SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

IMAPACT OF COVID-19 OUTBREAK ON HEALTH CARE PROFFESSIONALS IN GHANA: A STUDY AT GREATER ACCRA REGIONAL HOSPITAL

BY

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[10875626]

THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MSC. PUBLIC HEATH MONITORING AND EVALUATION DEGREE

JANUARY, 2023

DECLARATION

I Yvonne Afriyie Prempeh, hereby declare that the except for the references of other people's work which have been cited. This dissertation is the result of my own original work, and that this proposal either in whole or part has not been presented for a degree.

……..

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Date: 05-10-2023

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Date: 05-10-2023

DEDICATION

To my mother, Madam Doris Ama Awuku

ACKNOWLEDGEMENT

I give thanks to Jehovah Jireh for divine enablement to complete the programme and this dissertation. Also, I thank my supervisor, Dr. Frances Baaba Da-Costa Vroom for guidance, instructions, and patience that enabled me to complete the dissertation. Furthermore, I thank all the Lecturers at the University Of Ghana School Of Public Health for their massive contribution in my life in the area of public health. I could not have achieved this master's degree without the emotional support and sometimes financial assistance of my parenmother, Madame Doris Ama Awuku. Finally, I thank the management of the Greater Accra Regional Hospital and the healthcare professionals who participated in the research project.

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LIST OF ABBREVIATIONS

COVID-19	Coronavirus Disease 2019
DASS-21	Depression, Anxiety and Stress Scale-21
IES-24	Impact of Event Scale-24
IES-6	Impact of Event Scale 6
PPE	Personal Protective Equipment
WHO	World Health Organisation

DEFINITION OF TERMS

Cadre	A group of legally qualified and trained healthcare professional
Coping	It refers to a deliberate strategy employed to decrease discomforting emotions or stressful situations
COVID-19	Novel coronavirus outbreak that occurred in 2019
Health	It is defined by WHO as ñthe state of complete physical, mental and social well-being and not merely the absence of disease or infirmity ò
Healthcare Professionals	A group of trained professionals whose duty is to ensure that human health is maintain through the application of evidenced-based medicine and caring
Impact	It refers to the effect of COVID-19 on healthcare professionals
Mental	It relates with mental impact of COVID-19
Psychological	It denotes the psychological impact of COVID-19
Social Support System	It is the network of people, friends, family, neighbours, peers and colleagues that one can turn to for emotional support

ABSTRACT

The outbreak of the novel corona virus (COVID-19) stretched the capacity of health services to its limits and its effect on health care professionals have been reported by several studies. The review of literature showed that there is paucity of empirical investigations on the experience of health professionals in Africa and Ghana. Therefore, this study sought to examine the impact of COVID-19 outbreak on healthcare professionals in Greater Accra Regional Hospital. The cross-sectional design was employed and the respondents selected using simple random sampling. The study considered 424 healthcare professionals at Greater Accra Regional Hospital. The healthcare professionals included nurses, general physicians (doctors), physician assistants, midwives and laboratory technicians. The data was gathered from the respondents using a self-administered and structured questionnaire. The data from the respondents was entered into SPSS version 21 where descriptive and inferential statistics were computed. The study findings reported adverse psychological outcomes in the form of extreme severe depression and anxiety and severe stress. The majority of the respondents exhibited moderate adverse mental behaviours in the form of moderate intrusion, hyper-arousal and avoidance behaviour. It was identified that most of the healthcare professionals received social support from "family, friends and significant others". It is recommended that psychological and mental health support should be provided to all healthcare professionals by clinical psychologist. The study also proposes that fortnight monitoring and evaluation of frontline workers to identify signs of adverse psychological and mental effect and offer immediate treatment.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The ever-rising and increasing number of COVID-19 cases has exerted enormous pressure on healthcare systems across the world with nurses having the largest share of the psychological outcomes (Pouralizadeh et al., 2020). It has been found that anxiety, depression and complications associated with psychological conditions are very high, with nurses and frontline workers in need of mental and psychological counselling to enhance the quality of their service and reduce burnout (Pouralizadeh et al., 2020).

As of May 20, 2021, it is anticipated that 1652 healthcare workers worldwide had perished while battling COVID-19 (Zhang & Small, 2020). The COVID-19 infections are common among women and nurses and death toll is prevalent among men and doctors (Bandyopadhyay et al., 2020). The report further showed that general physicians and mental health nurses were prone to deaths from COVID-19 (Bandyopadhyay et al., 2020). The World Health Organisation provisional figures on July, 2020 revealed that healthcare professionals in Africa who have contracted COVID-19 are more than 10,000 (WHO, 2021).

The nature of nursing care, predisposes nurses to spending more time with the patients and as such are anxious about the probability of their relations and close friends contracting COVID-19 (Chen et al., 2020). The long hours of donning personal protective equipment and struggle with performing nursing care procedures have been stimulating anxiety and fatigue among nurses **(**Liu et al., 2020). The risk of mental health symptoms and disorder is high for healthcare professionals, in view of this, healthcare systems should be prepared to ensure that psychological and mental health support are available for healthcare professionals

(Pouralizadeh et al., 2020).

As a result of their exposure to the COVID-19 outbreak, frontline healthcare workers run the risk of getting psychological and mental health illnesses or issues (Shaukat, Ali, & Razzak, 2020). The risk factors for COVID-19 mortality include high blood pressure, coronary heart disease, advanced age, organ failure, and d-dimer levels greater than 1 g/mL (Zhou et al., 2020). There is a growing consensus that the COVID-19 pandemic epidemic had a detrimental psychological impact on healthcare personnel. According to a study, public health professionals are more likely than nurses, doctors, and other types of healthcare workers (such as technicians and medical residents) to experience psychiatric problems (Que et al., 2020). Psychological symptoms and psychological distress among healthcare professionals has been reported and included insomnia, anxiety and depression (Que et al., 2020). The use of self-quarantine and social isolation as control measures of COVID-19 have the propensity to cause mental health disorders and their symptoms, such as posttraumatic anxiety, depression, and stress when they persist for a long time (Brooks et al., 2020).

The impact of the outbreak of the viral infection on medical health workers is high, compared to the general populace during the outbreak of the pandemic or emergency health condition or disaster. Consequently healthcare professionals have reported psychological distress during the outbreak of some form of infectious diseases such as "Ebola virus", "acute respiratory syndrome" and "Middle East respiratory syndrome" (Tam, Pang, Lam, & Chiu, 2004; Lee, Kang, Cho, Kim, & Park, 2018; Raven, Wurie, & Witter, 2018). Studies also reports medical health workers experience high prevalence of psychological and mental conditions such as insomnia, posttraumatic stress disorder, anxiety and obsessive-compulsive symptoms (Tan et al., 2020; Lai et al., 2020; Zhang et al., 2020).

