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COVID-19 Pandemic and Initial Psychological Responses by Bangladeshi People

Oli Ahmed, Md Zahir Ahmed, Zhou Aibao, Sohan Mia and Md Arif Uddin Khan

Abstract

The present study was aimed to investigate the causes of COVID-19 worry and its effect on initial behaviors that observed in early stage of the COVID-19 outbreak in Bangladesh. In the online survey, participants' were asked about normative concerns, COVID-19 worry, initial behaviors, and the neuroticism personality trait. Results of the study demonstrated that (i) higher normative concerns and neurotic trait were predictors of higher COVID-19 worry; and (ii) higher normative concerns and COVID-19 worry significant predictors of buying preparatory materials, higher worry for postponing travel plan, and higher worry and neuroticism for purchasing daily commodities more than usual and difficulties in concentration.

Keywords: Pandemic, COVID-19 worry, normative concerns, neuroticism, initial behaviors

1. Introduction

Novel Coronavirus disease 2019 (COVID-19) is a rapid, human to human transmittable respiratory disease which has widespread uniformity with Severe Acute Respiratory Syndrome (SARS-CoV) as both belong to the Coronaviridae family, genus Betacoronavirus [1] believed to have originated and spread from a seafood market of Wuhan city of China [2]. The outbreak of atypical pneumonia caused unexplained first declared by the Health Commission of Hubei province on December 31, 2019. Though COVID-19 is originated and spread from China, most of the European countries have been squandered significantly than any other countries of Asia as they exceedingly delayed in shutting down the travel facility [3]. As of October 13, 2020, globally confirmed cases of COVID-19 are 38,080,325 with 1,086,011 deaths [4]. Though the epidemic emerged in China, but the crisis went beyond the specific territory and touched almost every sector. World Health Organization declared COVID-19 as a pandemic on March 11, 2020 [5]. After the warning of WHO and skyrocketed number of the cases instigated researchers around the world to discover lifesaving innovation to overthrow COVID-19 [6] and some 35 organizations are racing to succeed [7].

Though the healthcare infrastructure of Bangladesh is extremely poor as the legacy of national resource constraints, it confirmed the first case in significantly later on March 08, 2020 [8], where first confirmed death was recorded on March 18,

2020 [9]. From the second week of April, the number of confirmed cases is increasing. Local administrations have imposed lockdown in all 64 districts across the country. As of October 13, 2020, total confirmed cases are 379,738 and 5,555 people died [8].

Usually, emotional and behavioral responses and mental health issues remain almost untouched during such pandemic as world run after inventing medicine to cure the disease. This picture is also same in the current COVID-19 pandemic, as inadequate attempts have been taken to address mental health issues and emotional and behavioral responses. In the present study, we are trying to address the concern/worry about COVID-19 infection as an emotional response after COVID-19 positive cases confirmed in the country as “an affective and emotional response to threat” [10]. COVID-19 worry may arise from several factors such as unavailability of vaccine till to date, higher rate of infection globally, lack of sufficient knowledge, etc. Besides these situational factors, some demographic factors (i.e.- gender), social context factors (i.e. group norms or group concerns about the threat), and psychological factors (i.e.- personality traits) may also affect the worry. Women were more concerned about affecting by the SARS virus than men during the SARS epidemic [11]. Authors [10] also adapted a model where they found that personal conservation beliefs and normative concerns were significant predictors of the worry related to Swine Flu virus. Studies suggested that significant others’ concerns about threat are also important predictors of the worry related to that threat [12, 13]. Among personality traits, neuroticism has a strong association to depression, panic disorder, generalized anxiety disorder, etc. [14]. It is the only predictor of psychopathology, while extraversion and agreeableness for positive mental health [15]. COVID-19 worry also leads to some immediate action in everyday life as coping strategy to reduce worry. During the swine flu outbreak, authors [16] have found that people having higher anxiety related to swine flu were carried more avoidance behavior than people having lower anxiety. Moreover, worry during flu outbreak also has association with concentrating on daily activities [10, 17].

