

# Independent University, Bangladesh (IUB)



Thesis On

**“Assessment of Mental Health Burden with a  
Particular Focus on Anxiety of Medical Professionals  
in the Midst of COVID-19 Outbreak in Bangladesh”**

**Supervised by:**

**Dr. Zenat Zebin Hossain**

Assistant Professor

Department of Public Health

School of Pharmacy and Public Health

Independent University Bangladesh

**Submitted by:**

**Sabrina Rahman**

ID: 2010580

Course: Master of Public Health

## **Supervisor's Approval**

This is to certify that Sabrina Rahman worked on “Assessment of Mental Health Burden with a Particular Focus on Anxiety of Medical Professionals in the Midst of COVID-19 Outbreak in Bangladesh” under my supervision. I have gone through the paper. It's up to the mark and to my full satisfaction.

Dr. Zenat Zebin Hossain

Assistant Professor & Thesis Supervisor

Department of Public Health,

Independent University of Bangladesh

# Declaration

I declare that this thesis is an original report of my research, has been written by me and has not been submitted for any previous degree. The experimental work is almost entirely my own work; the collaborative contributions have been clearly indicated and acknowledged. Due references have been provided for all supporting literatures and resources.

Moreover, I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification. The work was done under the guidance of Dr. Zenat Zebin Hossain.

Sabrina Rahman  
ID: 2010580

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Sabrina Rahman

ID: 2010580

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### **Abbreviations**

COVID-19	Coronavirus Disease-2019
DASS-21	Depression Anxiety Stress Scales-21
GAD-7	Generalized Anxiety Disorder scale
ISI	Insomnia Severity Index
PHQ	Patient Health Questionnaire
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2

# **Assessment of Mental Health Burden with a Particular Focus on Anxiety of Medical Professionals in the Midst of COVID-19 Outbreak in Bangladesh**

## **Abstract**

**Introduction:** There have been numerous studies about the health implication of COVID-19 on patients, but little attention has been paid to the impacts of the pandemic on medical professionals. During the COVID-19 pandemic, it is particularly important since the mental health of medical professionals impacts not only on themselves but also their professional performance and hence, the care of patients.

**Objective:** The main objective of this study is to evaluate mental health burden of the healthcare professionals who had duties and used telemedicine to provide medical care to patients during the COVID-19 outbreak in Bangladesh by identifying the symptoms of anxiety and exploring the potential risk factors associated with these symptoms.

## **Method:**

A cross-sectional study was conducted using primary data from June 2020 to July 2021. Data were collected from 105 medical professionals by doing survey through a questionnaire created via Google Form on the internet. The raw data was entered into excel spreadsheets and later imported to Statistical tool IBM SPSS version 23 for univariate analysis in this study. For analyzing the data of evaluating the mental health burden of the healthcare professionals a univariate analysis was done to find the frequency and percentage of existing data. The Chi-Square test was performed to

examine the association between severity of anxiety level among different factors like age, sex groups as well as occupation, job location, working hour, changes in regular duty etc.

**Results:** From our survey, 105 respondents were taken and analyzed. Among the total study population 43% were male and around 57% of them were female. The highest prevalence was obtained among the age groups of 30 or below 30 years which is 57.12%. The occupation of maximum respondents (44.75%) was physicians and surgeons and 39.02% of the respondents were interns. Dhaka city has the highest number (72%) of respondents. 40.95% respondents have 12 hours duty, 35.23% respondents have 8 hours duty and 23.80% respondents have more than 12 hours duty during pandemic situation. 60.95% respondents regular duty was changed during pandemic. 41.90% respondents have mild symptoms of anxiety, 13.33% respondents have moderate symptoms and 10.47% respondents have severe anxiety problems. The mean GAD-7 anxiety score of the total study population is  $6.80 \pm 4.902$ . Among 6 socio demographical risk factors, 5 factors (age  $p=0.035$ , sex  $p=0.021$ , occupation  $p=0.001$ , working hours  $p=0.003$  and changes in regular duty  $p=0.001$ ) have statistically significant association with anxiety.

**Conclusion:** The current study explores the mental health burden faced by healthcare professionals during COVID-19 pandemic in Bangladesh. Our findings revealed that age, sex, occupation and working hour per day were risk factors for anxiety among healthcare professionals. More research is needed to examine the long-term effects of COVID-19's psychological strain as it has caused fundamental changes in the healthcare sector.

**Keywords:** Mental health, Anxiety, Medical professionals, COVID-19 outbreak.

# Chapter One

## Introduction

### **1.1 Introduction:**

The coronavirus disease 2019 (COVID-19) outbreak has been declared as a pandemic resulting in global health concerns [1]. In Bangladesh, the first known cases were reported on March 7, 2020, and now it is an internationally concerned public health emergency [2]. Doctors are first-line responders treating patients with COVID-19 and face a high risk of being infected because of exposure to long and distressing work shifts to meet health requirements every day. Thus there is growing evidence in Bangladesh on mental health issues, anxiety, and depressive disorders among physicians thriving due to the pandemic [3].

As a global pandemic, COVID-19 is a major threat to public health worldwide. Because of the disease's high level of transmissibility, COVID-19 patients have to stay in isolated units. While being treated in isolation, patients may experience both physical and psychological discomfort [4], which could result in mental health problems. In addition to causing physical damage, COVID-19 has also caused unbearable psychological pressure [5]. Recent research showed that during the COVID-19 pandemic, mental health problems such as fear, anxiety and depression were common among the general public, patients, medical staff, children, and older adults [5]. Facing this critical situation, healthcare workers on the front line who are directly involved in the diagnosis, treatment, and care of patients with COVID-19 are at risk of developing psychological distress and other mental health symptoms [Figure 1]. The ever-increasing number of confirmed and suspected cases, overwhelming workload, depletion of personal protection equipment, widespread media coverage,

lack of specific drugs, and feelings of being inadequately supported may all contribute to the mental burden of these health care workers. Studies showed that those healthcare workers feared contagion and infection of their family, friends, and colleagues, felt uncertainty and stigmatization, reported reluctance to work or contemplating resignation, and reported experiencing high levels of stress, anxiety, and depression symptoms, which could have long-term psychological implications [6-8].

Some hospitals in Bangladesh were completely converted into COVID-19 centers, and some others opened a dedicated COVID-19 particular unit or ward, which further increased the risk of infection for both the physicians and the patients. In this situation, doctors face higher work demands related to the mental, physical, temporal, and emotional context. Since poor mental health may hinder the professional performance of physicians and adversely affect the quality of healthcare provided, it is also likely to influence patient health outcomes adversely. Multiple studies related to mental health have been conducted among healthcare workers mental health. For instance, Rossi et al. (2020) conducted a cross-sectional study in March 2020 immediately preceding the COVID-19 contagion peak in Italy through an online questionnaire among all healthcare workers in Italy [9]. They found that 49.38% experienced post-traumatic stress symptoms, 24.73% had symptoms of depression, 19.80% reported anxiety symptoms, and 21.90% experienced high perceived stress [9]. Another study in China involved nearly 4000 healthcare workers using the General Health Questionnaire to assess their mental health status had revealed 40% of them had psychological distress, especially those from Wuhan [10]. There has been growing concern about mental health issues among healthcare workers, particularly doctors, following this COVID-19 pandemic, such as stress, depression, anxiety, insomnia and fatigue [11,12]. Thus, in this critical situation, the healthcare worker's mental health should be considered an urgent public health concern.