The predictors of psychological and mental symptoms among health professionals are age, inadequate hand hygiene, working in high-risk department, living in rural area, history of mental disorder, having family member with COVID-19, working more than 10 years, long hours with patients, close contact with patient and unprotected exposure (Shaukat, Ali, & Razzak, 2020; Zhang et al., 2020; Zhu et al., 2020). It has been argued that increasing workload, lack of adequate personal protective equipment, lack of medical drug, growing confirmed and suspected cases and feelings of insufficient support for healthcare workers can trigger adverse mental health outcomes (Lai et al., 2020). The outbreak of the COVID-19 according to Rodríguez & Sánchez (2020) has resulted in psychosocial consequences which are themed under two main categories, lack of resource and increased workload. They contend that the viral infection requires hospitalization of at least 30% of cases and this has increased the burden of healthcare workers, leading to signing of contracts with student physicians and other medical students to augment the labour force at the healthcare centres. Furthermore, students are new to the healthcare centres and are overburdened with the long hours which can lead to negative emotional reactions such as stress and depression. In Ghana, "a study on impact of COVID-19 on healthcare professionals" reported low psychological distress which was attributed to government tax-free salary and spiritual coping mechanism such as praying to God (Ofori, Osarfo, Agbeno, Manu, & Amoah, 2021)

1.2 Problem statement

The capacity of health services was stretched to its limits following the outbreak of COVID-19 and its effect on health care professionals have been reported by several studies (Cipolotti, Chan, Murphy, van Harskamp, & Foley, 2020; Pappa et al., 2020; Lasalvaia et al., 2021; Stone, Kintziger, Jagger, & Horney, 2021). These research reports from Asia, Europe and

America suggest that the pandemic had affected quality of life of healthcare professionals (Shaukat, Ali, & Razzak, 2020; Pappa et al., 2020). The risk factors that influences or predisposes the healthcare professionals to psychological and mental conditions are several and comprise improper donning of personal protective equipment (PPE), improper hand washing hygiene, close proximity to a family relations and long hours of contact with patients (Shaukat et al., 2020). The World Health Organisation and several research reports have proposed myriad of coping strategies for healthcare professionals ranging from professional mental health services, sufficient rest, adequate protection, online support system, one-to-one support interventions and psychological support systems (Cipolotti et al., 2020; Conti, Fontanesi, Lanzara, Rosa, & Porcelli, 2020; Greene et al., 2021; WHO, 2020). However, given the differences that exist between continents and even countries, it is most unlikely that the suggestions by studies in Europe, America and Asia will be the same in Africa. This same view was expressed by a study that contended that the experiences of healthcare professionals in China is different than those in United Kingdom (Cipolotti et al., 2020). Furthermore, there is a dearth of research investigations on the experience of health professionals in Africa and Ghana (Asnakew, 2021; Ofori, Osarfo, Agbeno, Manu, & Amoah, 2021) on impact of coronavirus outbreak on their psychological and mental state. Therefore, this study seeks to contribute to literature by exploring the "impact of COVID-19 outbreak on healthcare professionals in Ghana" with emphasis on those at the Greater Accra Regional Hospital.

1.3 Research objectives

The main objective of the study is to examine the "psychological and mental effect of COVID-19 outbreak on healthcare professionals at Greater Accra Regional Hospital"

The specific objectives to be investigated in the study are to:

1. Evaluate psychological effect of COVID-19 on health professionals at Greater Accra Regional Hospital.
2. Examine the impact of COVID-19 on the mental health of health professionals at Greater Accra Regional Hospital.
3. Examine the influence of the demographic characteristics of healthcare professionals on psychological and mental health at Greater Accra Regional Hospital.
4. Determine the coping social support systems utilized by healthcare professionals at Greater Accra Regional Hospital.

1.4 Research questions

The questions to be explored in this research are:

1. What is the psychological effect of COVID-19 on health professionals at Greater Accra Regional Hospital?
2. How does COVID-19 affect healthcare professionals' mental health at Greater Accra Regional Hospital?
3. What is the influence of the demographic characteristics of healthcare professionals on psychological and mental health at Greater Accra Regional Hospital?
4. What are the coping social support systems utilized by healthcare professionals at Greater Accra Regional Hospital?

1.5 Conceptual framework

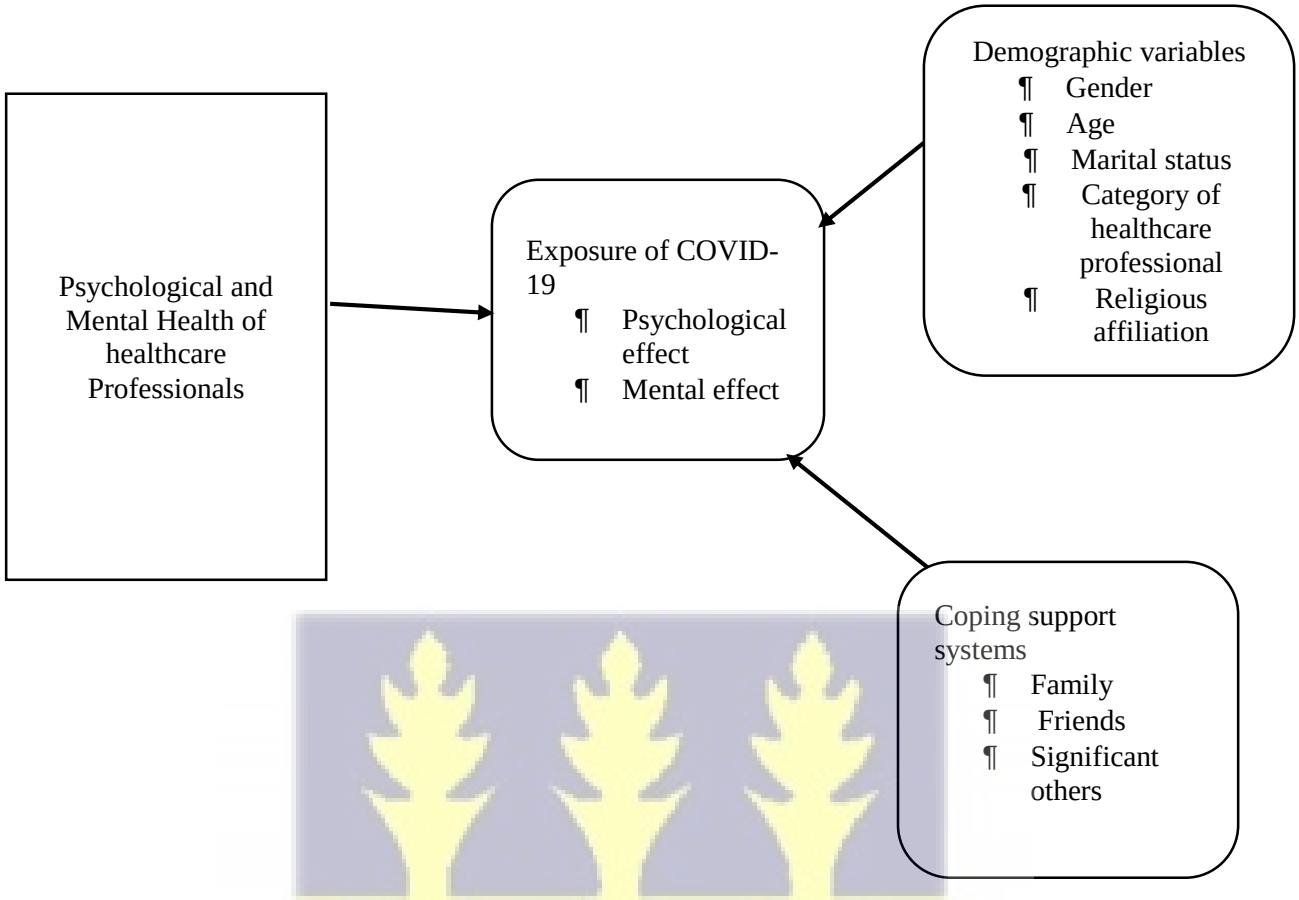

Figure 1: Conceptual Framework

The dependent variable is psychological and mental health of healthcare professionals and the independent variables are the psychological and mental effect of COVID-19. The study seeks to unravel the psychological and mental influence of the outbreak of COVID-19 on psychological and mental health of healthcare professionals. The framework also indicate that psychological and mental effect of COVID-19 is predicted by the demographic variables and coping social support systems available to healthcare professionals. The psychological looks at the impact of coronavirus on distress, anxiety, distress and perceived threat of the condition on one's life. The mental health part of the framework looks at the effect of COVID-19 on perceived mental health conditions or disorders such as avoidance, intrusion

and hyper-arousal. The coping social support system of the framework focuses on social support systems utilized by healthcare professionals to deal with the adverse psychological and mental problems associated with COVID-19. The social support comes from family, friends and significant others (someone special in your life). The framework is developed based on sound empirical underpinning and the review of studies did not identify any theoretical basis for all the studies reviewed (Raj et al., 2017; ; Conti et al., 2020; El-Hage et al., 2020; Khanal et al., 2020; Liu et al., 2020; Philip & Cherian, 2020; Temsah et al., 2020; Asnakew, 2021; De Kock et al., 2021; Greene et al., 2021; Ofori et al., 2021).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter begins with overview on COVID-19 pandemic and continues with psychological effects of COVID-19 on healthcare professional. This is followed by "impact of COVID-19 on mental health of healthcare professionals, influence of demographic variables on psychological and mental health of healthcare professionals and coping social support systems utilized by healthcare professionals".