Although it would be said that the COVID-19 worry is the main underlying reason of the immediate behavioral and psychological response, the predictors of the COVID-19 worry are unknown as it has a different pattern of affecting than earlier flu viruses. Therefore, in the present study, we aimed to identify possible predictors (i.e. – demographic factors, normative concerns, neuroticism, etc.) of the COVID-19 worry and its consequences in immediate behaviors like buying preparatory materials (buying mask, hand sanitizer, disinfection chemicals, etc.), postponing travel plan, buying more daily commodities than usual, and difficulties in concentrating daily activities. In the present study, a hypothesized model (**Figure 1**) was formulated to assess the association among study variables.

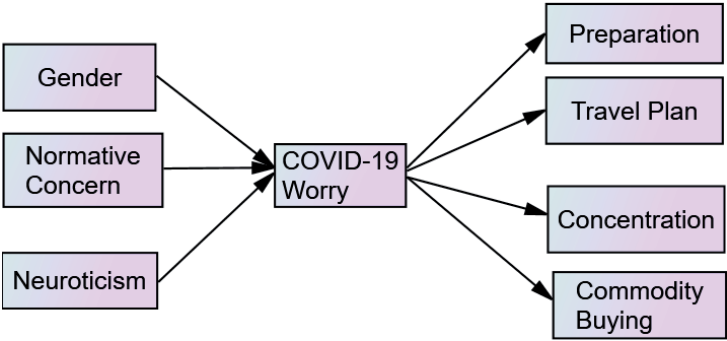


Figure 1.
The structural model about the association among study variables.

2. Methods

2.1 Participants

In the present study, an online survey was conducted using the 'Google Form' from March 23, 2020 to March 27, 2020. An online link of the survey questionnaire was shared via Facebook and email. A total of 504 respondents completed online form. Among 504 participants, 284 (56.3%) were male and 220 (43.7%) were female and their age ranged from 18 to 60 years old. Among them, 69.4% were students, 24.4% were full time employee, 2.2% were self-employed and 4% were unemployed, and 77.2% had university or equivalent degree, 20.4% had completed Grade XII, and 2.2% had other educational qualifications.

2.2 Measures

The online survey questionnaire of the present study included the neuroticism subscale of the Big Five Personality Inventory-10 [18], Bangla version [19], two questions about normative concerns about COVID-19 infection, two questions about COVID-19 worry, four questions about initial behavior and psychological responses, and questions about demographic information. Questions about normative concerns, COVID-19 worry, and three out of four questions about initial behavior and psychological responses adapted from the study of Goodwin et al. [10].

The Big Five personality inventory-10 (BFPI) contains 10 items (two items for assessing each trait). This scale had acceptable test-retest reliability (.68-.83) and high correlations (.51-.70) with the NEO-PI-R [20]. Test - retest reliability of the neuroticism subscale in Bangla version also had good test-retest reliability (.714). This subscale had acceptable infit and outfit mean squares (.93-1.02) and non-DIF between male and female. In the present study, participants responded on a five-point Likert scale (from strongly disagree to strongly agree). These two items had significant inter-item correlation ($r = .335$, $p < .001$) in this study. Author [21] have suggested assessing inter-item correlation when there're fewer than 10 items and inter-item correlation between .2 and .4 is sufficient.

To measure normative concerns, participants were asked - "How great a risk does your family (friends) think this COVID-19 pandemic is ..." on a five point scale (from very low to very high, including do not know). These items were significantly correlated ($r = .371$, $p < .001$). Regarding COVID-19 worry, participants were asked - "How concerned are you about yourself (your family members) being the victim of COVID-19 outbreak" on a four point scale (from not at all to very much) ($r = .541$, $p < .001$). For assessing outcome behavior and psychological responses following questions were asked - (i) Have you bought anything (i.e. Masks, Hand Sanitizers, Antiseptic, etc.) in preparation for COVID-19 pandemic? (Yes/No); (ii) Have you canceled or delayed your travel plans (Yes/No); (iii) Have you brought daily commodities more than usual? (Yes/No); and (iv) How difficult has it been for you to concentrate on your daily activities or job due to COVID-19 threat you feel? (a four-point scale, from not at all to very difficult).