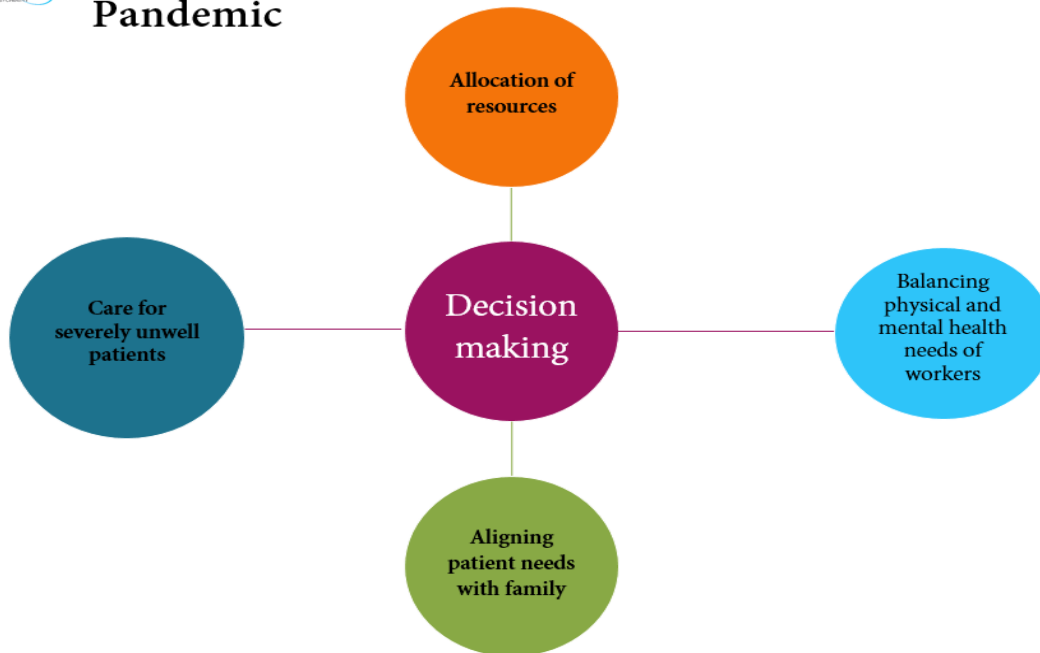
Major epidemic outbreaks pose an increasing demand for healthcare workers [13]. The growing trend of suspected and confirmed cases of COVID-19 required healthcare workers, particularly doctors, to be involved in the pandemic management [9,10]. Apart from the increased magnitude of various work demands, healthcare workers may enjoy limited recovery experiences to recover from their job demands. As a result of increased work demands and possible poor recovery experiences, healthcare workers are at risk of developing psychological distress and other mental health symptoms. Poor mental health among healthcare workers is harmful to themselves and their patients, organizations, and healthcare services. For instance, various studies before the emergence of COVID-19 have shown that fatigued doctors are at high risk of having commuting accidents, contracting needlestick injury, making diagnostic, medical, and clinical errors, and experiencing poor recovery [14,15]. Other consequences include adverse health and wellbeing, work-life dissatisfaction, low quality of life, job dissatisfaction, and inadequate performance. On the other hand, depressed doctors have been associated with improper medical treatment and adversely affect the attitudes towards patient care. Working in these situations develops the risk of various psychological and mental illnesses and physical and emotional distress among medical staff [15]. This situational framework worldwide can potentially put healthcare workers in an unprecedented situation, working under severe pressures [16].

Given the insights acquired from the previous global outbreaks and their psychosocial impacts, assessment of medical staff's mental health and considering appropriate psychological interventions are vital. There are many well-proven survey tools for the assessment of the symptoms of anxiety, depression, and sleep disorders. The Generalized Anxiety Disorder scale (GAD-7) [17] is used to assess the severity of the symptoms of anxiety, the 9-item Patient Health Questionnaire (PHQ) [18-20] is used to assess the severity of depression symptoms, and the 7-

item Insomnia Severity Index (ISI) is used to assess the severity of sleep disorders [21,22]. The total scores of these measurement tools were interpreted as follows: PHQ-9, normal (0-4), mild (5-9), moderate (10-14), and severe (15-21) depression; GAD-7, normal (0-4), mild (5-9), moderate (10-14), and severe (15-21) anxiety; ISI, normal (0-7), subthreshold (8-14), moderate (15-21), and severe (22-28) insomnia. Mental stress is also assessed via the Depression Anxiety Stress Scales–21 (DASS-21) [23]. The DASS-21 consists of 21 items, which can be divided into 3 subscales, each containing 7 items to measure depression. The GAD-7 scale is mostly valid for Asian region for the assessment of anxiety symptoms [24].

Recent studies remind us that the mental health of healthcare workers in COVID-19 should not be ignored. To address this gap, we conducted a survey to evaluate the mental health status of medical professionals who worked with COVID-19 patients during the pandemic by assessing their mental health symptoms particularly the anxiety level. Risk factors that associated with mental health symptoms were also explored. The research findings will help gaining attention regarding mental health problems of medical professionals.

## Dilemmas for Health Care Workers during Covid-19 Pandemic



**Figure 1: Healthcare professionals dilemmas during COVID-19 pandemic [25]**

Image source: <https://psychscenehub.com/psychinsights/mental-health-challenges-healthcare-workers-during-covid-19-pandemic-management-strategies>

### 1.2 Objective:

#### 1.2.1 General objective:

- The main objective of this study was to evaluate mental health burden of the healthcare professionals who had duties and used telemedicine to provide medical care to patients during the COVID-19 outbreak in Bangladesh.

#### 1.2.2 Specific objectives:

- To evaluate the status of anxiety levels of medical professionals.



- To investigate the association between potential risk factors of anxiety and mental health problems.
- To assess their anxiety level during pandemic situation using GAD-7 scale.

# **Chapter Two**

# **Methodology**

## **2.1 Study design:**

A cross-sectional study was carried out. The data source of this study is primary data, which was collected by an online survey through a structured questionnaire (Annexure 1) and the respondents were administered the survey by Google form. The collected data comprised the respondent's mental health burden who had duties in hospital and used telemedicine to provide medical care to patients from June 2020 to July 2021 during the pandemic period. The survey was conducted during the period of January 2022 to March 2022.

## **2.2 Study population:**

The study was carried out among the medical professionals registered by the Bangladesh Medical & Dental Council and working in Bangladesh and medical interns. The survey was done among 150 medical professionals, and potential respondents participated anonymously in it. A total of 105 participants responded to the survey.

## **2.3 Study area:**

The study was carried out via an online survey among medical professionals and interns working during the COVID-19 pandemic in all over Bangladesh.

## **2.4 Sampling distribution:**

This survey is based on a convenient sampling technique and the participants were selected through this technique from the online platforms (Messenger, WhatsApp, Email, LinkedIn, etc.).

**Inclusion criteria:**

1. Participants who had duty between the selected timeline (June 2020 to July 2021) during COVID-19.
2. Participants who gave online patients consultancy (telemedicine).

**Exclusion criteria:**

1. Who had no duty and did not use telemedicine to provide medical care to patients during that specified time.

**2.5 Sample size:**

105 respondents of the survey who had duties during lockdown period of pandemic were considered as a sample.

**2.6 Variables:****Dependent variable:**

The dependent or outcome variable of this study is anxiety level according to the GAD-7 scale in healthcare professionals that is measured by four categories of the scale which are, normal, mild, moderate and severe anxiety level. Here, this easy-to-use self-administered patient questionnaire is used as a screening tool and severity measure for generalized anxiety disorder (GAD). The GAD-7 score is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of 'not at all', 'several days', 'more than half the days', and 'nearly every day', respectively, and adding together the scores for the seven questions. Scores of 5, 10, and 15 are taken as the cut-off points for mild, moderate and severe anxiety, respectively. Using the threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for GAD.

**Independent variable:**

The independent variables of this study are,

- Age of the respondents
- Sex of the respondents
- Occupation of the respondents
- Job location of the respondents
- Working hours of the respondents during pandemic
- Changes of duty of the respondents during pandemic

Here, age of respondents in years is a categorical variable and we categorized it in three categories. The categories are  $\leq 30$  years, 31-50 years and 51-70 years. Sex of respondents is another independent variable with category Male and Female. This variable can give a clear view of the gender effect on anxiety disorder or distress level of the healthcare professionals during pandemic in Bangladesh. The job location of the study population from all divisions (inside Dhaka or outside Dhaka) of Bangladesh will be used in this study. It can give us a picture of how respondents from different job locations has what kind of association with their mental health and anxiety disorders during pandemic. Another independent variable is occupation, that is categorized as interns/physician or surgeons/others (other worker like /pathologists/nurse). It can give us a clear picture if the job type of respondents can affect the mental health of them during pandemic. Another independent variable is, working hours of the respondents during pandemic and the categories for this are 8 hours, 12 hours and  $>12$  hours. Lastly another independent is changes of duty of the respondents during pandemic. It can give us a picture if the change of duty type in pandemic can affect the mental health and anxiety levels of the healthcare professionals.

