

# Psychological effects of coronavirus disease 2019 among a Malaysian population at Quarters for Educational Institutions Section 18, Shah Alam, Selangor

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## Background

The Malaysian government decided to implement a nationwide movement control order (MCO) to break the chains of coronavirus disease 2019 (COVID-19). Implementation of MCO caused a large section of the population to be isolated, which led to significant economic, social, and political disruption. The epidemic also triggered individuals to experience stress symptoms as well as panic disorders, anxiety, and depression. Therefore, this research aimed to study the psychological effects of COVID-19 among a Malaysian population at Shah Alam, Selangor.

## Method

A cross-sectional study was conducted to evaluate the psychological effect, anxiety, depression, and stress status during the peak of the COVID-19 outbreak. Primary data were collected using an online questionnaire containing sociodemographics, psychological effects, and mental health status during MCO. The psychological effect was assessed using the Event Scale-Revised (IES-r), and mental health status was assessed by the depression, anxiety, and stress scale.

## Results

The results showed that the population rated themselves as having severe psychological distress during COVID-19 (95.2%) through the IES-r questionnaire. Meanwhile, mental health statuses such as depression, anxiety, and stress were rated as normal (89, 82.2, and 94.6%, respectively) through the depression, anxiety, and stress scale 21. The regression analysis showed a significant relationship between sociodemographic data and depression and anxiety. The marital status and parental status showed a significant relationship with depression, whereas age, educational attainment, and marital and parental status showed a significant relation with anxiety.

## Conclusion

Most of the population at Quarters of Educational Institutions experienced severe psychological distress during the COVID-19 outbreak according to IES-r, whereas the mental status was mostly unaffected.

## Keywords:

anxiety, coronavirus disease 2019, depression, psychological effects, stress

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## Introduction

The first documented case in Malaysia was registered on the January 25, 2020. The first coronavirus disease 2019 (COVID-19)-infected patient was a Chinese visitor from Wuhan who had a travel history from Singapore to Johor Bahru on the January 22, 2020. During the first phase of cases of COVID-19 infection, 22 positive cases were reported, and all of the cases were discharged with good health. Then, the second wave of the outbreak was reported on March 16, with a sudden increase in cases that reached 553 positive cases, and this second wave was also reported to be interconnected with the Tabligh gathering cluster at Sri Petaling. Up until then, there were 4987 confirmed infections with 170 new cases as of April 14, 2020 (MOH Ministry of Health Malaysia, 2020). In these conditions, the Malaysian

government introduced to implement a nationwide movement control order (MCO), which was effective from March 18, 2020 to March 31, 2020 to help in breaking the chains of infection. However, new cases were still reported, and the government decided to extend the MCO from April 1 until April 28, 2020 (Khor *et al.*, 2020). The directives of the MCO included prohibition of movement and mass assembly nationwide; closure and suspension of all religious activities in mosques; prohibition of leaving the country; closure of all premises and buildings except for infrastructure service such as supermarkets and wet

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market grocery stores; closure of all nurseries, government and private schools, vocational training, as well as public and private universities (Sarif and Yahya, 2020).

In previous findings, prolonged isolation and quarantine as well as increase in the number of death cases related to the extensive scale of the epidemic were believed to lead to psychological effects on the public, especially leading to feeling of helplessness, social isolation, anxiety, depression, sleep disturbances, aggression, and suicidal behavior (Zheng, 2020). Findings showed significant psychosocial effects on individuals, community, and international levels during previous epidemics (Hall *et al.*, 2008). Approximately 10–30% of the general population had a high concern about the prospect of catching the infection during the influenza outbreak, which led to feelings of fear and anxiety (Rubin *et al.*, 2010). Moreover, during the Ebola outbreak, most individuals showed negative emotions owing to the closure of the education center and businesses (Van *et al.*, 2016). Meanwhile, during the previous SARS outbreak, many studies revealed significant psychological effects of self-blame and moderate anxiety levels (Wang *et al.*, 2020). The public may experience anxiety and worries owing to the rise of some ethical issues that make them feel insecure and may make them to expect to suffer a lot if they caught an infection, for example, owing to exposure to compulsory examination or testing for the pandemic, and make them suffer owing to shortages in the health care services (Jamal *et al.*, 2020; Muhammad *et al.*, 2020). Besides, the MCO was associated with lifestyle changes in all aspects of life, for example, the shift to online learning mode, which is believed to have biopsychosocial effects on the students (Tze *et al.*, 2020). Unfortunately, there is no documented evidence of the psychological effect and mental health of the general population during the peak of the COVID-19 epidemic in Malaysia (Shanmugam *et al.*, 2020). Therefore, this research aimed to establish a measurement of the psychological effect of the COVID-19 outbreak among the Malaysian population who are living in Quarters of Educational Institutions Section 18, Shah Alam.