2.3 Statistical analysis

In the present study, IBM SPSS version 26.0 and IBM AMOS version 24.0 were used to analyze the extracted data. Using SPSS, descriptive statistics (frequency and percentages), independent sample t-test, χ^2 test were performed and path analysis was performed to assess the relationship among study variables using AMOS.

2.4 Ethics

The present study was carried out in accordance with the Declaration of Helsinki and its later amendments or comparable ethical standards as the data were collected from human participants. This study was approved by the university ethics committee of the Northwest Normal University, China (IRB no.- 20200018). Participants were informed about the study purposes, its nature, and required time to complete, cost and benefits, and confidentiality of information at the beginning of the survey. After reading above information, they had to express their opinion to participate in the study by clicking either ‘Yes’ or ‘No’.

3. Results

Table 1 shows that, 50.2% participants rated that their family members and 47.4% rated that their friends judge the risk of the COVID-19 infection to be ‘very high’. Regarding worry, 35.9% participants rated that they were ‘very much’ worried about themselves to be a victim of COVID-19 virus and 58.5% were ‘very much’ worried about their family members to be victims. Almost all participants (97.6%) bought or planned to buy preparatory materials (i.e. masks, hand sanitizers, soap, etc.). Among participants, 83.3% participants postponed their travel plans due to COVID-19 hit in the country and 39.5% participants brought necessary daily commodities more than usual. Twenty three percent participants rated that they felt very much difficulties to concentrate on their daily activities due to the COVID-19 worry. **Tables 2 and 3** shows non-significant gender differences in normative concerns ($t\text{-value} = -.427, p = .671$, effect size = .039), worry ($t\text{-value} = -1.799, p = .073$,

Questions	Response category	f (%)
How great a risk does your family think this COVID-19 pandemic is..?	High	210 (41.7%)
	Very high	253 (50.2%)
How great a risk do your friends think this COVID-19 pandemic is..?	High	222 (44.0%)
	Very high	239 (47.4%)
How concerned are you about yourself being the victim of COVID-19 outbreak?	Concerned	220 (43.7%)
	Very much concerned	181 (35.9%)
How concerned are you about your family members being the victim of COVID-19 outbreak?	Concerned	150 (29.8%)
	Very much concerned	295 (58.5%)
Have you brought anything (i.e. Masks, Hand Sanitizers, Antiseptic, etc.) in preparation for COVID-19 pandemic?	No	12 (2.4%)
	Yes	492 (97.6%)
Have you canceled or delayed your travel plans (Yes/No)	No	84 (16.7%)
	Yes	420 (83.3%)
Have you brought daily commodities more than usual?	No	305 (60.5%)
	Yes	199 (39.5%)
How difficult it has been for you to concentrate on your daily activities or job due to COVID-19 threat you feel?	Difficult	193 (38.3%)
	Very much difficult	118 (23.4%)

Table 1.
Frequency and percentages of responses in questions regarding normative concerns, COVID-19 worry, and initial behavioral responses.

Variable	Groups	M	SD	t-value	Sig.	Cohen's d
Normative concern	Male	6.70	1.27	- .427	.671	.039
	Female	6.75	1.31			
COVID-19 worry	Male	6.51	1.33	-1.78	.073	.16
	Female	6.72	1.24			
Concentration on daily activities	Male	2.85	.86	1.73	.085	.16
	Female	2.71	.88			

Table 2.
Gender differences in normative concern, COVID-19 worry, and concentration on daily activities (male = 284, female = 220).