## **2.7 Data management:**

Participants were selected conveniently according to inclusion and exclusion criteria. Their detailed history, clinical information, and professional information during the COVID-19 outbreak were obtained by the survey. Detailed socio-demographic, clinical and professional information was recorded in Google form also in predesigned Google spreadsheets. After collecting the primary data, a subset of data was created in respect to our selected dependent and independent variables. This helped us to specify the data according to our objective more precisely. The missing values were excluded using the SPSS software. After the exclusion process, it was prepared for the statistical analysis.

## **2.8 Statistical analysis:**

Patients names were not used, numbers were used to label the samples. For analyzing the data of evaluating the mental health burden of the healthcare professionals a univariate analysis was done to find the frequency and percentage of existing data. The ranked data, which was derived from the counts of each level for symptoms of anxiety, and distress, was presented as numbers and percentages. The raw data was entered into excel spreadsheets and later imported to Statistical tool IBM SPSS version 23 for univariate analysis in this study. To summarize patient characteristics and other pertinent information, descriptive statistics such as frequency, percentage, mean, and standard deviation were used. The Chi-Square test was performed to examine the association between severity of anxiety level among different factors like age, sex groups as well as occupation, job location, working hour, changes in regular duty etc. P-value <0.05 was considered statistically significant.

## **2.9 Ethics:**

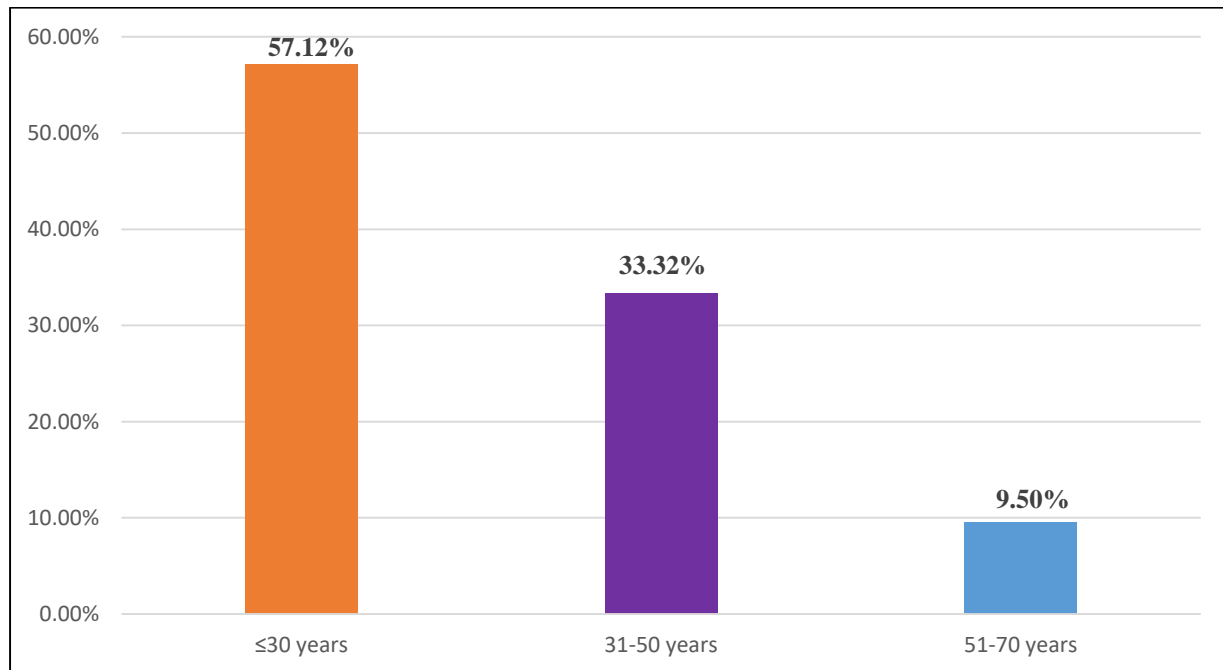
The data we are using for this study came from the primary sources. Informed consent and approval was taken from the participants while participating in the online survey. Ethical clearance was taken from the Institutional review board of Independent University- Bangladesh (Annexure 2).

# Chapter Three

## Results

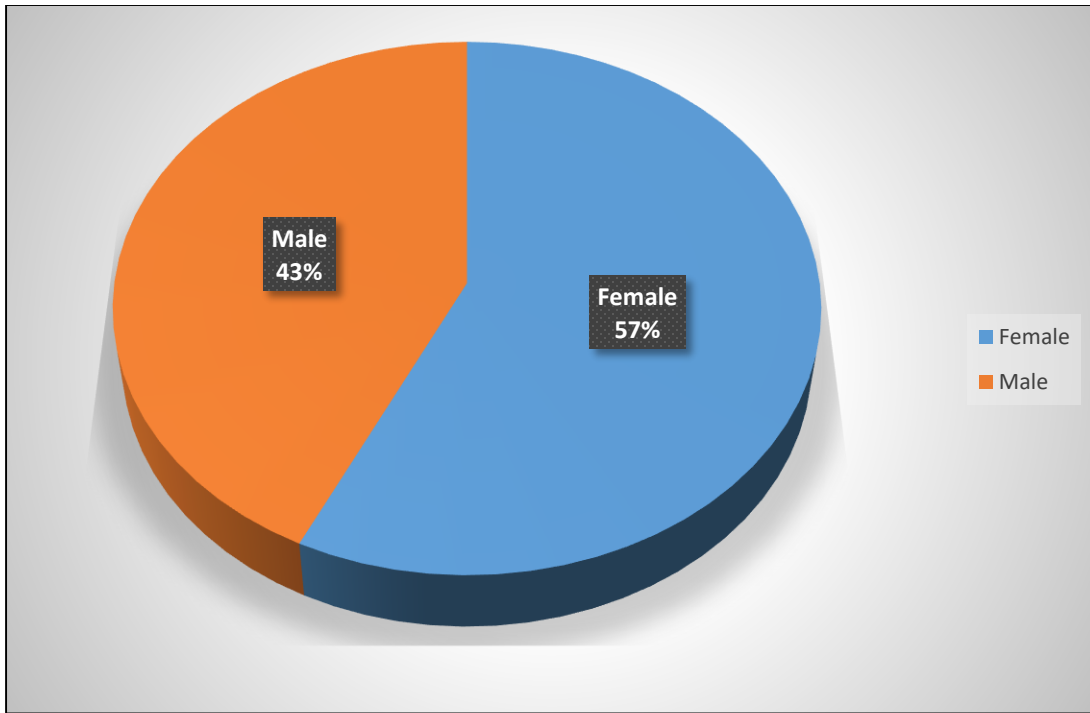
### 3.1 Characteristics of the respondents

The age of respondents is categorized into three categories. Among the three categories of age group, the maximum number of respondents belongs to the group 30 or below 30 years which is 57.12%. The lowest number of respondents belongs to the group of age 51 to 70 years which is 9.50% only. And 33.32% respondents belongs to the group of age 31 to 50 years (Figure 2).