2.1 Overview on COVID-19 pandemic

The new corona virus diseases (COVID-19) "is an RNA virus with a typical crown-like appearance under an electron microscope due to the presence of glycoprotein spikes on its envelope" (Di Gennaro et al., 2020, p.1). It is not surprising to be experiencing coronavirus outbreak because, in 2012 "Middle East respiratory syndrome coronavirus" appeared in the "Middle East and severe acute respiratory syndrome" coronavirus outbreak occurred in China in 2019. Laboratory examination reveals that COVID-19 has significant resemblance to Middle East respiratory syndrome and severe acute respiratory syndrome (Ramanathan et al., 2020; Di Gennaro et al., 2020, p.1). The new Indian strain of COVID-19 has been showed to be more virulent and has infected over ten million persons and killed about 150,000 (Srivastava, Banu, Singh, Sowpati, & Mishra, 2021). Other strains of COVID-19 that has spread to other parts of the world are South African strain, United Kingdom strain and Brazil strain (Hossain, Hassanzadeganroudsari, & Apostolopoulos, 2021). The ability of the virus to mutate depending on location and genetic factors has been a worrying public health concern for world in terms of development of vaccines, treatment and management. Development of

vaccines for treatment of COVID-19 has been increasing across the world and the success of these vaccines will be subjected to new selection procedures and clinical investigations in the light of mutations of the COVID-19 (Srivastava et al., 2021).). The global COVID-19 outlook is illustrated in Figure 2.

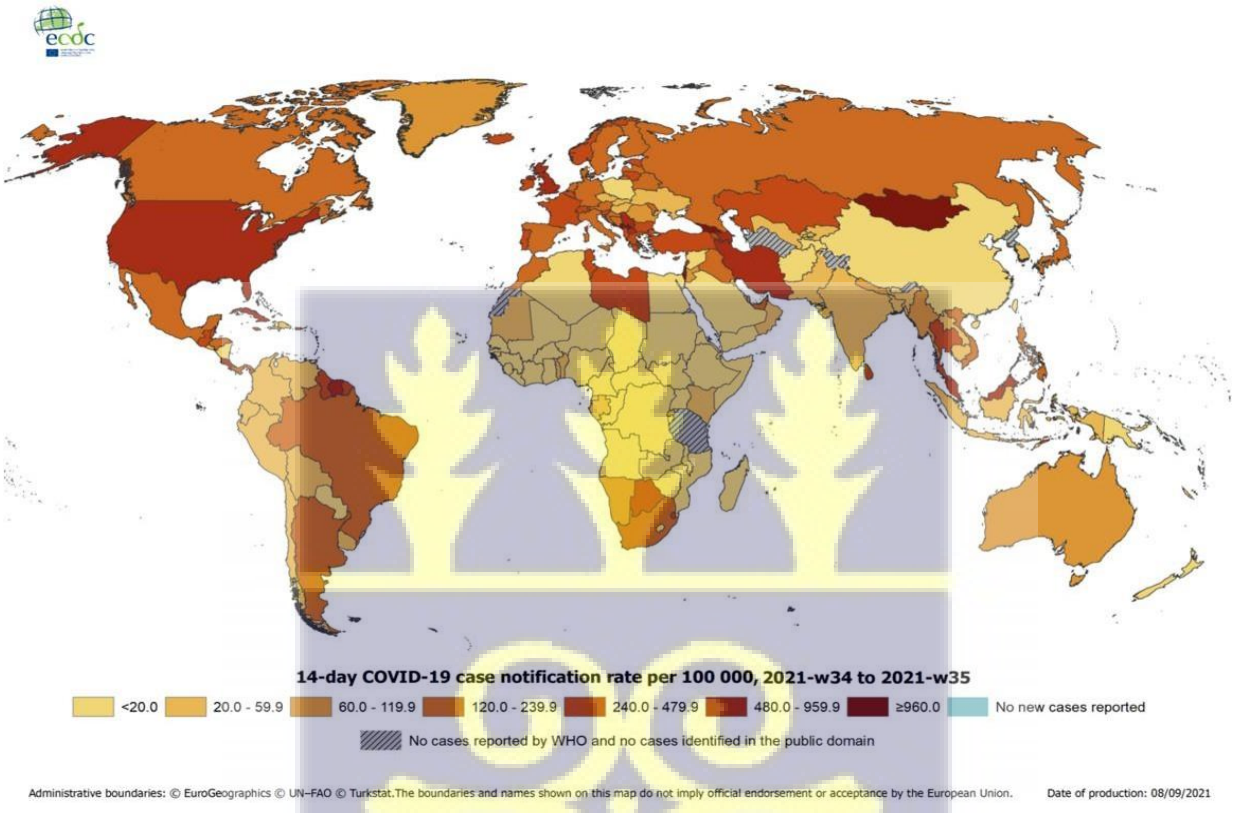

Figure 2: Spread of COVID-19 across the Globe

The African continents leading five countries with COVID-19 cases are South Africa (2, 819, 945), Morocco (884, 085), Tunisia (674, 047), Libya (316, 797) and Ethiopia (314, 984) accordingly. Total cases for each continent are given as follows: America (85, 299, 900), Europe (64, 395, 450), Asia (63, 561, 853), Africa (7, 913, 825) and Oceania (185, 380). In relation to death rates from COVID-19, America had the highest death toll (2, 129, 494),

followed by Europe (1, 260, 972), Asia (981, 465), Africa (199, 253) and Oceania (2, 407) (European Centre for Disease Prevention and Control, 2021).

2.2 Psychological effect of COVID-19 on health professionals

Raj et al. (2017) study results show that professionals outside health sector experience the highest psychological outcomes followed by technicians, nurses and physicians. However, the physicians, nurses and technicians experience a significantly higher anxiety, depression and insomnia levels than the professionals outside the health sector. The findings indicate that depression was experienced by majority of nurses, followed by technicians, professionals outside the health sector and physicians. Insomnia was occurred among a large number of physicians, followed by professionals outside the health sector, technicians and nurses. Nonetheless, anxiety was experience by most of the professionals outside the health sector, followed by physicians, technicians and nurse.

The prevalence of anxiety among healthcare professionals using self-rated anxiety scale reviewed was perused in China. The study results using multivariate regression demonstrate that almost one-third (32.03%) of the total healthcare professional had "direct contact with infected persons". The prevalence rate of anxiety was 12.5% and a greater number (n = 53, 10.35%) had mild anxiety, followed by those with moderate anxiety (n = 7, 1.36%) and sever anxiety (n = 4, 0.78%) (Liu et al., 2020).