Variable	Response categories	Gender		χ^2	Sig.	Effect size
		Male	Female			
Purchasing preparatory materials	No	10 (3.5%)	2 (.9%)	3.64	.056	.085
	Yes	274 (96.5%)	218 (99.1%)			
Postpone travel plan	No	53 (18.7%)	31 (14.1%)	1.87	.172	.061
	Yes	231 (81.3%)	189 (85.9%)			
Purchasing daily commodities more than usual	No	182 (64.1%)	123 (55.9%)	3.47	.067	.083
	Yes	102 (35.9%)	97 (44.1%)			

Table 3.
Gender differences in purchasing preparatory materials, postpone travel plan, and purchasing daily commodities after confirming COVID-19 positive cases in Bangladesh.

effect size = .16), purchasing preparatory materials ($\chi^2 = 3.64, p = .056$, effect size = .085), postponing travel ($\chi^2 = 1.87, p = .172$, effect size = .061), buying daily commodities more than usual ($\chi^2 = 3.47, p = .067$, effect size = .083), and difficulties in concentration due to COVID-19 worry ($t\text{-value} = 1.73, p = .085$, effect size = .039).

Due to non-significant gender differences among study variables, gender was excluded from the path analysis model. Model fit statistics of the path analysis suggested that the hypothesized model had good fits ($\chi^2 = 24.214, df = 7, \chi^2/df = 3.459, p = .001$, GFI = .986, CFI = .972, TLI = .917, RMSEA = .070, LO 90 = .041 and HI 90 = .101, p close = .120, SRMR = .035). The results of the path analysis (**Figure 2**) showed that both normative concerns about the COVID-19 ($\beta = .326, p < .001$) and neuroticism ($\beta = .341, p < .001$) significant predictors of COVID-19 worry. Both normative concerns and neuroticism predicted 22% variance of COVID-19 worry. Normative concerns, neuroticism, and COVID-19 worry predicted 16% variance of the buying preparatory materials, 22% of travel plan, 26% of buying daily commodities more than usual, and 20% of concentration problem due to COVID-19 threat. Among variables, normative concerns ($\beta = .107, p = .014$) and COVID-19 worry ($\beta = .362, p < .001$) significant predictors of buying preparatory materials. Postponing travel plan significantly predicted by COVID-19 worry ($\beta = .449, p < .001$), buying daily commodities more than usual significantly predicted by neuroticism ($\beta = .281, p < .001$) and COVID-19 worry ($\beta = .321, p < .001$), and difficulties in concentration was significantly predicted by neuroticism ($\beta = .126, p = .003$) and COVID-19 worry ($\beta = .358, p < .001$).