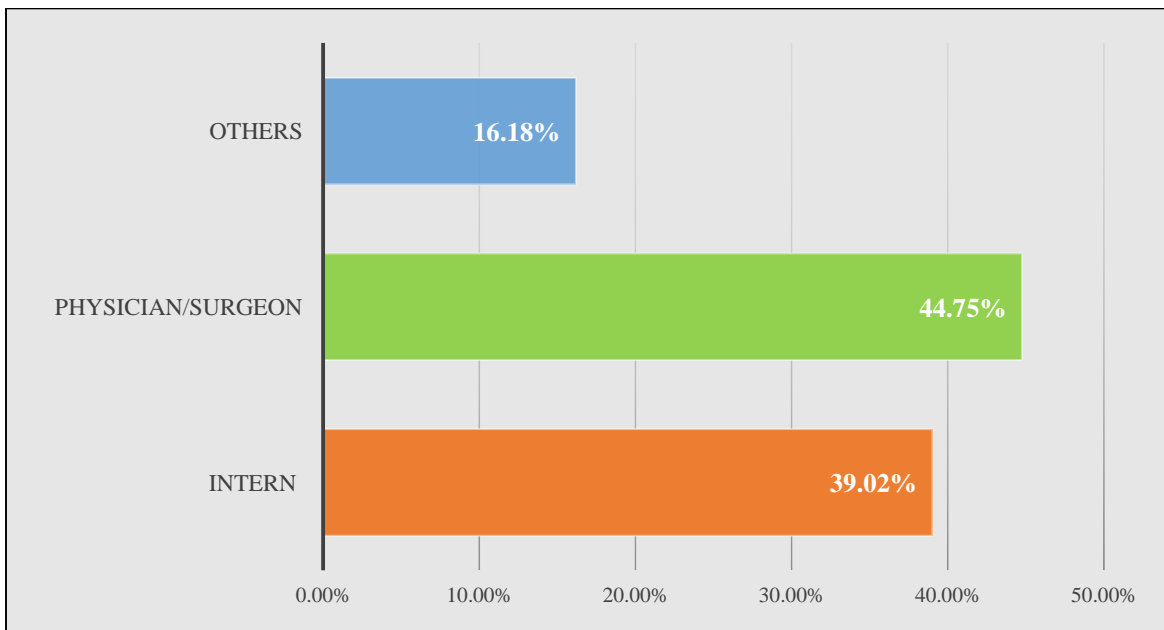
**Figure 2: Distribution of respondents according to their age group**

In our study, there are more female respondents than male respondents. The distribution of the respondents sex shows that, among the total (105) study population 43% are male and around 57% of them are female (Figure: 3).



**Figure 3: Distribution of respondents according to their gender**

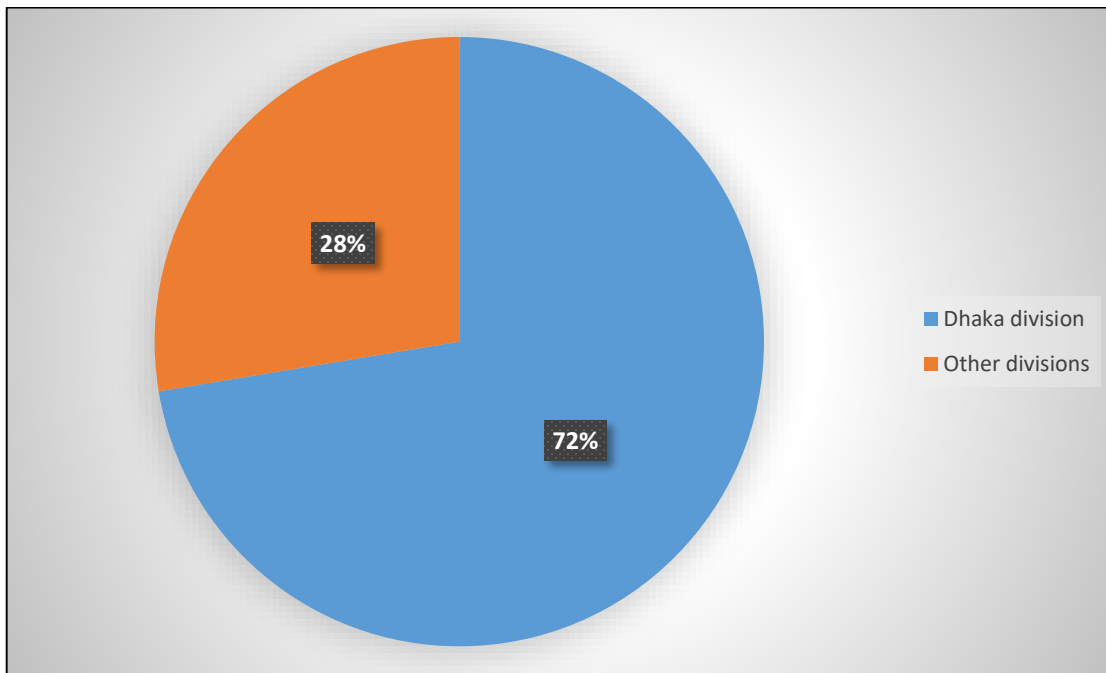
Within our total study population (105), the occupation of maximum respondents (44.75%) are physicians and surgeons. Whereas 39.02% of the respondents are interns. And 16.18% respondents are from other medical professions (Figure: 4).





**Figure 4: Distribution of respondents according to their occupation**

The frequency analysis of this study show that, the capital of Bangladesh, Dhaka city has 72% of total respondents; that is the highest number of respondents. The lowest number of respondents which is around 28% of the total 105 respondents are from other divisions of Bangladesh (Figure 5).



**Figure 5: The distribution of respondents according to their job location**

The frequency distribution of the changes in duties during pandemic are shown in table 1. Here, maximum respondents have 12 hours duty which is 40.95%. Also, 35.23% respondents of the study group have 8 hours duty during pandemic situation. And, 23.80% respondents of our total study population have more than 12 hours duty during pandemic situation (Table 1).

Among our total (105) study population, 60.95% respondents regular duty was changed during pandemic. And, 39.04% respondents duties were same as they have before pandemic (Table 1).

**Table 1: Changes in duty during pandemic (n = 105)**

Variables	Frequency (n)	Percentage (n%)
<b>Working hours during pandemic</b>		
8 hours	37	35.23%
12 hours	43	40.95%
More than 12 hours	25	23.80%
<b>Change in regular duty in COVID-19</b>		
Yes	64	60.95%
No	41	39.04%

### 3.2 Frequency distribution of severity categories of anxiety

The severity categories of anxiety measurements with GAD-7 scale are presented in the table 2. The frequency distribution of severity categories of anxiety shows that, maximum respondents (41.90%) have mild symptoms of anxiety, 13.33% respondents have moderate symptoms and 10.47% respondents have severe anxiety problems. Among total population, 34.28% respondents were normal and have no anxiety related problems. The mean GAD-7 anxiety score of the total study population (105) is  $6.80 \pm 4.902$  and median score is 6 (Table 2).

**Table 2: Severity categories of anxiety among all participants by GAD-7 scale (n = 105)**

GAD-7, Anxiety score	Total No (n)	Percentage (%)
Normal (0-4)	36	34.28%
Mild (5-9)	44	41.90%
Moderate (10-14)	14	13.33%
Severe ( $\geq 15$ )	11	10.47%
GAD-7 (mean $\pm$ SD; Med)	$6.80 \pm 4.902$ ; 6	

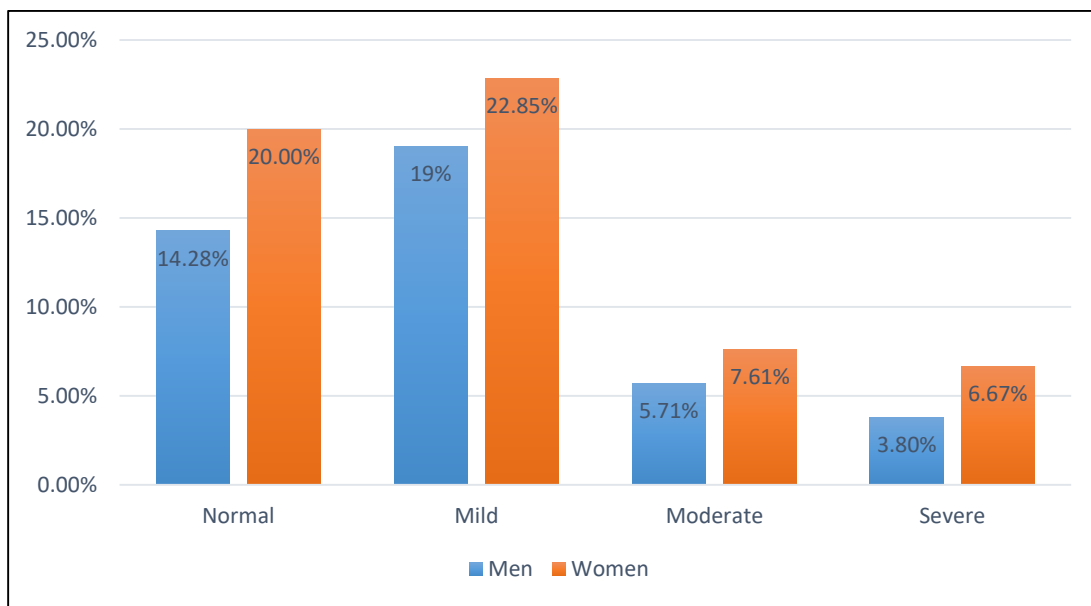
Table 3 shows that, among 6 socio demographical risk factors, 5 factors (age  $p=0.035$ , sex  $p=0.021$ , occupation  $p=0.001$ , working hours  $p=0.003$  and changes in regular duty  $p=0.001$ ) have statistically significant association with anxiety (Table 3). See the detailed information in the table 3 below-