## Materials and methods

This research used a descriptive survey method in a cross-sectional design among the general public living at Quarters of Educational Institutions Section 18, Shah Alam, to record and obtain the data on existing factors that contribute to the psychological symptoms or psychological effect during the COVID-19 outbreak. In this type of study, the researchers do not have direct control over independent variables because their manifestations have already existed or

are inherent and not manipulatable (Kerlinger and Lee, 2000). In line with the Malaysian MCO by the Malaysian Government, which recommended for the public to reduce face-to-face interaction and confine themselves at home, the collected data were conducted online through the Google Form website. The researcher distributed the link of an online survey to potential respondents through WhatsApp and Facebook groups among residents of Quarters of Educational Institutions Section 18, Shah Alam. This survey consisted of part A (sociodemographic data), part B (psychological effect of the COVID-19 outbreak), and part C (mental health status during COVID-19 outbreak). The self-reports of the Impact of Event Scale-Revised (IES-r) and Depression, Anxiety, and Stress-21 (DASS-21) were used in measuring psychological effects and mental health status, respectively. Both the IES-r scale and the DASS-21 scale were used owing to their intended to be used as a screening tool in a community setting (Coker *et al.*, 2018).

This cross-sectional study required a minimum of 136 people. The study included individuals older than 18 years and willing to participate during the COVID-19 outbreak. Besides, the inclusion criteria were individuals who could read English, both sex, male and female, of any race, with no physical handicap, and without the obvious disorder. Meanwhile, an individual with a physical handicap, blind, deaf, and the individuals who were unwilling to participate were excluded from data collection. All of the data received through IES-r were calculated, and the total score was interpreted based on the interpretation scale based on a previous study (Weiss, 2007). The subscale score can be divided into normal (0–23 scores), mild psychological impact (24–32 scores), moderate psychological impact (33–36 scores), and severe psychological impact ( $\geq 37$  scores). Meanwhile, the mental status among respondents during this outbreak through DASS-21 scales was calculated, and the total score was interpreted based on scales provided by a previous study (Lovibond and Lovibond, 1995). Questions C3, C5, C10, C13, C16, C17, and C21 were used for depression determination. In this determination, the score result can be divided into normal (0–9 scores), mild depression (10–13 scores), moderate depression (14–20 scores), severe depression (21–27 scores), and extremely severe depression ( $\geq 28$  scores). C2, C4, C7, C9, C15, C19, and C20 were used for anxiety determination. The total score of anxiety can be interpreted into normal (0–7 scores), mild anxiety (8–9 scores), moderate anxiety (10–14 scores), severe anxiety (15–19 scores), and extremely severe anxiety ( $\geq 20$  scores). The stress was determined using items in C1, C6, C8, C11, C12, C14, and C18. The total scores

of stresses can be interpreted into normal (0–14 scores), mild stress (15–18 scores), moderate stress (19–25 scores), severe stress (26–33 scores), and extremely severe stress ( $\geq 34$  scores). Besides, this study also measured the strength of correlation between sociodemographic factor variables toward psychological distress and mental health status among participants during this outbreak through linear regression analysis and a two-tailed test, with a significance level of  $P$  value less than 0.05. In addition, all of the data received were described and analyzed through descriptive analysis and analysis of variance using IBM SPSS Statistics 26 (USA).

## Results

This research received about 151 responses, which makes the sample size of this research achieve the minimum requirement of calculation. However, five respondents from 151 respondents did not agree to continue answering the survey. Specifically, among 146 respondents who agreed to participate in this research, most were females (69.9%), with 28.1% being in the age range of 42–51 years. The percentage of male respondents was  $\sim 30.1\%$ . Besides, this research also included participants aged 12–21 years old (13%), 22–31 years old (17.1%), 32–41 years old (20.5%), and 52–61 years old (21.2%). Throughout this research, it was found that most of the participants (95.2%) rated themselves as having severe psychological distress with a score of more than 37 (3.4%) followed by mild psychological distress with a score between 24 and 32 (1.4%) and moderate psychological distress with the score between 33 and 36. In addition, the mean psychological distress score among participants was 56.42, with a SD of 12.55. Meanwhile, the mental health status among participants during the COVID-19 outbreak showed a normal status.