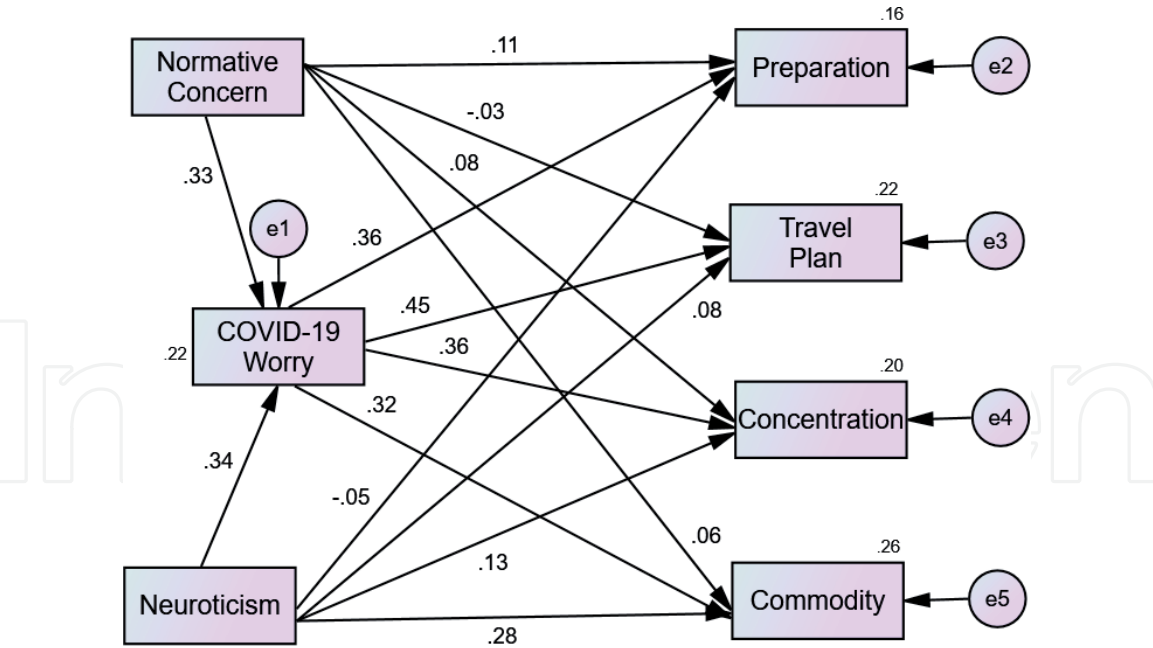


Figure 2.
Path analysis of COVID-19 worry and its causes and consequence on initial responses.

4. Discussion

Despite of the modernization in all sectors, the outbreak of infectious diseases and subsequent epidemics are propagating all over the world as the humans are spreading significantly [22]. The human-to-human transmission feature and continuous mutation into a more deadly strain worsen the contagion [23]. Due to the COVID-19 pandemic, worry has touched almost all the people across the globe. In this study, we identified the some causes of the COVID-19 worry and immediate consequence after confirming first COVID-19 positive case in Bangladesh. Results showed that almost all participants' family and friends perceive higher risk of COVID-19 infection. Almost all participants' also highly worried about being COVID-19 victim. This study has collected research data from Bangladesh at the early stage of COVID-19 outbreak with very nominal confirmed cases and reported death, though by that time the world has already been grappled. People have already come to know the severity of the COVID-19 pandemic in China, Italy, Spain, USA, etc. Moreover, a large of number of people has returned from COVID-19 affected countries and most of them did not follow authority's instruction to maintain home-quarantine for 14 days. Therefore, higher concern regarding the COVID-19 threat is usual among people. This study suggested that close others concerns about a potential threat was the predictor of the personal worry of that threat. Author [10] have also have suggested a similar association between normative concerns about swine flu outbreak and personal worry about it. Besides, this study also suggested that people higher in neuroticism trait were more worried about COVID-19 threat. Usually, people with higher neurotic traits are characterized through having low self-esteem, irrational perfectionistic beliefs, and pessimistic attitude [24] and they are more sensitive to negative affect [25]. Although neuroticism is impossible to be a product of socialization without the control of hereditary predispositions, the national levels of neuroticism can be moderated, at least to some degree, by cultural factors. Certain empirical findings associated the levels of neuroticism with the religious values [26], geography [27] of a given society. Authors [28] have present very different correlations for neuroticism and cultural aspects. Cultural variations tend to have a certain neurological impact on neurotic conditions considering the

differences in prevalence of depression, conversion response, anxiety, somatoform disorder, and obsessive–compulsive disorder among various societies [29]. As you will learn when you study social psychology, Asian cultures are more collectivist, and people in these cultures tend to be less extroverted. Authors [30] have reported, people in Central and South American cultures tend to score higher on openness to experience, whereas Europeans score higher on neuroticism, explains how Asian societies appear to be more collectivist and how individuals in these cultures tend to have lower extroversion. In European and Latin American cultures, tolerance to practice is greater, and neuroticism is greater. Significantly, neuroticism leads the poor stress management, perceive minor frustration as overwhelmed depression, and surprisingly interpreting an ordinary crisis as a great threat [31]. The quality of life of a neurotic individual is with elevated level of ill-will feeling, excessive worry and other occupational failure [32]. But the maladjustment often motivates the cognition; perform exceptionally well, especially when the situation requires caution, and discipline to act effectively to the anticipated threat [33]. These findings regarding the underlying causes of COVID-19 worry have a great practical implication for mental health practitioners and other concerned authorities for effective dealing with psychologically vulnerable persons due to COVID-19 worry. From personal observation of the authors, a large number of people are not concerned about the severity of COVID-19 pandemic due to lack of literacy, misleading information from some religious leaders and some YouTube channels and Facebook pages, groups. Government is facing difficulties to make conscious these people about the pandemic. Findings about the causes of COVID-19 worry would helpful to local administration and law enforcing agencies to analyze why these people are not concerned and what measure they can take. Study findings showed that higher personal and close others' safety concern lead to purchase protective materials. People postponed travel plans and purchasing extra daily commodities than usual due to personal anxiety about the COVID-19 threat. People do not know how many days the pandemic will be in Bangladesh. As most of the factories are closed as part of the first line protective measure during an epidemic, people are uncertain about the supplies of the daily commodities. Such uncertainty about future food supplies might also be worked beside neuroticism and worry to purchase extra commodities. Neuroticism and COVID-19 worry also has significant association to problem in concentrating on daily activities. The unrelenting threat of COVID-19 is interrupting the daily activities with psychological symptoms [34]. Authors [35] have found that highly worried about the likelihood of family members to be COVID-19 infected leads to higher stress. This epidemic induced stress predicts behavioral change in different negative forms, including attention deficit and concentration difficulty [36].