**Table 3: Association between anxiety and socio-demographic factors (N=105)**

Description	Categories of Anxiety				P-Value
	Normal	Mild	Moderate	Severe	
<b>Age</b>					
<30 years	31	19	6	4	0.035
	29.52%	18.09%	5.71%	3.80%	
31-50 years	3	21	5	6	
	2.85%	20%	4.76%	5.71%	
51-70 years	2	4	3	1	
	1.90%	3.80%	2.85%	0.95%	
<b>Sex</b>					
Female	21	24	8	7	0.021
	20%	22.85%	7.61%	6.67%	
Male	15	20	6	4	
	14.28%	19.04%	5.71%	3.80%	
<b>Job location</b>					
Dhaka division	28	31	9	8	0.392
	26.67%	29.52%	8.57%	7.61%	
Other divisions	8	13	5	3	
	7.61%	12.38%	4.76%	2.85%	
<b>Occupation</b>					
Physician/Surgeon	15	19	7	6	0.001
	14.28%	18.09%	6.67%	5.71%	
Interns	16	16	5	4	
	15.23%	15.23%	4.76%	3.80%	
Others	5	9	2	1	
	4.76%	8.57%	1.90%	0.95%	
<b>Working hours</b>					
8 hours	14	14	5	4	0.003
	13.33%	13.33%	4.76%	3.80%	
12 hours	13	19	6	5	
	12.38%	18.09%	5.71%	4.76%	
>12 hours	9	11	3	2	
	8.57%	10.47%	2.85%	1.90%	

Changes in regular duty					
Yes	23	26	8	7	0.001
	21.90%	24.76%	7.61%	6.67%	
No	13	18	6	4	
	12.38%	17.14%	5.71%	3.80%	

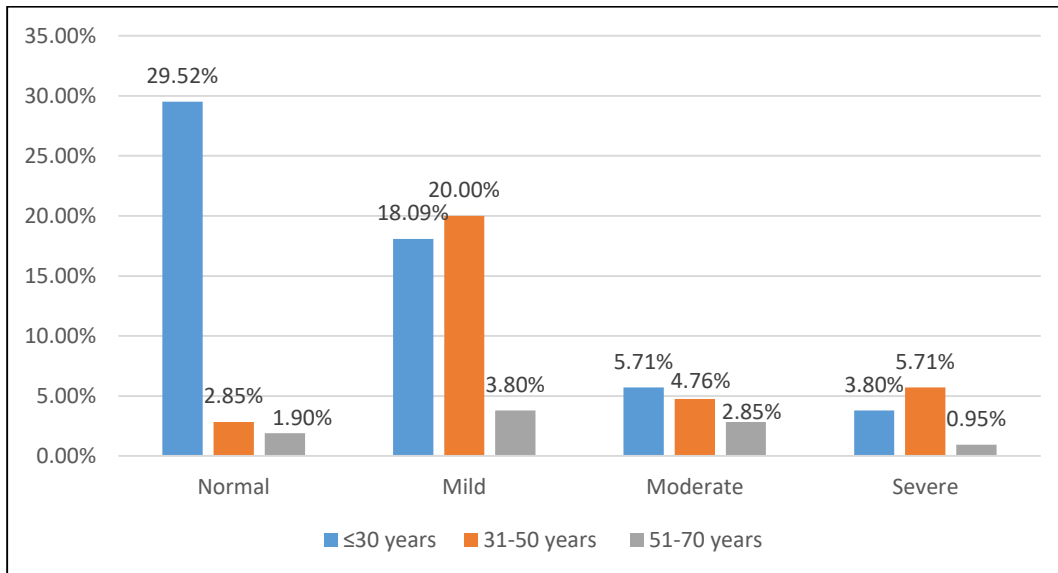
The distribution of severity of anxiety in different sex group are shown in figure 6. According to the severity scores of GAD-7 scale, maximum respondents have mild anxiety and among them 22.85% are female respondents and 19% are male respondents. And according to the severity scores of GAD-7 scale, minimum respondents have severe anxiety; among them 6.67% are female respondents and 3.80% are male respondents (Figure 6).



**Figure 6: Distribution of severity of anxiety in different sex group**

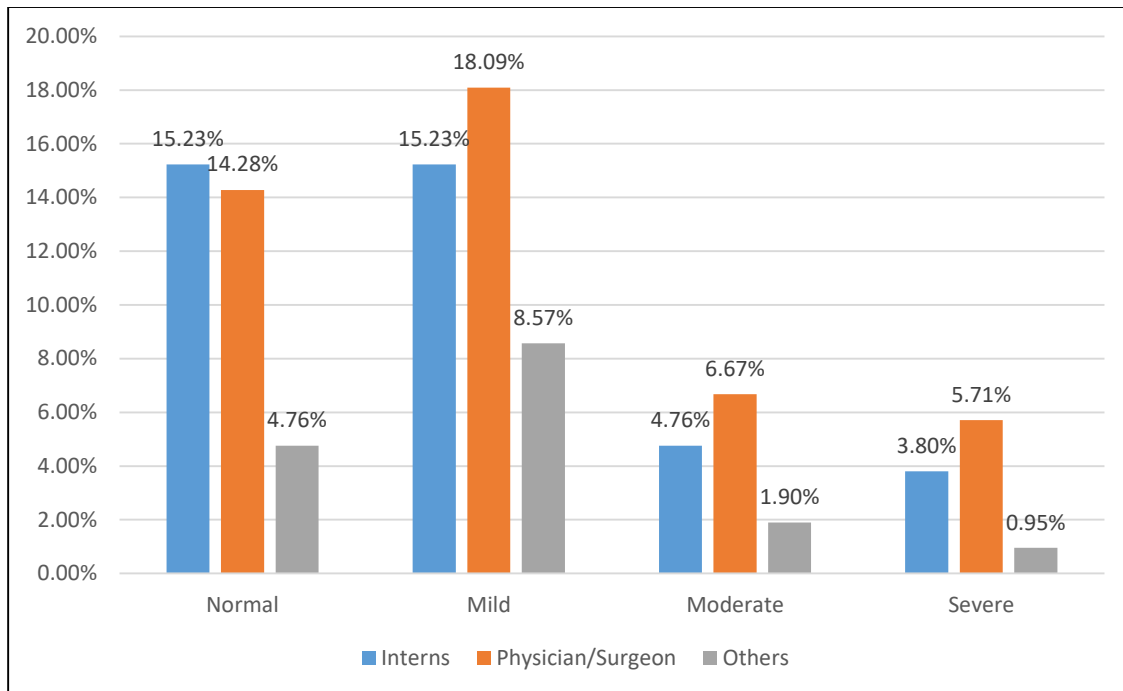
The distribution of severity of anxiety in different age group are shown in the figure 7. Among the respondents of 30 or below 30 years, maximum (29.52%) respondents have normal anxiety level and minimum (3.80%) respondents have severe anxiety. Among the respondents from 31 to 50 years, maximum (20%) respondents have mild anxiety and minimum (0.95%) respondents have

severe anxiety. And, among the respondents from 51 to 70 years, very few respondents have mild (3.80%), moderate (2.85%) and severe (0.95%) anxiety (Figure 7).



