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Psychological distress during pandemic Covid-19 among adult general population: Result across 13 countries

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ABSTRACT

The COVID-19 pandemics caused an unprecedented mortality, distress, and globally poses a challenge to mental resilience. To our knowledge, this is the first study that aimed to investigate the psychological distress among the adult general population across 13 countries. This cross-sectional study was conducted through online survey by recruiting 7091 respondents. Psychological distress was evaluated with COVID-19 Peritraumatic Distress Index (CPDI). The crude prevalence of psychological distress due to COVID-19 is highest in Vietnam, followed by Egypt, and Bangladesh. Through Multivariate Logistic Regression Analysis, the respondents from Vietnam holds...
1. Introduction

The coronavirus disease (COVID-19) pandemic started in China in the late 2019. COVID-19 has infected humans which has caused unprecedented numbers of illness and deaths and has led to psychological distress. COVID-19 poses a challenge to mental resilience globally. As a response to COVID-19 pandemic, most countries have implemented a measure to prevent the spread of the disease, such as restricting movement. The restriction of movement and quarantine has affected many aspects of people’s lives and livelihoods. It may also trigger a wide range of psychological distress and responses such as panic, anxiety, and depression, and it was a predictor of short-term dysfunction to predict the development and/or maintenance of post-traumatic stress disorder (PTSD) after the pandemic. Many studies showed the adverse psychological health effects following quarantine which include emotional disturbance, depression, stress, low mood, irritability, insomnia, post-traumatic stress symptoms, anger, and emotional exhaustion. Differences in ethnic inequality demonstrated inequalities in psychological distress due to sociodemographics and economic differences. Islam (2019) found that a low level of education, inability to work, and residence in semi-urban areas in Bangladesh were associated with a high prevalence of psychological distress. However, there is a limited information on comparison of the psychological distress and mental health effect of COVID-19 across different countries. The corona virus impacts on psychological health would have different due to countries having a different situation and deployed different responses toward COVID-19 crisis. Therefore, this study aimed to survey the general population across 13 countries (Bangladesh, Egypt, India, Indonesia, Iran, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Turkey, and Vietnam) to measure the prevalence and severity of psychological distress.

2. Methods

2.1. Study setting and population

An internet-based cross-sectional survey was conducted from March to April 2020 during the movement restriction took place. Snowball sampling, a type of convenience sampling method was used for the data collection using research networks of universities, hospitals, friends and their relatives. The study population were adults aged 18 years and above who resided in respective countries for a minimum of one week during the COVID-19 pandemic announcement made by the World Health Organization. The structured online questionnaires were distributed through emails, WhatsApp, Telegram, and other social media platforms throughout different countries. All co-researchers and colleagues identified the respondents’ social media account through their link and network.

2.2. Study tool (measurement)

Data were collected through a structured online questionnaire. The questionnaire has two parts: Part 1 – Sociodemographic data (state, gender, age, education, marital status, co-morbidities); Part 2 - COVID-19 Peritraumatic Distress Index (CPDI), which was developed by Qui et al. The COVID-19 CPDI was a self-reported questionnaire with 24 questions which features the use of a Likert Scale: (never –0, occasionally-1, sometimes-2, often-3, and always-4) of anxiety, depression, and it was a predictor of short-term dysfunction to predict the development and/or maintenance of post-traumatic stress disorder (PTSD) after the pandemic. Many studies showed the adverse psychological health effects following quarantine which include emotional disturbance, depression, stress, low mood, irritability, insomnia, post-traumatic stress symptoms, anger, and emotional exhaustion. The reported adverse psychological effects following quarantine include emotional disturbance, depression, stress, low mood, irritability, insomnia, post-traumatic stress symptoms, anger, and emotional exhaustion. Differences in ethnic inequality demonstrated inequalities in psychological distress due to sociodemographics and economic differences. Islam (2019) found that a low level of education, inability to work, and residence in semi-urban areas in Bangladesh were associated with a high prevalence of psychological distress. However, there is a limited information on comparison of the psychological distress and mental health effect of COVID-19 across different countries. The corona virus impacts on psychological health would have different due to countries having a different situation and deployed different responses toward COVID-19 crisis. Therefore, this study aimed to survey the general population across 13 countries (Bangladesh, Egypt, India, Indonesia, Iran, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Turkey, and Vietnam) to measure the prevalence and severity of psychological distress.