Unfortunately, there was no significant difference comparing the relation between sociodemographic status and psychological distress (IES-r) among participants during the COVID-19 outbreak. This can be observed through regression analysis, where sex had an  $R^2 = -0.005$ ,  $\beta$ [95% confidence interval (CI)] = -0.033, age had an  $R^2 = -0.005$ ,  $\beta$ (95% CI) = -0.046, and marital status had an  $R^2 = -0.003$ ,  $\beta$ (95% CI) = -0.062. Meanwhile, other sociodemographic variables such as parental status recorded a value of  $R^2 = -0.004$ ,  $\beta$ (95% CI) = -0.053 and the employment status recorded an  $R^2 = -0.007$ ,  $\beta$ (95% CI) = 0.003. The educational attainment also showed an value of  $R^2 = -0.006$ ,  $\beta$ (95% CI) = 0.034.

Meanwhile, both marital status and parental status showed a significant value with a negative linear regression with respect to depression symptoms

among respondents during the COVID-19 outbreak, with recorded value of  $R^2 = 0.020$ ,  $\beta$ (95% CI) = -0.165 for marital status and  $R^2 = 0.049$ ,  $\beta$ (95% CI) = -0.235 for parental status. Unfortunately, other sociodemographic factors such as sex [ $R^2 = -0.004$ ,  $\beta$ (95% CI) = -0.052], age [ $R^2 = 0.012$ ,  $\beta$ (96% CI) = 0.138], employment status ( $R^2 = -0.003$ ,  $\beta$ (95% CI) = -0.060], and educational attainment ( $R^2 = -0.004$ ,  $\beta$ (95% CI) = -0.053] did not show any significant difference.

In the regression analysis of measuring the relation of sociodemographic variables and anxiety among respondents during the COVID-19 outbreak, there was a negative linear regression with age, marital status, and parental status, with the value of  $R^2 = 0.022$ ,  $\beta$ (95% CI) = 0.171 for age,  $R^2 = 0.054$ ,  $\beta$ (95% CI) = -0.247 for marital status, and  $R^2 = 0.073$ ,  $\beta$ (95% CI) = -0.281 for parental status. Only educational attainment variable showed a positive linear regression [ $R^2 = 0.026$ ,  $\beta$ (95% CI) = 0.182]. Other sociodemographic variables such as sex [ $R^2 = 0.013$ ,  $\beta$ (95% CI) = -0.140] and employment status [ $R^2 = 0.008$ ,  $\beta$ (95% CI) = -0.124] did not show any significant difference with respect to anxiety symptom.

Unfortunately, the regression analysis was unable to show any significant value in measuring the relation of sociodemographic data with stress symptoms in DASS-21 scales. This can be observed through the result recorded, with value of  $R^2 = -0.002$ ,  $\beta$ (95% CI) = -0.067 in sex, value of  $R^2 = -0.007$ ,  $\beta$ (95% CI) = -0.018 in age, value of  $R^2 = 0.003$ ,  $\beta$ (95% CI) = -0.097 in marital status, value of  $R^2 = 0.008$ ,  $\beta$ (95% CI) = -0.121 in parental status, value of  $R^2 = 0.004$ , (95% CI) = -0.106 in employment status, and value of  $R^2 = 0.012$ , (95% CI) = 0.138 in educational attainment (Tables 1 and 2).

## Discussion

From the results obtained, this research was able to show that most of the respondents rated themselves as having severe psychological distress through IES-r scales and having a normal mental status in all three subscales of DASS-21 during the COVID-19 outbreak. Thus, this concludes that the respondents may tend to have future PTSD if there is no immediate attention taken to address this psychological distress burden. Unfortunately, this research was unable to show any significant regression comparing demographic factors and psychological effect of the COVID-19 outbreak among respondents. This result was contrary to other findings, where in a Chinese population, it was recorded that most of the respondents in China rated themselves as having

**Table 1** Severity of psychological distress and mental health status rated by respondents through Event Scale-Revised and depression, anxiety, and stress scale