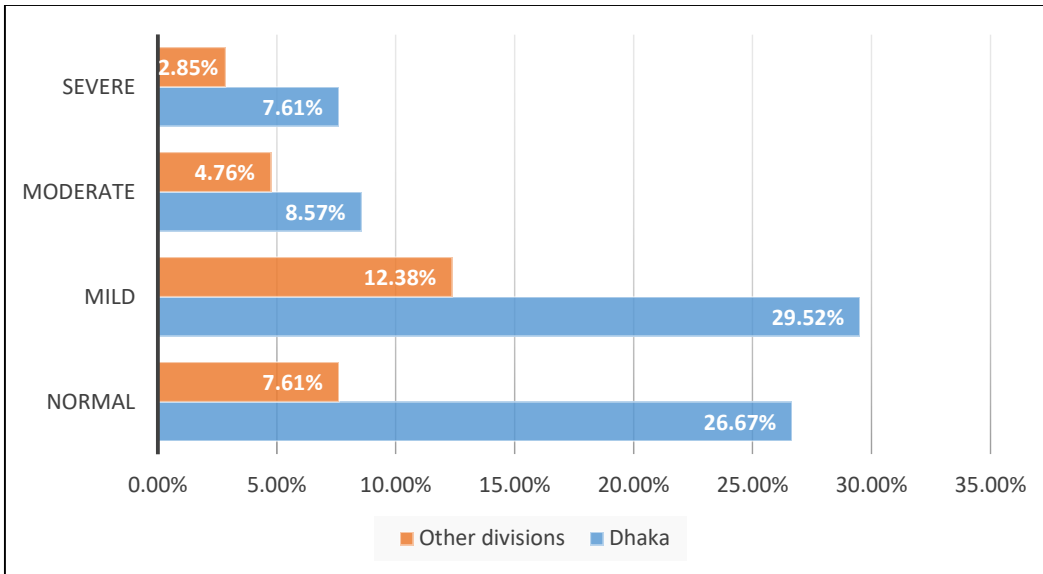
**Figure 7: Distribution of severity of anxiety in different age group**

The distribution of severity of anxiety among different occupational group are shown in the figure 8. Among the respondents having normal anxiety level, maximum (15.23%) respondents are interns, 14.28% are physicians or surgeons and minimum (4.76%) respondents belong to other medical professions. Among the respondents having mild anxiety, maximum (18.09%) respondents are physicians or surgeons and minimum (8.57%) respondents belong to other medical professions. Among the respondents having moderate anxiety, maximum (6.67%) are physicians or surgeons and only 1.90% belong to other medical professions. And, among the respondents having severe anxiety, maximum (5.71%) respondents are physicians or surgeons, and only 0.95% belong to other medical professions (Figure 8).



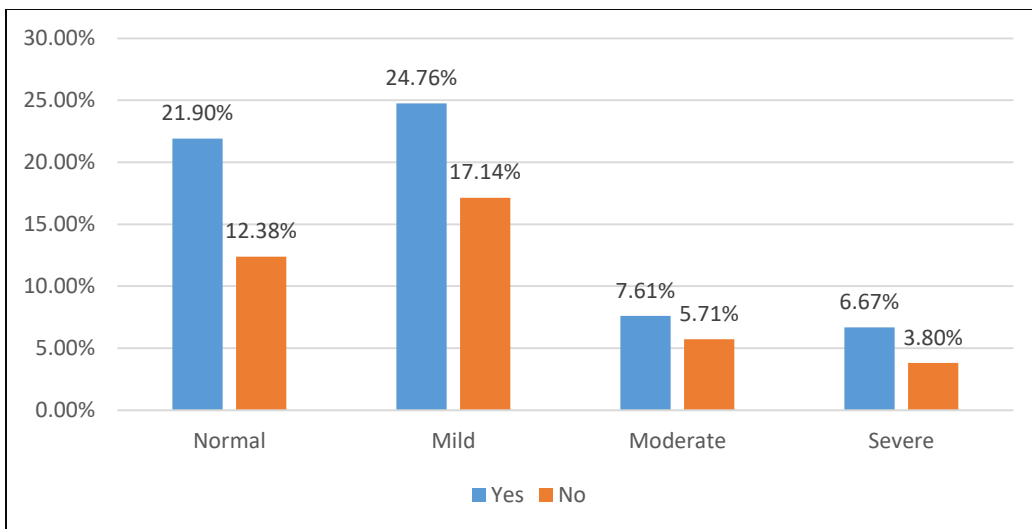
**Figure 8: Distribution of severity of anxiety in different occupational group**

The distribution of severity of anxiety in different divisions of Bangladesh are shown in the figure 9. Among the respondents from Dhaka division, maximum (29.52%) respondents have mild anxiety and minimum (7.61%) respondents have severe anxiety. Among the respondents from other divisions, maximum (12.38%) respondents have mild anxiety and minimum (2.85%) respondents have severe anxiety (Figure 9).



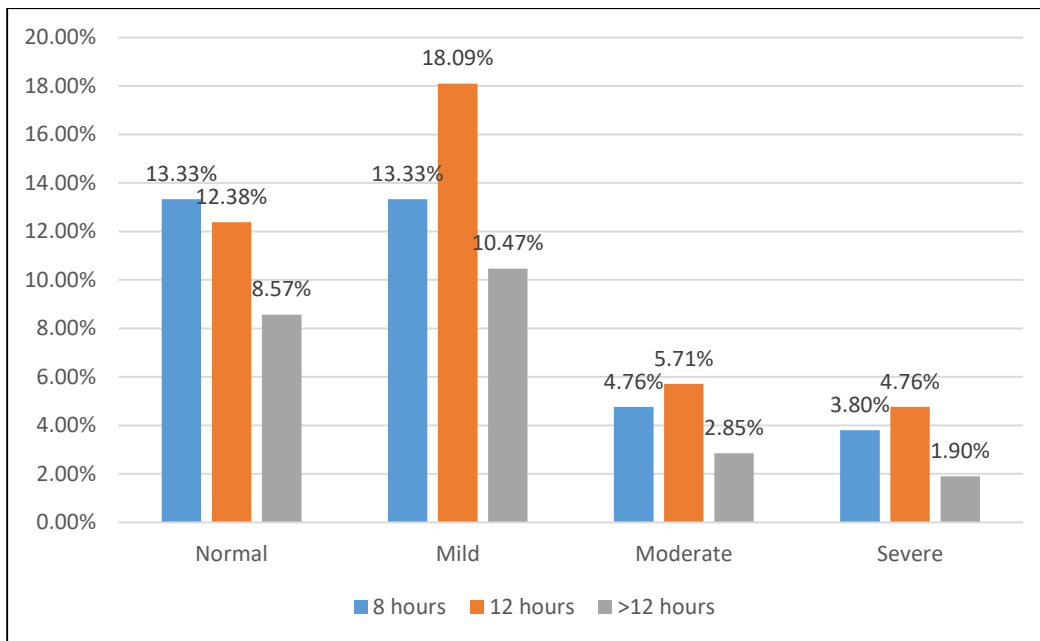
**Figure 9: Distribution of severity of anxiety in different division of Bangladesh**

The distribution of severity of anxiety varies according to the respondents changes in regular duties and it is shown in figure 10. In our study, among the respondents who faced changes in regular duty, maximum (24.76%) have mild anxiety and minimum (6.67%) respondents have severe anxiety. And among the respondents who did not face changes in regular duty, maximum (17.14%) respondents have mild anxiety level and only 3.80% respondents have severe anxiety (Figure 10).



**Figure 10: Distribution of severity of anxiety according to the changes in duties in pandemic**

The distribution of severity of anxiety varies according to the respondents working hours during pandemic and it is shown in figure 11. In our study, among the respondents having normal anxiety level, maximum (13.33%) respondents have 8 hours duty, 12.38% have 12 hours duty and minimum (8.57%) respondents have more than 12 hours duty. Among the respondents having mild anxiety, maximum (18.09%) respondents have 12 hours duty and minimum (10.47%) respondents have more than 12 hours duty. Among the respondents having moderate anxiety, maximum (5.71%) have 12 hours duty and minimum (2.85%) respondents have more than 12 hours duty. And, among the respondents having severe anxiety, maximum (4.76%) respondents have 12 hours duty, and only 1.90% have more than 12 hours duty (Figure 11).