2.3. Process of data collection

Data collection started 2 weeks after the announcement by the WHO that COVID-19 was pandemic. The online link was available for about 1 month. Our study was an online survey which was completely voluntary. The consented participants were able to respond only once using a single account by setting the feature to prevent more than one response from the same history. The participants were asked to give a response based on their previous one-week experience. Spreadsheet’s responses were exported into IBM SPSS version 25 and Stata 13.0 (Stata Corp., USA). Overall response rate of the survey was 36%.

2.4. Statistical analyses

Descriptive statistics was conducted for the demographic variables, and reported with frequency (count), percentage, mean, standard deviation and prevalence. Univariate logistic regression was conducted to produce crude odds ratios for associations between countries, age, sex, religion, education, and employment with distress. A multivariate logistic regression was then fitted to examine the association between distress and countries, with Nepal as a reference category controlling for demographic factors. Nepal was chosen as a reference category due lowest psychological distress prevalence among all 13 countries.

Age, sex, nationality, education, and employment were initially
included to predict the likelihood of being in distress category. Religion was removed because distribution of religion is not similar in each country. Education level categories were collapsed to two categories (from primary, secondary, and tertiary level to up-to secondary and tertiary) in order to minimize multicollinearity to become an acceptable level. The removal of religion and collapsing education level categories has reduced mean VIF from 3.86 (range 1.16–10.46) to 1.99 (range 1.16–3.62). Statistical analyses were computed IBM SPSS version 25 and Stata 13.0 (Stata Corp., USA).

3. Results

A total of 7,091 respondents took part in this online survey conducted in multiple countries. Table 1 showed the sample characteristics which illustrate the majority of the sample were women (59.8%), Muslim (61.5%), had tertiary education (67.6%), and on employed 57.1%. About half of the respondents were from Indonesia (15.1%), Iran (16.4%) and Malaysia (16.9%).

The crude prevalence of psychological distress from COVID-19 pandemic is displayed in Table 2 where the crude prevalence is shown in descending order. The top 3 countries that reported the highest prevalence of psychological distress from the pandemic were Vietnam (94.5%), Egypt (64.1%) and Bangladesh (56.3%) whereas the 3 countries in this study that had the lowest prevalence of psychological distress from the COVID-19 pandemic were Thailand, Sri Lanka and Nepal with 28.1%, 26.8% and 14.0% respectively. As compared to males (42.2%), prevalence among females was much higher (48.0%). The prevalence of distress was more in higher educated people (Primary/secondary education- 42.3%; Tertiary education-47.3%). Students (41.9%) had the low level of distress as compared to employed (46.3%) and unemployed (47.4%) people.

The univariate and multivariable logistic regression for prediction of psychological distress were displayed in Table 3. From the univariate analyses, nationalities, age, sex, education, and employment status were associated with having psychological distress. Multivariable model 1 predicted psychological distress adjusted for countries, age, and sex whereby model 2 had education and employment status added to variables in model 1.

Table 2

| Country    | Distress (count) | Total population | Prevalence of distress (in %) |
|------------|------------------|------------------|-------------------------------|
| Vietnam    | 397              | 420              | 94.5%                         |
| Egypt      | 164              | 256              | 64.1%                         |
| Bangladesh | 259              | 460              | 56.3%                         |
| Philippines| 185              | 357              | 51.8%                         |
| Iran       | 599              | 1160             | 51.6%                         |
| Myanmar    | 209              | 415              | 50.4%                         |
| Turkey     | 192              | 456              | 42.1%                         |
| Indonesia  | 432              | 1067             | 40.5%                         |
| India      | 148              | 378              | 39.2%                         |
| Malaysia   | 430              | 1197             | 35.9%                         |
| Thailand   | 100              | 356              | 28.1%                         |
| Sri Lanka  | 88               | 328              | 26.8%                         |
| Nepal      | 34               | 241              | 14.1%                         |

Note: Chi square test statistic and p value *p < 0.05, **p < 0.01, ***p < 0.001.