A study in Ghana examined the "psychological impact of the COVID-19 on healthcare workers in three hospitals located in the Ashanti Region" (Ofori et al., 2021). The "depression, anxiety and stress scale" and "fear of COVID-19" and two self-developed scales used for the study. The results show that most of them did not have "depression, anxiety and stress". A small number of them had extreme levels of depression (1.1%), anxiety (15.8%) and stress

(1.5%). Similarly, moderate level of anxiety (13.3%), depression (4.4%) and stress (1.5%) were experienced by the healthcare professionals.

A cross-sectional study evaluated the "psychological effect of COVID-19 on healthcare professionals living in a country with Middle East respiratory syndrome coronavirus outbreak in Saudi Arabia" (Temsah et al., 2020). The findings points to the fact that anxiety from COVID-19 infection is higher than "Middle East respiratory syndrome coronavirus". The study found that 40% of the healthcare professionals had prior exposure to "Middle East respiratory syndrome coronavirus" during the outbreak. It was identified that 41.4% each of the respondents were stressed about "Middle East respiratory syndrome coronavirus" and COVID-19. The healthcare professionals were largely worried about transferring the infection to family relations and close friends.

Another study was conducted among healthcare professional in Saudi Arabia and the authors utilized the "hospital anxiety and depression", and "perceived stress scale" (Qasem Surrati, Asad Mansuri, & Ayadh Alihabi, 2020) . The study results suggest that almost one-third of the respondents (32.9%) were exposed to coronavirus infections and more than one-third (35.6%) had extreme anxiety about coronavirus. The mean anxiety score for the respondents was 8.43 those with insufficient training and women experiencing more stress than their counterparts. The mean depression for the respondents was 7.6 and was significantly higher for those with insufficient training. About a quarter of the respondents (27.9%) had symptoms of depression and insufficient training for infection control. The study concludes that the healthcare professionals had high anxiety and depression, with moderate level of stress.

A related study among Singaporean healthcare professionals adopted "evaluated - revised scales". The findings suggest that 14.5%, 8.9%, 6.6% and 7.7% of the respondents had experienced post-traumatic disorder, anxiety, depression and stress. The incidence of anxiety was higher for professionals outside the health industry than medical health workers after controlling for demographic characteristics. Equally, there was higher anxiety, stress and perceived stress subscale levels for professionals working outside the health industry (Tan et al., 2020).

A comparative review of reports on "psychological impact of COVID-19" showed that research articles conducted in Western and America had moderate to high level of anxiety, burnout, stress and depression. It was identified that different coping mechanisms and recurrent and high symptoms were reported by nurses and age had inconclusive result in terms of association with coping, recurrent and high symptoms of adverse psychological outcomes of healthcare professionals. The psychological adverse effect of COVID-19 was higher for the frontline workers than any other healthcare personnel. In addition, the psychological adverse effect of the pandemic was higher for healthcare professionals in Asia than those in other continents (Danet, 2021).

In addition, another research paper conducted a review on " impact of COVID-19 on psychological stress of healthcare professionals" (Bohlken, Schömig, Lemke, Pumberger, & Riedel-Heller, 2020). The review signifies that the common scales used include "self-rating anxiety scale", "patient health questionnaire" and "impact of event scale". Severe degree of adverse mental health symptoms were experienced by 2.2-14.5% of the healthcare professional. The severity of the mental health symptoms were predicted by gender, types of activities, specialization, proximity to infected person, age and occupation. The adverse effect

of COVID-19 was mediated by resilience, social support, personnel and preventive interventions.

A study was conducted on the review of studies relating to psychological influence of public health outbreaks such as "COVID-19, Ebola, influenza A, Middle East respiratory syndrome coronavirus and severe acute respiratory syndrome on healthcare professionals" (Preti et al., 2020). Post-traumatic stress (PTS) symptoms was identified in most of the healthcare professionals (73.4%) which included nurses, physicians and supportive staff experienced. The symptoms of PTS lasted for 1-3 years and occurred between 10% and 40% of healthcare professionals. Also, 34-36.1% of healthcare professionals had symptoms of insomnia and depression symptoms were found in 27.5-50.7% of the respondents. The presence of psychiatric symptoms were found in 17.3-75.3% of the respondents and elevated levels of stress was cited in 18.1-80% of the respondents. The risk of COVID-19 infections was predicted by exposure to infected persons, presence of organisational support and personality features.

In China, a study examined the psychological and sleep outcomes among healthcare professional using "Pittsburg sleep quality index, post-traumatic stress disorder self-assessment scale, patient health questionnaire, mental state with symptom checklist and self-rating anxiety/depression scale" (Mei et al., 2020). Findings suggest that mental state with symptom checklist depicted factor scores of depression, anxiety, somatization and phobia were higher among those infected than those otherwise. Substantial difference in term of anxiety, somatization, phobia, and depression experience by those with COVID-19 infection and others without the infection was established by the authors. The factor scores for "self-rating anxiety scale" and "post-traumatic stress disorder" were higher among infected persons than those

otherwise. The factor scores on “health questionnaire”, “self-rating anxiety” and “post-traumatic stress disorder self-assessment scale” for infected persons were higher beyond the threshold (normal range).

A meta-analysis study was conducted among healthcare professionals in China on their anxiety status during the outbreak of coronavirus (Pan, Zhang, & Pan, 2020). The finding indicates that the anxiety level of the respondents is higher than the national figure in each of the study reviewed. The results reveal that anxiety level of healthcare professionals is significantly higher than the national score. The study concludes that anxiety level of healthcare professionals is reported higher and needs immediate attention.

In China, a cross-sectional study explored the psychological impact of coronavirus outbreak using “event scale-6, depression, anxiety and stress scale and other variables such as social support, perceived threat and coping strategies” (Si et al., 2020). The findings suggest that posttraumatic stress is widespread among healthcare professionals in China and more than 40% (40.2%) of the respondents tested for substantial symptoms of posttraumatic stress disorder. The respondents reported of mild to extreme form of stress (8.6%), anxiety (13.9%) and depression (13.6%). Furthermore, nurses were more prone to anxiety that any other category of healthcare professional working during the COVID-19 outbreak.

A study was conducted among healthcare professionals in South-East of Ireland adopted “depression, anxiety and stress scale and impact of event scale-revised” to determine psychological effect (Ali et al., 2020).. The findings demonstrate that mean stress, anxiety and depression comprise 7.41, 3.87 and 4.57 respectively. More than 40% of the respondents were had positive symptoms of depression (42.6%), anxiety (45.1%) and stress (45.1%). The average measure of impact of life scale- revised on three dimension were: avoidance (1.008),

hyper-arousal (1/084) and intrusion (1.085). A little more than 40% of the respondents (41.3%) were found to be positive of posttraumatic stress disorder. Healthcare professionals with underlying conditions reported worsen outcomes. The respondents who hospitalize in site B reported a higher stress, anxiety, depression and posttraumatic stress disorder.

In Ghana, "a study examined the psychological influence of COVID-19 outbreak on healthcare workers" (Ofori et al., 2021). The scales utilized were "depression, anxiety and stress scale" and "fear of COVID-19 scale". The findings suggest that the level of anxiety, stress, depression and fear of COVID-19 virus were 27.8%, 8.2%, 21.1% and 45.4% accordingly. The study also found that job description of the respondents had strong relationship with anxiety, stress and depression.

2.3 Impact of COVID-19 on the mental health of healthcare professionals

In Nepal, a study evaluated mental health of the professionals using "Hospital Anxiety and Depression Scale and Insomnia Severity Index" (Khanal, Devkota, Dahal, Paudel, & Joshi, 2020). The findings of the multivariate regression indicate that 33.9%, 37.5% and 41.9% of healthcare professionals have experienced symptoms of insomnia, depression and anxiety. The study results also demonstrate that the stigma of associated with mental health had higher probability of increasing the odds of insomnia, anxiety and depression.