**Figure 11: Distribution of severity of anxiety according to working hours during pandemic**



# Chapter Four

## Discussion

### **4.1 Discussion**

The study sought to determine the psychological load of healthcare personnel in Bangladesh during the COVID-19 epidemic, as well as the characteristics that predict their mental health. The study discovered that anxiety and despair due to the COVID-19 epidemic were frequent among Bangladesh's frontline clinicians during this unusual time. The psychological response of healthcare personnel to an infectious disease pandemic is complex. This research focuses on healthcare personnel who faced significant mental issues during the COVID-19 pandemic. We assessed their perceived anxiety level and mental health burden to acquire a better picture of their circumstances.

The SARS-CoV-2 pandemic has highlighted major difficulties in healthcare, especially mental health, in many nations. Healthcare professionals in emergency departments, infectious wards, and intensive care units are more likely to come into contact with infected persons, resulting in a severe mental strain. Furthermore, workers who participated in our study were more likely to be affected by psychological disorders, such as increased symptoms of anxiety and stress. These individuals were subjected to emotionally taxing contacts with the unwell and potentially dying individual, they were concerned about their own and their families' health, and they were subjected to occupational overload due to staff shortages and insufficient personal protective equipment. These professionals in a state of mental decompensation require consistent information support, stress reduction, and rest.

Due of the COVID-19 pandemic, a significant proportion of frontline clinicians in Bangladesh have had psychiatric issues. Medical vocations are associated with demanding working circumstances and a high level of stress. Contact with sick individuals on a daily basis, exhaustion, stress, and a regular lack of physical and even mental rest all raise the chance of error. A large proportion of participants in this study developed anxiety symptoms. According to the frequency distribution of anxiety severity categories, the majority of respondents (41.90%) have mild symptoms, 13.33% have moderate symptoms, and 10.47% have severe anxiety difficulties. 34.28% of the overall population reported being normal and having no anxiety-related disorders. During the COVID-19 pandemic, the burden of psychological symptoms was higher than the burden of symptoms among healthcare workers in China, Singapore, and India, according to a study [26,27].

A study found that, when compared to the pooled prevalence of symptoms in China, Bangladeshi doctors had a larger proportion of depression and anxiety, but a lower incidence of insomnia [28]. Furthermore, the prevalence of anxiety and depression in Singapore was reported as 14.4% and 9%, respectively, and 17.1% and 12.4%, respectively, in India, both of which are lower than the magnitude of anxiety and depression identified among Bangladeshi doctors in a study [26,27]. Furthermore, when compared to mental health symptoms (anxiety 77.4%, depression 74.2%, and sleep issues 52.3%) among health workers during the SARS pandemics in Taiwan, Bangladesh has a reduced burden of psychological symptoms during the COVID-19 pandemics [29]. It is worth noting that the methods used to measure psychological symptoms vary among studies.

Many underlying factors for mental health problems among frontline health workers during the pandemic situation have been reported in the literature, including gender, age, living in a rural area, poor social support, poor self-efficacy, profession, place of work, disruption of routine

clinical practice, fear of potential destabilization of health services, a sense of loss of control, having organic disease, and being at risk of contact with a patient infected with COVID-19 [30-33]. Among all the listed causes, COVID-19 may be an independent risk factor for poor mental health in health-care workers [31]. Frontline health staff, like the general public, have been overwhelmed by the outbreak of infection. According to studies, doctors in Bangladesh have had the highest rate of infection and fatality owing to the virus [24]. COVID-19 infection and its underlying causes, according to experts, contribute to the doctors' bad mental health.

Female respondents outnumber male respondents in our study. According to our findings, women reported more severe feelings of anxiety, and distress. According to the gender distribution of the respondents, 43% of the total (105) study population is male, while 57% are female. According to the severity scores on the GAD-7 scale, the majority of respondents report mild anxiety, with 22.85% being female and 19% being male. And, according to GAD-7 severity ratings, the majority of respondents exhibit severe anxiety; 6.67% are female respondents and 3.80% are male respondents. Female gender and younger age were identified as risk variables in certain research [35], which is similar to our findings. As a result, it has already been recommended to care for the mental health of both the general population and specific population groups.

Frontline medical professionals who treat COVID-19 patients are more likely at risk of infection due to their close, regular contact with patients and working longer hours than usual [36,37]. This cross-sectional survey engaged 105 healthcare professionals; among the three age groups in our study, the group 30 or under 30 years old had the highest number of respondents (57.12%). The age range 51 to 70 years old had the fewest respondents, accounting for only 9.50%. And 33.32% of those polled are between the ages of 31 and 50. Female gender and younger age were identified as risk variables in various research [34,35], which is comparable to our study.

Working on the front lines is a risk factor for poorer mental health outcomes across all dimensions of interest. Physicians and surgeons are the most common occupations among our overall study population (44.75%). In comparison, 39.02% of responders are interns. Other medical professions account for 16.18% of respondents. Another study found that, when compared to second-line workers, who were not directly involved in the diagnosis or treatment of patients infected with SARS-CoV-2, frontline workers were more likely to have symptoms of anxiety, depression, and sleep disorders (p 0.001, p 0.001, p 0.001, respectively) [32]. In our survey, the majority (15.23%) of respondents with normal anxiety levels are interns, 14.28% are physicians or surgeons, and the rest (4.76%) are from other medical professions. Furthermore, the majority of our responders with mild, moderate, or severe anxiety (18.09%, 6.67%, and 5.71%, respectively) are physicians or surgeons. During the SARS outbreak, a study of emergency department nurses found that they were more prone than physicians to experience distress and engage in behavioral disengagement [32]. Frontline nurses caring for SARS patients faced physical and psychological challenges when committing to providing high-quality nursing care [38,39]. As a result, special consideration should be given to the mental health well-being of healthcare personnel who treat COVID-19 patients.

According to the frequency analysis of this cross-sectional survey, Dhaka city has 72% of all respondents, the greatest number of respondents. The lowest number of respondents, approximately 28% of the total 105 responders are from Bangladesh's other divisions. The majority of Dhaka division respondents (29.52%) experience mild anxiety, whereas the minority (7.61%) have severe anxiety. Among responders from other divisions, the majority (12.38%) had mild anxiety, while the minority (2.85%) have severe anxiety. Anxiety was found to be more prevalent among physicians working within the Dhaka division, according to a study. Because the Dhaka

division has the greatest population and handles the bulk of COVID-19 cases in Bangladesh, this could be a role [40]. As a result, during future pandemics, physicians from the Dhaka division should receive special attention and care from the appropriate authorities.

During the pandemic, 60.95% of our whole study population's normal duty was modified. Furthermore, 39.04% of respondents' duties remained the same as before the outbreak. In our study, the majority of respondents (40.95%) work 12 hours a day. In addition, 35.23% of the study group's responders have 8 hours of duty during a pandemic. Furthermore, 23.80% of our overall study group had more than 12 hours of duty during a pandemic. Workload was found to be related to participants' mental health in one study. Physicians who worked 8 hours a day were more likely to experience anxiety than those who worked 8 hours a day [41]. This finding implies that when selecting "at risk" physicians for whom practice-based interventions can be adopted, the workload of the physicians must be considered. While this does not address the issue of doctors working longer hours, it does identify those groups who may require mental health care during COVID-19. They should be guaranteed a place to relax on their own and meet their daily needs such as food, sleep, protective clothes, and communication with their families if they work long hours [37]. As a result, the mental health of healthcare workers is not just a major medical issue, but also a social one that demands special attention. This unusual work pattern for doctors was implemented to limit the frequency of COVID-19 virus exposure in the workplace. However, it is believed that the long shifts and isolation during quarantine caused mental health issues in the doctors. According to the current survey, 60.95% of respondents' normal duty was modified during the pandemic. Furthermore, 39.04% of respondents' duties remained the same as before the outbreak. In our study, those who performed shifting duties were more likely to have poor mental health.