4. Discussion

This study demonstrates the importance of assessing psychological distress and mental health effects in the general population during a global pandemic. Studies on mental health effects during the current COVID-19 pandemic showed that healthcare workers are mostly at risk of psychological sequelae such as psychological distress, anxiety, depression, and other mental health issues during such outbreaks by being on the frontline. Nevertheless, its impact on non-healthcare workers is also significant, and is worth addressing.

It has long been disproven that psychological distress only concerns those in affluent countries. However, studies have shown that its effects are widespread and global. Nevertheless, a comparative study on the effects of pandemic on the mental health of non-healthcare workers in different countries across continents especially among developing nations have not been much attempted. This study, done on such a scale,
managed to do just that. It is able to inform us on how the prevalence of psychological distress varies across non-developed countries, while controlling for the cause of distress.

In this study, we were able to ascertain that, as the result of COVID-19 outbreak, Vietnam had the highest prevalence of psychological distress followed by Egypt, where Nepal had the least. The emergence of the COVID-19 outbreak, misinformation and fake news inundating social media platforms have sparked coronavirus fears locally and globally. In Vietnam, rumors, such as lockdowns of entire cities, COVID-19 deaths, or shortages of facemasks or food, spread on social media networks are serious public concerns. These have inflamed the COVID-19 panic and confusion, stockpiling of foods and essential supplies, and people rushing to pharmacies for face mask purchases. At the early phase of the outbreak, the Vietnamese Prime Minister has signed a decree stipulating sanctions against those disseminating fake news and misinformation on social media.14

The total number of COVID-19 confirmed cases reported from Nepal till April 2020 was the lowest among the study countries with no deaths (Table 4). The small sample size and largely represent the urban population were the most probable reason behind low distress level in Nepal compared to other countries in study. However, a similar community survey done on April 2020 in Nepal revealed that the prevalence of anxiety, depression and stress were 14%, 7% and 5% respectively.27,28

| Table 3 | Univariate and multivariable logistic regression for COVID-19 distress. |
|---------|---------------------------------------------------------------|
| Factors | Univariate | Multivariable model 1 | Multivariable model 2 |
|         | Crude OR (95% CI) | p-value | Adjusted OR (95% CI) | p-value | Adjusted OR (95% CI) | p-value |
| Nationality | Reference | 7.85 (5.22-11.78) | <0.001 | 7.42 (4.93-11.18) | <0.001 | 8.12 (5.34-12.34) | <0.001 |
| Nepal | Bangladesh | 10.85 (6.97-16.91) | <0.001 | 9.62 (6.15-15.04) | <0.001 | 10.54 (6.68-16.61) | <0.001 | 6.50 (4.44-9.51) | <0.001 | 6.25 (4.20-9.24) | <0.001 |
| India | 3.92 (2.58-5.95) | <0.001 | 3.78 (2.48-5.74) | <0.001 | 4.17 (2.72-6.39) | <0.001 |
| Indonesia | 4.14 (2.82-6.07) | <0.001 | 3.81 (2.60-5.60) | <0.001 | 3.65 (2.48-5.38) | <0.001 |
| Iran | 6.50 (4.44-9.51) | <0.001 | 5.68 (3.86-8.34) | <0.001 | 6.25 (4.20-9.24) | <0.001 |
| Malaysia | 3.41 (2.33-5.00) | <0.001 | 3.11 (2.12-4.56) | <0.001 | 3.29 (2.23-4.86) | <0.001 |
| Myanmar | 6.18 (4.10-9.31) | <0.001 | 5.90 (3.91,8.90) | <0.001 | 6.08 (4.02-9.19) | <0.001 |
| Philippines | 6.55 (4.31-9.95) | <0.001 | 6.10 (4.01-9.28) | <0.001 | 6.58 (4.30-10.07) | <0.001 |
| Sri Lanka | 2.23 (1.44-3.46) | <0.001 | 2.01 (1.30-3.13) | <0.001 | 2.23 (1.42-3.50) | <0.001 |
| Thailand | 2.38 (1.55-3.66) | <0.001 | 2.23 (1.45-3.43) | <0.001 | 2.44 (1.67-3.79) | <0.001 |
| Turkey | 4.43 (2.95-6.66) | <0.001 | 4.44 (2.95-6.68) | <0.001 | 4.50 (2.99-6.78) | <0.001 |
| Vietnam | 105.09 (60.32-183.09) | <0.001 | 99.54 (57.09-173.55) | <0.001 | 107.91 (61.46-189.46) | <0.001 |
| Age | 0.991 (0.987-0.995) | <0.001 | 0.997 (0.993-1.001) | 0.155 | 0.996 (0.991-1.001) | 0.123 |
| Sex (Female) | 1.26 (1.15-1.39) | <0.001 | 1.27 (1.14-1.42)** | <0.001 | 1.30 (1.16-1.45) | <0.001 |
| Education | Reference | Primary/Sec | 1.22 (1.10-1.35) | <0.001 | 0.85 (0.74-0.97) | 0.018 |
| Employment | Reference | Tertiary | 1.20 (1.06-1.35) | 0.003 | 1.03 (0.88-1.20) | 0.744 |
| Student | Reference | Unemployed | 1.25 (1.08-1.44) | 0.002 | 0.98 (0.82-1.17) | 0.820 |