Severity	Psychological distress during COVID-19 outbreak (IES-r) [n (%)]	Mental health status during COVID-19 outbreak (DASS-21) [n (%)]		
		Depression	Anxiety	Stress
Normal	0	130 (89)	120 (82.2)	138 (94.6)
Mild	5 (3.4)	9 (6.2)	10 (6.8)	4 (2.7)
Moderate	2 (1.4)	6 (4.1)	12 (8.2)	4 (2.7)
Severe	139 (95.2)	1 (0.7)	2 (1.4)	0
Extreme	–	0	2 (1.4)	0

COVID, coronavirus disease 2019; DASS, depression, anxiety, and stress scale; IES-r, Event Scale-Revised.

moderate to severe psychological distress during the COVID-19 outbreak, where female sex, employment status especially among students, specific physical symptoms, and poor self-rated health status were shown to have a significant associated with a high score in the IES-r (Wang *et al.*, 2020). Similar to the Chinese population, the participants in a Spain population reported moderate to severe psychological effect during this large pandemic (Rodriguez-Rey *et al.*, 2020). However, an Indian population reported mild psychological distress, where younger age, female sex, and comorbid physical illness showed a significantly associated with a high score in the IES-r (Varshney *et al.*, 2020). If we compare these results with previous large-scale pandemics such as SARS outbreak, it was found that SARS survivors showed psychological distress after a year following the outbreak as compared with after 1 month of SARS outbreak, with the female sex, age differences, and education levels showing a significant control the subsequent analyzed with psychological distress among SARS survivors (Lee *et al.*, 2007). Therefore, based on the finding reported among SARS survivors, there may have a high tendency that there will be a future increase in severe psychological distress after a 1 year from the COVID-19 outbreak if there was still no immediate attention to this issue. Meanwhile, this research was able to show that there is normal mental status in all three subscales of DASS-21 among the population. However, this finding is in contrary to other populations of China and Spain. Most of the Chinese population recorded that they had moderate-to-severe anxiety (Wang *et al.*, 2020), whereas Spanish population showed mild-to-severe levels of anxiety, depressive symptoms, and stress (Rodriguez-Rey *et al.*, 2020). In the Australian population, there was high severity of all of the subscales in DASS-21 compared with the Chinese population (Traumuller *et al.*, 2020), and the American population reported suffering from symptoms of anxiety (Canady, 2020). These high numbers of total DASS-21 scales shown in other

country populations may have happened owing to overwhelming fear and anxiety toward COVID-19 outbreak through social distancing where they wanted to be connected but did not know if the contact had COVID-19 infection (Shanmugam *et al.*, 2020). There is also a view that these high findings happened because of the low level of information about COVID-19 infection, which led to threats and feelings of insecurity (Traumuller *et al.*, 2020).

However, the possibility of normal mental health status in this research among the population of Quarters Educational Institutions Section 18, Shah Alam, Selangor, is due to an intermediate action by the government during MCO. For example, the respondent may feel less anxious due to tightened security during MCO through numerous roadblocks, which led to a 48% reduction in the crime rate around Kuala Lumpur (Shanmugam *et al.*, 2020). Besides, MCO also provides relief for those who have experienced constant work stress, thus reducing the rate of stress symptoms among the population. In addition, prolonged staying at home had a high potential in enabling more homecooked food and a healthier diet. This exposure to a good dietary meal can affect the good mental health status (Dinan *et al.*, 2019).

The unpredictability of this COVID-19 outbreak and the unpredictability of the extension of the MCO may have the possibility of affecting an individual's mental health status. Therefore, it is recommended that each individual should not panic about this current issue and always maintain good hygiene, which had been recommended by World Health Organization (WHO, 2020). Next, each individual should explore new hobbies during self-isolation to keep themselves happy and reduce stress during self-isolation. Furthermore, each individual should maintain a healthy diet by restricting unhealthy activities, smoking, and vaping to maintain a good mental

**Table 2 Summary of regression analysis between sociodemographic factors variables and psychological distress (Event Scale-Revised) and mental health status (depression, anxiety, and stress scale) during coronavirus disease 2019 outbreak**