Despite the fact that the majority of respondents indicated normal to mild levels of anxiety and depression, the whole study population's mean GAD-7 anxiety score is  $6.80 \pm 4.902$  and the median score is 6. According to one study, after controlling for age, gender, and the diagnosis of the following diseases: hypertension, diabetes, dyslipidemia, asthma, autoimmune diseases, and cigarette smoking, an increased risk of symptoms was confirmed among frontline healthcare workers: anxiety on the GAD-7 scale (OR = 1.934; p 0.001), depression on the PHQ-9 scale (OR = 2.623; p 0.001), and sleep disorders on the ISI scale (OR = 3.078; p 0.00) [42]. When compared to other countries, participants from the United Kingdom and France had the highest descriptive scores for depression, anxiety, and stress [43]. This could be because England and France were among the countries hardest hit by COVID-19 [43], with a case fatality rate of 19.2% in France and 14.7% in the UK [42]. A prior study indicated heightened levels of sadness and anxiety during COVID-19 [43], while another study found a significant prevalence of anxiety 1 week after the lockdown began [35]. Germany, which had a larger number of cases but less psychological strain, appeared to have a better prepared health care system because it has the most critical care beds in Europe [44]. Our findings support previous research on COVID-19 that found higher levels of psychological distress during the pandemic [44,45]. There are disparities in the number of people in the severe/extremely severe group for depression, anxiety, and stress among countries. Another Chinese cross-sectional observational study involving 180 health workers providing direct treatment to COVID-19 patients found that large levels of worry and stress had a negative impact on sleep quality and work [46]. These findings are consistent with those of the current investigation.

Our findings support the issue stated by Perrin et al [47] during SARS: health care personnel do their job by assisting others while also being concerned about becoming infected or infecting their

families. Medical workers are frequently more concerned about infecting their families with COVID-19 than about becoming sick themselves. During the acute SARS outbreak, 89% of health care workers in high-risk conditions experienced psychological symptoms in a previous study [28]. These findings are positive in the sense that, while facing tremendous obstacles and hazards, the medical personnel appeared to be mentally equipped to handle the pandemic situation. However, it is probable that their medical training aided them in better understanding and categorizing COVID-19-related material. When they felt self-sufficient, the problem seemed more manageable. A study of SARS survivors found that a stronger sense of self-care and self-efficacy resulted in greater psychological adjustment to the condition [41]. Protective measures such as permanent face mask use, limits on visits to hospitals and nursing homes, and tougher cleanliness regulations were made mandatory for medical professionals in the examined nations, not just in COVID-19-specialized departments. Furthermore, given the high frequency of mortality among doctors and nurses [45], medical workers would have viewed COVID-19 as a constant concern, not just while in direct contact with infected patients. When medical professionals were questioned about the most stressful aspects in their daily lives or at work during the pandemic, "uncertainty about when the epidemic would be under control" and "fear about infecting COVID-19 on family" were at the top of the list. The possibility of family infection is a big problem that has been raised previously. The current study discovered various factors that contribute to the burden of psychological disorders among Bangladeshi doctors, the most significant of which is a lack of workplace resources. Limited workplace resources include materials, trained labor, and any other items required to perform services. In many countries during the epidemic, a lack of resources is often cited as a factor of poor psychological health among healthcare personnel [46]. Experts have identified enough resources as a critical criterion for healthcare personnel to remain resilient during

an unprecedented period [43]. Another underlying cause of the high incidence of psychiatric illnesses among frontline doctors in Bangladesh is a shortage of professional and trained workers in hospitals.

## **4.2 Limitation of the research**

Our study has several limitations. Firstly, the study was conducted with an online-based questionnaire. Therefore, the possibility of selection bias cannot be ruled out. Secondly, a small sample size limited the generalization of the study findings. Thirdly, it does not compare the symptoms of anxiety, depression, insomnia, and being a healthcare worker between various health centers in Bangladesh from regions differing in the extent of the pandemic. This shows the need for longitudinal studies with more respondents. Fourthly, the respondents may have recall bias as we collected retrospective data from them by online survey.



# **Chapter Five**

## **Conclusion**

The COVID-19 pandemic has resulted in significant reforms in the health-care industry. Protecting health workers, particularly those who battle on the frontlines every day, is a critical public health job in the fight against the COVID-19 pandemic. The current study investigated the mental health burden experienced by healthcare personnel in Bangladesh during the COVID-19 pandemic. Age, gender, occupation, and working hours per day were discovered to be risk factors for anxiety. Governments may use the study's findings for improved health management and outcomes for both physicians and patients. More research is needed to examine the long-term effects of COVID-19's psychological strain using more valid diagnostic tools and different research methods such as longitudinal surveys or qualitative investigations.

# **Chapter Six**

## **Recommendation**

- The healthcare professionals should be supported with adequate resources for both physical and mental health.
- An appropriate risk-reduction strategy should be developed and implemented to reduce the mental health burden of the healthcare professionals in Bangladesh.
- Special and effective intervention support programs to promote mental well-being in health care workers exposed to COVID-19 need to be implemented, with women, physicians, and frontline workers requiring particular attention.
- In-depth interviews could provide additional valuable information on major stressors and coping strategies.

# Chapter Seven

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# Chapter Eight

## Annexure-1

### Survey Questionnaire

I am informed that, this study will not cause any harm to my health. I fully recognize that my participation in this study will generate valuable medical information that might be used for the community in future.

Do you agree?

a. Yes b. No

1. What is your age?

a. <30 years b. 31 – 50 years c. 51 – 70 years d. >70 years

2. Are you male or female?

a. Male b. Female

3. Your current occupation?

a. MBSS/Intern b. Physician/Surgeon c. others

4. What is your current job location?

a. Dhaka division b. Other division

5. Duration of work during pandemic?

a. 8 hours b. 12 hours c. more than 12 hours

6. Change in regular job duty during COVID-19?

a. Yes b. No

7. Did you feel anxious, depressed, or stressed during pandemic?

a. Yes b. No

8. How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable during pandemic period?

a. Never b. Rarely c. Sometimes d. Often e. Always

9. How would you rate your depression, anxiety and stress level during pandemic period?

a. Normal b. Mild c. Moderate d. Severe d. Very Severe

***GAD-7 scale (How often have they been bothered by the following over the pandemic period?)***

10. Felt nervous, anxious, or on edge?

a. Not at all b. Several days c. More than half the days d. Nearly every day

11. Not being able to stop or control worrying?

a. Not at all b. Several days c. More than half the days d. Nearly every day

12. Worried too much about different things?

a. Not at all b. Several days c. More than half the days d. Nearly every day

13. Trouble in relaxing?

a. Not at all b. Several days c. More than half the days d. Nearly every day

14. Was so restless that it's hard to sit still?

a. Not at all b. Several days c. More than half the days d. Nearly every day

15. Becoming easily annoyed or irritable?

a. Not at all b. Several days c. More than half the days d. Nearly every day

16. Feeling afraid as if something awful might happen?

a. Not at all b. Several days c. More than half the days d. Nearly every day

17. How difficult have these problems made it to do work, take care of things at home?

a. Not at all b. Somewhat difficult c. Very difficult d. Extremely difficult

# Annexure-2

## Approval from Institutional Review Board



TEACHETH MAN THAT WHICH HE KNEW NOT

### Institutional Review Board (IRB) Certificate of Approval

September 01, 2022

**Dr. Zenat Zebin Hossain**  
Assistant Professor, Dept. of Public Health, SPPH

Research Project Name:  
**Assessment of Stress and Mental Health Burden of Medical Professionals in the Midst of COVID-19 Outbreak in Bangladesh**

Dear Principal Investigator,

The above-referenced application has been reviewed and approved by the university's IRB. Please report any changes in the protocol or adverse events to the IRB immediately.

Your research records may be audited at any time during or after the implementation of your project. If you have any questions, contact Assistant Director and Officer In-Charge, Sponsored Research, Office of the Pro-Vice Chancellor.

Good luck with your work.

Sincerely,

A blue ink handwritten signature of Professor Niaz Ahmed Khan, consisting of several loops and a horizontal line at the end.

**Professor Niaz Ahmed Khan, Ph.D.**  
Pro-Vice Chancellor & Member  
Institutional Review Board, IUB

**INDEPENDENT UNIVERSITY, BANGLADESH**

Plot- 16, Block- B, Aftabuddin Ahmed Road, Bashundhara R/A, Dhaka-1212

Phone : +880 9612 939393, 88-02-8431645-53, 8432065-76, Fax : 88-02-8431991, G.P.O. Box No. 138

E-mail : info@iub.edu.bd, Website : www.iub.edu.bd