Notes: *p < 0.05, **p < 0.01, ***p < 0.001.
1 Nationality, age and sex (n = 7991).
2 Model 1 + education and employment (n = 7088).

Table 4 | Countries with reported laboratory-confirmed COVID-19 cases and deaths. Data as of 17 April 2020*.

| Country | Total Number of confirmed COVID-19 cases |
|---------|------------------------------------------|
| Iran | 77995 |
| Turkey | 74193 |
| India | 13387 |
| Philippines | 5660 |
| Indonesia | 5516 |
| Malaysia | 5182 |
| Thailand | 2700 |
| Egypt | 2673 |
| Bangladesh | 1572 |
| Vietnam | 268 |
| Sri Lanka | 238 |
| Myanmar | 85 |
| Nepal | 16 |
Furthermore, this association persisted even after adjusting for factors with significant hardship. Overburdened health service.

R.R. Marzo et al. of online survey could provide the useful alternative for the formal efficiency of data collection, lower cost and acceptability of the recruitment. Sampling, the presence of bias may limit its findings. Non-respondent population of these respondents was done through convenience sample of respondents from different corners of the globe. However, since the earthquake. It is possible that, in the wake of such an event, the Nepalese had become a resilient nation, so much so that it was least affected by psychological distress during periods of extreme stress.

Distress during periods of extreme stress.

Depression, anxiety, and posttraumatic stress disorder. Sometimes may last longer than a few weeks. When this happens, the person may be at risk of developing other mental illnesses such as depression, anxiety, and posttraumatic stress disorder. Interestingly, researches have also linked psychological distress with cardiovascular disease, arthritis, and chronic obstructive pulmonary diseases. Furthermore, this association persisted even after adjusting for factors such as smoking status, exercise, and diet. This suggests that psychological sequelae of the COVID-19 pandemic may be endured long after the condition itself, and, if not, addressed may impede the already overburdened health service.

The main strength of this study is the inclusion of the large number of respondents from different corners of the globe. However, since the recruitment of these respondents was done through convenience sampling, the presence of bias may limit its findings. Non-respondent population, such as severely distressed patients without interest to participate in the survey or low digital literate participants, might affect the generalizability of the findings in these populations. However, efficiency of data collection, lower cost and acceptability of the recruitment of online survey could provide the useful alternative for the formal regional or national survey.

With such a large number and widespread participation, the findings of this study are difficult to be ignored but need of further research for the in-depth understanding of the issue.

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Declaration of competing interest
The authors declare no conflict of interest.

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