Variable	n (%)	Psychological distress during COVID-19 outbreak (IES-r)					Mental health status during COVID-19 outbreak (DASS-21)										
		R <sup>2</sup>	Adjusted $\Delta R^2$	$\beta$ (95% CI)	P	R <sup>2</sup>	Depression		Anxiety		Stress						
							Adjusted $\Delta R^2$	$\beta$ (95% CI)	P	Adjusted $\Delta R^2$	$\beta$ (95% CI)	P	Adjusted $\Delta R^2$	$\beta$ (95% CI)	P		
Sex																	
Male	44 (30.1)	0.002	-0.005	-0.033	0.617	0.003	-0.004	0.052	0.536	0.020	0.013	-0.140	0.091	0.004	-0.002	-0.067	0.423
Female	102 (69.9)																
Age																	
12–21 years old	19 (13.0)																
22–31 years old	25 (20.5)																
32–41 years old	30 (28.1)	0.002	-0.005	-0.046	0.097	0.019	0.012	0.138	0.097	0.029	0.022	-0.171	<b>0.048*</b>	0.000	-0.007	-0.018	0.825
42–51 years old	41 (28.1)																
52–61 years old	31 (21.2)																
62–71 years old	–																
Marital status																	
Single	45 (30.8)																
Married	98 (67.1)	0.004	-0.003	-0.062	0.456	0.027	0.020	-0.165	<b>0.047*</b>	0.061	0.054	-0.247	<b>0.003*</b>	0.010	0.003	-0.097	0.423
Divorced/Separated	3 (2.1)																
Status as parent																	
No children	50 (34.2)																
Has a child (0–16 years old)	41 (28.1)	0.003	-0.004	0.053	0.522	0.055	0.049	-0.235	<b>0.004*</b>	0.079	0.073	-0.281	<b>0.001*</b>	0.015	0.008	-0.121	0.145
Has a child ( $\geq 16$ years old)	55 (37.7)																
Employment status																	
Students	37 (25.3)																
Employed	91 (62.3)	0.000	-0.007	0.003	0.975	0.004	-0.003	-0.060	0.469	0.015	-0.008	-0.124	0.137	0.011	0.004	-0.106	0.202
Retired	9 (6.2)																
Educational Attainment																	
Lower secondary school	8 (5.5)																
Upper secondary school	16 (11.0)	0.001	-0.006	0.034	0.681	0.003	-0.004	0.053	0.526	0.033	0.026	0.182	<b>0.028</b>	0.019	0.012	0.138	0.098
University – Bachelor	101 (69.2)																
University – Masters	16 (11.0)																
University – Doctorate	5 (3.4)																

COVID-19, coronavirus disease 2019; DASS, depression, anxiety, and stress scale; IES-r, Event Scale-Revised. \*significance level of  $p < 0.05$ .

status. Each individual also should learn and practice relaxation techniques as a coping method toward stress. This can be through meditation, listening to music, art, and deep breathing exercises. In addition, to reduce stress and anxiety toward the closure of education centers and workplaces, the researcher would like to recommend for the public to have a proper designate workplace at home to improve the productivity and mood during working at home. Proper designated schedules or timetables are also recommended to avoid being distracted.

## Conclusion

This research reported that the population living in Quarters of Educational Institutions Section 18, Shah Alam, rated themselves as having severe psychological distress with a normal status of stress, anxiety, and depression. However, the regression analysis showed a highly significant linear regression between sociodemographic variables and depression and anxiety through the DASS-21 scale during the COVID-19 outbreak. It should be taken into consideration that this research was conducted during the early COVID-19 outbreak period in Malaysia and toward the beginning of the implementation of the MCO. These results can be useful in future planning to enhance mental health and minimize psychological distress during the COVID-19 outbreak or any future epidemic. The researcher also would like to recommend for future researchers to use a larger scale of the population to measure the psychological effect in each state of Malaysia and add an observation from month to month to accurate measuring mental health status and psychological distress after the clearance of the outbreak.

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## Conflicts of interest

There are no conflicts of interest.