5. Limitations

The present study had several limitations. This survey was conducted using online tool 'Google Form' as it was impossible to conduct face-to-face interviews for data collection. So, people who read well and having internet access were participated in this study. A large portion of Bangladeshi people is out of Internet access. Besides, the majority of the respondents were graduate level students. Therefore, representativeness of the study sample was in questions. Data in this study were self-reported which might be subjected to social desirability bias as COVID-19 pandemic has got huge attention across the world. Often educated respondents prevailed with social-desirability bias, but we consider this study's results explicit since the survey was conducted at the very outset of the COVID-19

pandemic in Bangladesh. It is apprehended that social desirability was not absolute at that time among Bangladeshi people; hence credibility of this study remains irrefutable.

6. Recommendations

As the present study suggested that, almost all respondents were worried about COVID-19 infection, it is urgent to assess the severity of psychological problems (anxiety, depression, stress etc.) and well-being of Bangladeshi people. It is important to reduce the amount of time spent on social media as it negatively affects user's mental health with rapid spread of rumors and trigger negative emotions. To render mental health support during emergency situation, Bangladeshi government should prepare comprehensive guideline where telephone and web based counseling need to integrate instantaneously. Since majority of the infected are front-line warriors i.e. doctor, police, and administrators so government should employ intensive mental health service for them.

7. Conclusions

The outbreak of CIVID-19 has been increasing the psychological problems among the Bangladeshi people significantly ever since the initial stage. Our findings suggest that the emotional aspects, worry and normative concerns, are significantly predicting the behavioral responses. This emotional concern often widely depends on the neuroticism where excessive worry and other psychological problems predict the precautionary behavior with the purchase pattern. Our study recommends to cautious and reduced use of social media, rendering telephone based mental health services, appoint psychologists and psychiatrists for front-line warriors in the war against COVID-19, and preparing a guideline for offering mental health services.

Acknowledgements

We are thankful to Mr. Mohammad Mohibul Hasan, Technical Officer, Friendship (NGO), Ms. Syeda Jannatun Nayeem Siddiqua, Ex-student, Department of Psychology, University of Chittagong, Ms. Moslima Akter, Graduate student, Department of Psychology, University of Chittagong, Mr. Md. Zahid Ahamed Ratul, and Mr. Abdullah Mursalin Utshow for their cordial cooperation to conduct the online survey.

This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

No potential competing interest was reported by the authors.

Acronyms and abbreviations

SARS-CoV	Severe Acute Respiratory Syndrome
NEO-PI-R	NEO Personality Inventory-Revised
DIF	Differential item functioning

IBM SPSS	International Business Machines Corporation Statistical Package for the Social Sciences
IBM AMOS	International Business Machines Corporation Analysis of Moment Structures
GFI	The goodness of fit index
CFI	The comparative fit index
TLI	Tucker-Lewis index
RMSEA	the root mean square error of approximation
SRMR	Standardized Root Mean Square Residual
APA	American Psychological Association
CDC	Centers for Disease Control and Prevention

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