In Ethiopia, "a study evaluated the negative effects of COVID-19 on the healthcare professionals using depression, anxiety and stress scale" (Asnakew, 2021). Findings indicate that the prevalence of anxiety, stress and depression stands 64.7%, 63.7% and 58.2%. The healthcare professionals with prior mental sickness, contact with COVID-19 infected persons and weak social support had strong influence on depression. Those who had contact with infection persons, chronic illness, female healthcare professionals and weak social support

have strong predictive influence on anxiety. Stress levels of the respondents were also associated with healthcare professionals who had experience weak social support, suffering from chronic illness and contact with infected persons.

A review study on literature on "impact of COVID-19 on healthcare professionals" using 14 database drawn from World Health Organisation and Cochrane database system (De Kock et al., 2021). The results indicate that "COVID-19" has significant influence on the psychological health of healthcare professionals. The nurses stand a higher risk of suffering from adverse mental health problems during the outbreak of the pandemic (COVID-19) although statistical relationship between nurses and other healthcare professionals is lacking.

In the case of the United Kingdom, "a study investigated the predictors and level of post-traumatic stress disorder, anxiety, depression and other mental health disorders among healthcare and social care professionals during the outbreak" (Greene et al., 2021). The three scales that were used include "generalized anxiety disorder scale", "patient health questionnaire and international trauma questionnaire" to measure "anxiety, depression and post-traumatic stress disorder". The results demonstrate that most of the respondents (58%) suffered from post-traumatic stress disorder and was high among occupation and residence groups. The predictors of significant mental disorder were access to personal protective equipment, concerns about infection others and stigmatization and inability to managers about coping experience in the pandemic. The higher likelihood of being diagnosed with post-traumatic stress disorder were related with working during COVID-19 outbreak and being infected with COVID-19. The level of household income has significant association with reduction of the odds of mental disorder.

A comparable study perused "the review of studies on effects of COVID-19 on the mental

health of workers" (Giorgi et al., 2020). The review was based on 35 articled and the mental health challenges identified were "depression, anxiety, post-traumatic stress disorder and sleep disorders" which adversely affected healthcare professionals in the frontline, workers with contact with general public and migrant workers. The psychological state of the younger adults and those with advance education were worsen by uncertain about the future, job insecurity and long periods of self-isolation. The coping strategies coming from both personal and organisation factors including resilience, ant-contagion measures and donning of personal protective equipment.

According to a study in U.S., social-ecological factors (individual, interpersonal, institutional and community) account for mental health outcomes of healthcare professionals (Hennein, Mew, & Lowe, 2021). The scales used in the study were "primary care post-traumatic stress disorder, personal health questionnaire and alcohol use disorders identification test-concise scales". The study findings postulate that "major depression", "post-traumatic stress disorder" and "alcohol use disorder" were reported among 13.9%, 15.6%, 22.8% and 42.8% of the healthcare professionals. The need for social support was cited as a significant variable predicting the likelihood of "major depression", "alcohol use disorder" and "post-traumatic stress disorder". With reference to the individual level, gender (female) predicted the likelihood of "post-traumatic stress disorder" and at the institutional level, lower team cohesion was significantly related with likelihood of developing post-traumatic stress disorder whiles following hospital policies was associated with major depression. In relation to the community level, increase in stigma spur the likelihood of developing "post-traumatic stress disorder" and "alcohol use disorder", and decline in satisfaction with government national policies had significant association with generalized anxiety disorder. The rise in media

exposure also increases the likelihood of developing “generalized anxiety disorder” and “post-traumatic disorder”.

In the same setting as Hennein, Mew and Lowe (2021), this study (Luceño-Moreno, Talavera-Velasco, García-Albuerne, & Martín-García, 2020) examined “anxiety, depression and posttraumatic stress levels of healthcare professionals in the United States with reported adverse mental health outcomes”. The findings suggest that most of the respondents had symptoms of “stress disorder” (56.6%), “posttraumatic stress disorder” (58.6%) and less than half had “depressive disorder” (46%) and a feeling of emotionally exhaustion (41.1%). The factors that were associated with posttraumatic stress symptoms comprise being a woman, living with an infected person, working in Autonomous Community of Madrid and perceiving yourself of greater risk of infection. The predisposing factors for developing anxiety and depression were being concerned a family member could be infected, being a woman, working in half day or full day shift.

A systematic review was conducted on “COVID-19 and its effects on the mental health” (Vindegaard & Benros, 2020). The results of the studies on patients diagnosed with COVID-19 virus had high levels (96.2%) of posttraumatic stress disorder and significant levels of depressive symptoms. Patients with underlying psychiatric condition had worsen psychiatric symptoms. Studies that focused on healthcare professionals found increase symptoms of anxiety, depression, distress and sleeping disorder/quality. Studies on the general populace found that high levels of anxiety, depression and generally poor psychological state than before the outbreak of COVID-19. The risk of low psychological and mental health outcomes as a result of the COVID-19 infection comprise being female, having relatives diagnosed of COVID-19 and underlying poor health condition.

El-Hage et al. (2020) conducted a "narrative review on the mental health risk linked with exposure to COVID-19 outbreak". The results indicate that brought about uncertainty and atmosphere of wariness among healthcare professionals due to its rapid spread, lack of knowledge of the virus, deaths among healthcare professionals and severity of symptoms. Organisational and personal factors that causes stress among healthcare professionals and comprise: lack of certain medications, inadequate personal protection equipment, shortage of ventilators, and worries about being not able to provide quality of care, shortage of intensive care units beds for critically ill patients, fear of infecting a family and others, uncertainty, social stigmatization, overload of work, lack of access to rapid testing, significant change in social and family life. The review established that healthcare professionals stand a higher risk of developing elevated levels of burnout, depression, anxiety and posttraumatic stress disorder. The coping strategies that would mitigate the adverse effect experience include social and organisational factors as well as personal factors such as resilience.

In Pakistan, "a survey sought to explore the influence of COVID-19 on mental health of health workers in Lahore" (Wasim, Raana, Bushra, & Riaz, 2020). The respondents were grouped into two main categories: insomnia and non-insomnia groups. Findings show greater proportion of the respondents reported of symptoms of stress (55.33%), anxiety (64.76%), depression (62.35%) and insomnia (53.37%). The study found that mild to severe symptoms of "anxiety, stress and depression" were higher for those in the insomnia group than others in non-insomnia group. It was discovered that nurses, healthcare professionals in isolation and paramedics stood a higher chance of getting insomnia. Finally, insomnia group has low level of education when compared with non-insomnia group.

In China, research was conducted on "the mental health of frontline healthcare professionals

following the outbreak of COVID-19" (Huang, Han, Luo, Ren, & Zhou, 2020). The "self-rating anxiety scale" and "post-traumatic stress disorder self-rating scale" were adopted in the study. The findings show that prevalence of anxiety among the healthcare professionals stands at 23.04% and the self-rating anxiety score for the respondents was 42.9±10.89. Severe, moderate and mild anxiety levels of the respondents were 16.09%, 4.78% and 2.17% respectively. The incidence of anxiety among female healthcare workers (25.16%) was significantly higher than their male counterparts (11.63%). Equally, the self-rating anxiety score for females (43.78±11.12) were notably higher than the males (39.14±9.01). The incidence of anxiety among nurses (26.88%) was substantially higher among nurses that doctors (14.29%) and in the same vein, the self-rating anxiety score for nurses being higher for nurses (44.84±10.42) than doctors (38.50±10.72). The study found that the incidence of stress disorder among healthcare professionals was 27.39% and the post-traumatic stress disorder self-rating score being 42.92±17.88. The female healthcare professionals (44.30±18.42) recorded a significantly higher post-traumatic stress disorder self- rating score than the male counterparts (36.91±13.95).

