/10.1016/j.jpsychores.2020.110113

[20] Verma, S., & Mishra, A. (2020). Depression, anxiety, and stress and socio-demographic correlates among general Indian public during COVID-19. *International Journal of Social Psychiatry*, *66*(8), 756–762. https://doi.org/10.1177/0020764020934508

[21] Weiss, D. S., Marmar, C. R., Metzler, T. J., & Ronfeldt, H. M. (1995). Predicting Symptomatic Distress in Emergency Services Personnel. *Journal of Consulting and Clinical Psychology*, *63*(3), 361–368. https://doi.org/10.1037//0022-006x.63.3.361

Annals of R.S.C.B., ISSN: 1583-6258, Vol. 25, Issue 5, 2021, Pages. 5323 - 5332
Received 15 May 2021; Accepted 20 May 2021.

[22] Wilson, W., Raj, J. P., Rao, S., Ghiya, M., Nedungalaparambil, N. M., Mundra, H., & Mathew, R. (2020). Prevalence and Predictors of Stress, anxiety, and Depression among Healthcare Workers Managing COVID-19 Pandemic in India: A Nationwide Observational Study. *Indian Journal of Psychological Medicine*, *42*(4), 353–358. https://doi.org/10.1177/0253717620933992

[23] Yu, X., Tam, W. W. S., Wong, P. T. K., Lam, T. H., & Stewart, S. M. (2012). The Patient Health Questionnaire-9 for measuring depressive symptoms among the general population in Hong Kong. *Comprehensive Psychiatry*, *53*(1), 95–102. https://doi.org/10.1016/j.comppsych.2010.11.002

[24] Zhu, B., Fu, Y., Liu, J., & Mao, Y. (2018). Modeling the Dynamics and Spillovers of the Health Labor Market: Evidence from China's Provincial Panel Data. *Sustainability*, *10*(2), 333. https://doi.org/10.3390/su10020333