## References

- Canady VA (2020). APA poll finds nearly half anxious about getting COVID-19. *Ment Health Weekly* 30:1-5.
- Coker AO, Coker OO, Sanni D (2018). Psychometric properties of the 21-item depression anxiety stress scale (DASS-21). *Afr Res Rev* 12:135-142.
- Dinan TG, Stanton C, Long-Smith C, Kennedy P, Cryan JF, Cowan CS, Sanz Y (2019). Feeding melancholic microbes: mynewgut recommendations on diet and mood. *Clin Nutr* 38:1995-2001.
- Hall RC, Hall RC, Chapman MJ (2008). The 1995 Kikwit Ebola outbreak: lessons hospitals and physicians can apply to future viral epidemics. *Gen Hosp Psychiatry* 30:446-452.
- Jamal IJ, Pakianathan D, Mohamed MIP, Mohammad SS, Attalla SM (2020). Overview of the patient autonomy challenging the healthcare providers during pandemic management; a study evoked during covid-19 pandemic. *IJM TLM* 23:10-17.
- Kerlinger FN, Lee HB (2000). Survey research. *Found Behav Res* 4:599-619.
- Khor V, Arunasalam A, Azli S, Khirul-Asri MG, Fahmy O (2020). Experience from Malaysia during the COVID-19 movement control order. *Urology* 141:179-180.
- Lee AM, Wong JG, Mcalonan GM, Cheung V, Cheung C, Sham PC, Chua SE (2007). Stress and psychological distress among SARS survivors 1 years after the outbreak. *Can J Psychiatry* 52:233-240.
- Lovibond SH, Lovibond PF (1995). The structure of negative emotional states comparison of the depression anxiety stress scales (DASS) with the Beck depression and anxiety inventories. *Behav Res Ther* 33:335-343.
- MOH (Ministry of Health Malaysia) (2020). Sidang Media Kementerian Kesihatan Malaysia: Situasi Semasa Jangkitan Penyakit Coronavirus 2019 (COVID-19) di Malaysia, April 14, 2020. [Pressreleased]. Available at: [https://www.moh.gov.my/index.php/pages/view/2019-ncov\\_wuhan-kenyataan-akhbar](https://www.moh.gov.my/index.php/pages/view/2019-ncov_wuhan-kenyataan-akhbar) Accessed date 20.7.2021
- Muhammad IPM, Jamal IJ, Mohammad SS, Pakianathan D, Attalla SM (2020). Ethical review for the legal healthcare strategies implemented during pandemics. *Eur J Mol Clin Med* 7:542-550.
- Rodríguez-Rey R, Garrido-Hernansaiz H, Collado S (2020). Psychological impact and associated factors during the initial stage of the coronavirus (COVID-19) pandemic among the general population in Spain. *Front Psychol* 11:1540.
- Rubin GJ, Potts HWW, Michie S (2010). The impact of communication about swine flu (Influenza A H1n1v) on public responses to the outbreak: results from 36 national telephone survey in the UK. *Health Technol Assess (Rockv)* 14:183-226.
- Sarif SM, Yahya R (2020). Tawhidic approach of managing crisis with 'unprecedented situation deals with unprecedented measures': the case movement control order on coronavirus disease 19 (COVID-19) in Malaysia. <https://doi.org/10.13140/RG.2.2.31743.97444>. Last accessed on 20 March 2021.
- Shanmugam H, Juhari JA, Nair P, Ken CS, Guan NC (2020). Impact of COVID-19 pandemic on mental health in Malaysia: a single thread of hope. *Malay J Psychiatry* 29:1-10.
- Traumüller C, Steffitz R, Gaisbachgrabner K, Schwerdfeger A (2020). Psychological correlates of COVID-19 pandemic in the Austrian population. *Res Square* 20:1-31.
- Tze LS, Suriarumthy PV, Amin NM, Zain SS, Afandi NM, Hamzah H, Attalla SM (2020). Overview of the biopsychosocial effects of e-learning and its impact on the academic performance among university students. *Psychol Educ J* 57:2469-2477.
- Van BT, Bansayake A, Wurie F, Jambai M, Koroma AS, Muana AT, Nellums LB (2016). Psychosocial effects on an Ebola outbreak at individual, community and international levels. *Bull World Health Organ* 94:210-212.
- Varshney M, Parel JT, Raizada N, Sarin SK (2020). Initial psychological impact of COVID-19 and its correlates in Indian community: an online (FEEL-COVID) survey. *PLoS ONE* 15:e0233874.
- Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 17:1729.
- Weiss DS (2007). The impact of event scale: revised. in cross-cultural assessment of psychological trauma and PTSD. Boston, MA: International and Cultural Psychology Series, Springer 219-238.
- World Health Organization (WHO). (2020). Mental Health and COVID-19. World Health Organization; 1-6. Retrieved from [https://www.who.int/docs/default-source/coronaviruse/mental-health-consideration.pdf?sfvrsn=6d3578af\\_2](https://www.who.int/docs/default-source/coronaviruse/mental-health-consideration.pdf?sfvrsn=6d3578af_2)
- Zheng W (2020). Mental health and novel coronavirus (2019-Ncov) In China. *J Affect Disord* 269:201-202.