A related study on assessed the "psychological and mental status of healthcare professionals in Italy" (Conti et al., 2020). The study perused the role of socio-demographic variables on exposure, anxiety, psychological care, post-traumatic symptoms, somatization and depression. The authors found that female professionals experience significantly higher levels of anxiety than their male counterparts. Persons who are aged below 40 years had higher levels of anxiety, depression, somatization and post-traumatic symptoms. In addition, working in an infected location and direct contact with an infected person has marginal influence on the psychological outcomes of professionals. Healthcare professionals who had a relation that had

died of COVID-19 infection, post-traumatic symptoms and anxiety experience higher levels of depression, than those otherwise. Healthcare professionals who thought that they need psychological assistance had psychological scores above the threshold clinical worse psychological condition. The predictors of psychological care were anxiety, gender, psychological distress and depression. Finally, most of the healthcare professionals were diagnosed of somatization and distress.

2.4 Influence of the demographic characteristics on psychological and mental health

A study conducted in China on the influence on socio-demographic variables on anxiety reveal that healthcare professionals who had "direct contact with infected persons" exhibited elevated anxiety levels than those without direct contact (Liu et al., 2020). Also, the results shows that respondents living in Hubei province had higher anxiety levels compare to those otherwise. Those with suspected cases of coronavirus infection experience higher anxiety levels than those otherwise.

A comparable literature by Khanal et al. (2020) suggests that previous history of mental health is substantially related with the higher probability of experience symptoms adverse mental outcome. Inadequate precautionary measure at the facility is strongly related with the higher odds of experiencing depression and anxiety. Out of all the healthcare professionals, nurses had the higher odds of experience symptoms of anxiety more than all other categories of healthcare personnel. The study concludes that stigma with mental health, history of mental health condition and inadequate precautionary measures are the predictors of mental health issues among healthcare professional.

According to Khanal et al. (2020), lack of personal protective equipment, fear of infection, gender, underlying sickness and contact with infected person are risk factors of COVID-19.

Also, knowledge, resilience and systemic support are all factors that negatively affect the mental healthcare outcomes of the healthcare professionals. The study findings postulate that gender of nurses, contact with infected person and lack of structured support for healthcare professionals demands immediate attention. Furthermore, the disparity in results and exclusion of data gathered outside the hospital settings might lead to the neglect of other groups when dealing with social care and healthcare professionals.

Ofori et al. (2021) study revealed that only job description has significant influence on anxiety and stress levels of respondents. It was discovered that gender, age, marital status and religion of respondents did not have significant nexus anxiety, stress and depression state of healthcare professionals in Ashanti Region of Ghana.

A study explored a thematic review on the factors influencing the psychological outcomes of healthcare professionals (Philip & Cherian, 2020). The study results demonstrate that middle-age healthcare professionals are more prone to adverse psychological outcomes from COVID-19 outbreak than other professionals. With respect to gender, there was a disparity in the findings; some studies found that women are more predispose to adverse psychological problems whereas other found men are more prone to adverse psychological condition due to the inherent roles played by men which brings them closer to their relations. The review also identified that having a marriage partner provides a security against the risk of posttraumatic stress condition and individuals with prior mental conditions were liable to suffering from "stress, anxiety and depression" during the COVID-19 pandemic. In addition, healthcare professionals with relations who had been diagnosed of COVID-19 virus stand a greater risk of developing adverse psychological outcomes. Furthermore, a middle age person, married, with less social connections or contact, lower education level and prior history of psychiatric and

medical condition were more susceptible to distress during the COVID-19 outbreak. In relation to healthcare professionals, nurses and general physicians stand a greater chance of developing adverse mental outcomes and also lack of experience on treating a patient with COVID-19 coupled with being asked to treat a colleague with COVID-19 exacerbated the prevailing stress, advancing existing stress and depression levels. The healthcare professionals who were asked to go for mandatory quarantine were found to experience sleep disorders and posttraumatic stress symptoms.

In Spain, "a study sought to evaluate the nexus between socio-demographic characteristics and psychological outcomes of healthcare professionals" (Rodríguez et al., 2020). The study utilized the perceived stress scale among 1269 persons diagnosed of COVID-19. The study results postulate that being a woman, aged 25-40 years, having low incomes predicted the stress levels of the infected persons undergoing treatment in Spain.

A study across four countries in Europe (USA, UK, Australia and Norway) examined the demographic variables that have strong predictive effect on the psychological health of COVID- 19 patients (Østertun Geirdal et al., 2021). The study findings show that living area, employment, level of education, gender, place of work and civil status had strong influence on psychological health of COVID-19 patients.

In Korea, "a study examine the psychological impact of COVID-19 on healthcare professionals using the generalized anxiety disorder scale" (Yang, Kwak, & Chang, 2021). The results show that 11.1% of the respondents had depression and people living with chronic disease had higher level of depression and anxiety. Also, occupational therapists reported with higher incidence of depression than nurses and physical therapists.

In Mexico, “a study assessed the mental health problems among healthcare professionals” (Robles et al., 2020). The mental and behavioural health problem/disorder scale was employed in the study. The findings indicate that depression, insomnia and posttraumatic stress disorder were common among frontline healthcare professional and women. Also, the unavailability of resting time was a significant predictor for developing insomnia. Grieving over a friend or a loved one who had passed away from COVID-19 infection predicted the level of depression of respondents. Finally, the status of COVID-19 of healthcare professionals has strong influence on developing posttraumatic stress disorder.

2.5 Coping social support systems utilized by healthcare professionals

In Italy, “a study examined the psychosocial impact of COVID-19 on healthcare professionals using perceived stress scale, resilience scale of adults, big five inventory items and state anxiety scale” (Coco et al., 2021). The results indicate that majority of females (48.04%) had significant higher stress level than males (32%). It was identified that job seniority, marital status, number of sons or daughters did not have strong relationship with anxiety and stress. However, emotional stability dimension of resilience and perception of future and self-perceptions dimensions of personality had strong correlation with anxiety and stress. The study also found that females had perceived higher social support that males and similarly, had a reported higher scores in self-perception and social behaviour dimensions of resilience than males.

In the United States, “a study examined the coping strategies used by healthcare professionals experiencing psychological problems as a result of the COVID-19 outbreak COVID-19 outbreak” (Rose, Hartnett, & Pillai, 2021). The findings postulate that the respondents experience emotional trauma when the first wave of pandemic began. The coping strategies

employed by the respondents were humour at work place, frequent and transparent communication, monetary compensation and availability of personal protective equipment. It was discovered that most of the healthcare professionals did not have social support from physicians, therapists, family physicians to lessen the stress levels experience during the pandemic. A greater number of the healthcare workers did not engage in relaxation exercise to control their stress levels. The feeling of togetherness among the healthcare professionals help them to deal with stress that comes with the outbreak of COVID-19.

In Saudi Arabia, "a study examined the feelings, stress level and coping mechanisms of nurses" (Natividad, Aljohani, & Gamboa, 2021). The study results show that most of the respondents felt compelled by their professional ethics and code to continue working and were unhappy with working hours, scare of being infected and did not have intention of leaving the profession. The level of stress experience by the nurses come from possibility of transmitting the infection to their families, insufficient personal protective equipment, respiratory conditions might signify the presence of COVID-19. The respondents that were married, aged 25-34 years and having a bachelor's degree had significantly higher coping strategies. The coping strategies include having comfort in religion, receiving advice from family, friends and colleagues, making jokes out of the situation and having a positive outlook to the situation.

Some of the coping strategies identified to deal with adverse psychological impact of COVID-19 outbreak have been reported by a study conducted in Ghana. They comprise the receipt of tax-free salary relief, positive attitude from coworkers, seeing patients recover from the viral infection, joking with colleagues, provision of clear guidelines on infection prevention and control, having confidence in screening procedures at the hospital and praying were some of the coping mechanisms that healthcare professionals utilized (Ofori et al., 2021).

A study adopted the perceived social support scale to determine the coping strategies utilised by healthcare workers in managing the adverse psychological outcomes in China (Si et al., 2020). The finding indicates that "Passive coping" and "Perceived threat" were strongly and positively related with posttraumatic stress and depression, anxiety and stress scores. The results also show that "active coping strategies" and "perceived social support" were negatively related with depression, anxiety and stress scores. The finding suggests that active coping dimension do have not significant influence on posttraumatic stress disorder symptoms. The result concludes that providing adequate coping strategies and social support has the potential to reduce the adverse psychological problems facing healthcare professionals dealing with COVID-19 outbreak.

A study evaluate the mental health challenges facing healthcare professional following the outbreak of COVID-19 among low, middle and high income countries (Htay et al., 2021). The findings indicate that physicians, nurses and other healthcare professionals were 36%, 24% and 40% respectively. It was revealed that majority of the healthcare professional (70%) were getting family support and coping with the pandemic and having positive outlook to life. Almost half of the healthcare professionals belief in God, more than half of them (58.4%) prayed and almost half (48%) had adequate food and rest. The attitude of the healthcare professionals on inter-professional teamwork were predicted by gender, marital status, occupation, current workplace, working experience and age.

A review of studies on the coping strategies employed by healthcare professionals was conducted among developing countries (Chandra & Vanjare, 2020). The coping strategies employed were: discussing of emotional and social challenges with healthcare workers, giving clear view of the challenges confronting them without any unrealistic assurances, rotation of

healthcare professionals at the work place and ensuring sufficient rest for them and provision of online services to enable them to communicate with the public and their colleagues. Other coping strategies comprise: building the capacity of healthcare professionals to provide psychological interventions through training, adequate supply of personal protective equipment, hand sanitizers, compensation, access to vaccines and anti-viral medications, stipulation of clear guidelines on infection prevention and control, temporal isolation centres for healthcare professionals, creation of rehabilitation centres for depressed and distressed healthcare workers. Finally, increasing the information of the healthcare workers would ensure that they had optimistic attitude towards life, pandemic and profession. This will help them to reduce the stress, anxiety and depression associated with COVID-19 outbreak.

In Turkey, "a study explored the level of anxieties and its relationship with coping strategies among healthcare professionals" (Subaşi, Sümengen, Şimşek, & Ocakçı, 2021). The anxiety level was determined using state trait anxiety scale and coping strategies assessed using ways of coping questionnaire. The coping questionnaire was made up of five dimensions namely "self-confidence, helpless, submissive, optimistic and seeking social support". The findings show that the mean percent and standard deviation of coping strategies were self-confidence was 63.31±14.59, followed by optimistic approach (74.61±11.77), seeking social support (52.78±12.87), helpless approach (52.78±12.87) and submissive approach (42.12±11.04). The self-confidence scores for healthcare professionals were higher for those aged 30 years and over. In the same vein, respondents aged 20-29 years had higher helpless approach than those in other age brackets. "Seeking social support" and "helpless approach for females" were significantly higher for females than males whiles optimistic approach scores for males were significantly higher for males than females. The respondents with high school and

postgraduate education had reported significantly higher helpless approach than those with other level of educations. The optimistic approach of respondents with children was significantly higher than those without children.

CHAPTER THREE

RESEARCH METHODS

3.1 Research design

The study adopted the cross-sectional design that involves the investigation of present or current situation about a phenomenon across a section of a population. According to (Wang & Cheng, 2020, p.65), cross-sectional studies "analyzes data from a population at a single point in time and are often used to measure the prevalence of health outcomes, understand determinants of health, and describe features of a population". It is often referred as taking a snapshot of the individuals or units of a group and presenting their experiences and involves generation of quantitative data that are graphically presented in tables and charts. Given that the study sought to assess current impact of COVID-19 on healthcare professionals which generated quantitative data, the cross-sectional design is therefore considered appropriate and suitable for this empirical investigation.

3.1 Study area

The study area was "Greater Accra Regional Hospital" previously called "Ridge Regional Hospital". The Hospital is located at "North Ridge (along the castle road) in the Osu-Klottey Sub-Metro of the Accra Metropolitan Area in the Greater Accra Region (GAR). It occupies a total land area of about 15.65 acres. As the Regional Hospital for the GAR, its catchment area is the whole of the Greater Accra Region, with an estimated population of over 4,671,363 (2015 projection based on 2010 census by the Ghana Statistical Service, GSS).The immediate catchment area, however, includes the following suburbs: Ridge, Nima, Maamobi, Kanda, Accra New Town, Kotobabi, Osu, La, Adabraka, Achimota, Airport Residential Area and Central Accra. Located at the heart of Accra city, the GARH started as a Hospital for the

European expatriates around 1928. It became a District Hospital after Ghana's independence in 1957 and was later designated as the Ridge Regional Hospital in 1997. It is now being redeveloped and transformed into an ultra- modern 620 bed capacity hospital with the full complement of specialist services that reflects the current social aspirations of the rapidly growing capital city of Ghana" ("History And Background - Ridge Hospital," n.d.).

3.2 Study population

The targeted population included all healthcare professionals such as "doctors, nurses, physician assistants, midwives and technicians" at Greater Accra Regional Hospital.

3.2.1 Inclusion and exclusion criteria

The inclusion criteria for the study were all healthcare professionals who have graduated from school, gone through their national service and are now serving the country. Student healthcare professionals were not included in this research. Also, healthcare professionals who were going through their rotation or national service were not included. The study did not consider auxiliary or support staff working in the healthcare setting such as accountants, receptionists etc.

3.3 Study variables

The variables of the study are in two forms: demographic characteristics and validated instruments used to measure psychological effect, mental health effect, coping social support systems of healthcare professionals diagnosed of COVID-19. The validated instruments are all in the form of Likert scale and the demographic characteristics are in the form of binary, ordinal and nominal data form.

3.3 Study design

3.3.1 Dependent variables

The dependent variables are demographic variables, psychological and mental effect of COVID-19.

Table 1: Dependent Variables

	Dependent Variables
1.	Psychology effect evaluated using DASS-21 developed by Lovibond & Lovibond (1995)
2.	Mental Health using IES-6 developed by Thoresen et al. (2010)
3.	Coping social support system developed by Zimet, Powell, Farley, Werkman and Berkoff (1990)
4.	Impact of Demographic Variables on Mental and Psychological health: self- developed by the researcher: gender, age, marital status, category of health profession and religious affiliation

3.3.1 Independent variables

The independent variable is COVID-19 pandemic.

3.4 Data collection instruments

The study adopted a self-administered and structured questionnaire made up self-developed and validated instruments. The questionnaire had been structured into four sections. Section A presents the demographic characteristics made up of gender, age, marital status, category of healthcare professional and religion. Section B presents the views of the respondents on psychological impacts of COVID-19 using "DASS-21" developed by Lovibond and Lovibond (1995). Section C outlines the evidence of adverse mental symptoms among healthcare

professionals using IES-6 developed by Thoresen et al. (2010). Section D discusses the coping social support systems available for the healthcare professionals developed by Zimet et al. (1990) instrument used to evaluate "social support from family, friends and significant others". The instruments are all validated which means the results provided valid and reliable outcomes on the objectives of the study. The question is lasted for 15-25 minutes per each respondents and the data collection period was three weeks. The indicators that were used to evaluate psychological outcome is Distress, Anxiety and Stress -21 instrument. The total score for each construct is multiplied by 2 to arrive at the rating of "normal, mild, moderate, severe or extreme severe" condition because the original instrument had 42 items. The interpretation of the scores is illustrated in Table 2.

Table 2: Interpretation of DASS-21 Scores

Meaning	Depression	Anxiety	Stress
"Normal"	0-9	0-7	0-14
"Mild"	10-13	8-9	15-18
"Moderate"	14-20	10-14	19-25
Severe"	21-27	15-19	26-33
"Extreme severe"	28+	20+	34+

Source: (Lovibond & Lovibond, 1995)

The Mental health of the professionals was assessed using "Impact of Event Scale 6 (IES-6)" a short form of the original "Impact of Event Scale-24 (IES-24)" developed by Weiss (2007). The IES-6 has reduced each sub-scale by 4 and has been validated by prior studies as strong predictor of symptoms of adverse mental health (Zhang, Ho, Fang, Lu, & Ho, 2014; Si et al., 2020; Hosey et al., 2020). A high score indicates poor mental health and lower score

demonstrates good or acceptable mental state. The coping social support system four items for each construct (family, friend and significant others). A mean score of 1-2.9 is considered a low support, a score of 3-5 is deemed as a moderate support and a score of 5.1 to 7 considered as a high support. This instrument has been used by prior studies to assess coping support of healthcare professionals (Si et al., 2020).

Table 3: Variable Definition, Instrument, data type, measurement and Outcome

Objective	Instrument	Data type	Measurement	Outcome
"Evaluate psychological effect of COVID-19 on health professionals"	Psychology (using DASS-21)	4- point Likert scale ranging from 0 (never) to 3 (almost always)	Mean, standard deviation, frequency and percentage	Measures level of distress, anxiety and stress
"Examine the impact of COVID-19 on the mental health of health professionals"	Mental Health (using IES-6)	5- point Likert scale starting from 1 (not at all) to 5 (extreme)	Mean and Standard deviation	Measures mental health of a person to reveal if there is any adverse or improved mental condition following COVID-19
"Determine the coping social support systems utilized by healthcare professionals"	Coping social support system (using CSSS-12)	7-point Liker scale spanning from 1(very strongly disagree) to 7(very strongly agree)	Mean and Standard deviation	Measures the social support from "family, friends and significant others"
"Examine the influence of the demographic characteristics of healthcare professionals on psychological and mental health"	Demographic Variables	Nominal and ordinal	Chi-square	Influence on psychological and mental health outcomes following the outbreak of COVID-19

3.5 Sampling

3.5.1 Sampling size determination

The study adopted the Cochran (1963) formula for determining a sample from an unknown population size. The formula is specified in the equation below:

$$n_0 = \frac{Z^2 p q}{e^2}$$

Where n_0 = sample size

Z^2 = "abscissa of the normal curve that cuts off an area α at the tails" (1.96)

p = "estimated proportion of an attribute that is present in the population" (a maximum variability of 50% is assumed)

q = 1 – p (1 – 0.5), which is equal to 0.5

e = "desired level of precision" (5%)

$$n_0 = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}$$

$$n_0 = \frac{3.8416(0.5)(0.5)}{0.0025}$$

$$n_0 = \frac{0.9604}{0.0025}$$

$$n_0 = 384.16$$

The sample size for the population in the nearest figure is 385 and the study considered an attrition rate of 10% which translates into 39 (in the nearest figure). Thus, the study considered a sample of 424 healthcare professionals at Greater Accra Regional Hospital.

Table 4: Breakdown of Respondents

	Cadre of healthcare professional	Number to be selected for the study
1.	General physician (Doctors)	40
2.	Physician Assistants	30
3.	Nurses	274
4.	Midwives	30
5.	Laboratory technician	50

The justification for the breakdown of the healthcare professionals comes from the fact that research shows that nurses, midwives doctors and physician assistants account for more than 80% of all healthcare workers (Tan et al., 2020; Temsah et al., 2020; Preti et al., 2020). The nurses account for more than 60% and the remaining 40% include midwives, doctors and physician assistants and laboratory technicians. The midwives, physician assistants and general physician accounts for less than 10% whereas the laboratory technicians accounts for more than 10% (Tan et al., 2020; Temsah et al., 2020; Preti et al., 2020).

3.5.2 Sampling procedure

The study utilized the random sampling procedure to collect data from the respondents. In simple random studies, "members of the sample are selected randomly and purely by change" (Bhardwaj, 2019, p.159). Thus, each person stands at an equal chance of being selected from the sampling frame. The researcher made a list of nurses, physician assistant, general physician, midwives and laboratory technician each department of the hospital. The research

assigned a number to each cadre of healthcare professionals. The nurses were first sampled first and started with those at the OPD and followed by those at the ward. Each nurse is assigned a code of starting from 1. A target of nurses for each ward is estimated determined based on the number of nurses at each department or ward. The researcher ensured that the total targeted number of nurses were attained (274). The midwives were assigned a different code starting from 1 to the final figure 30. The same assignment of codes for the remaining cadre of healthcare professionals (laboratory technician, physician assistant and general physician). The codes were based on the targeted number of respondents expected from each cadre of healthcare professional. Each of the healthcare professionals were approached during their break time or end of their shift period for interaction in order to determine the appropriate time to interact with them. If the respondents upon interaction express interest to take part in the study, then an appropriate date and time based on the respondent's free time was arranged and the researcher explained in details the study and provided the consent form. The researcher ensured that all cadres of healthcare professionals are given the same opportunity by arranging for convenient time to engage each group of healthcare professional over a period of time. That is to say, the first group comprising of nurses, general physicians (doctors), physician assistants and midwives were given a period of two weeks. The second group consisting of laboratory technicians was assigned one week for data collection. The one week period assigned for the latter group is based on the relative smaller size when compared with the former group. Furthermore, the first group is more than the second group as consequently accounted for majority of the respondents. Prior studies have also sampled healthcare professionals using random sampling procedure (Tan et al., 2020; Lai et al., 2020) and mostly the first group which the core healthcare professional have been found to account for 73- 95% (Tan et al., 2020; Temsah et al., 2020; Preti et al., 2020). Therefore, the first group included about 80% of total

sample size and the second group comprised about 20% of estimated sample size.

3.5 Quality control

The researcher ensured that the questionnaire were duly filled and was present to ensure that any assistance that the respondents needed was provided. Any questionnaire that was not fully filled was rejected and also the questionnaires were cross-checked to ensure that they were free from typo and grammatical errors. The data was kept in an encrypted pen drive with the password known by the researcher and supervisor only.

3.6 Data processing and analysis

The data that was gathered from the respondents was processed and entered into the SPSS version 20. The analysis produced descriptive statistics and inferential statistics. The descriptive statistics were made up of frequency, percentage, mean, standard deviation, minimum and maximum. The inferential statistics consisted of the chi-square value and measure of significance (p-value).

3.7 Reliability and validity

The study utilized validated instruments to measure psychological, mental health symptoms and coping social support systems. These instruments have been found to be display high level internal consistency and appropriate measure of mental health, psychology and coping social support of healthcare professionals. Furthermore, the Cronbach alpha coefficient was computed to check for reliability of the instruments.

3.8 Ethical consideration

The ethical clearance was obtained from the Ghana Health Service (GHS-ERC 045/06/22) and all respondents were given the consent form to indicate their voluntary participation in the

study. The ethical clearance was obtained from the Ghana Health Service by ensuring that all issues on confidentiality, risk, anonymity, beneficence and appropriateness of the research were maintained. The confidentiality and anonymity was safeguarded by ensuring that codes were used to represent each respondents and that their responses could not be traced to them. The study ensured that none of the respondents is exposed to any risk or harm by adhering the safety protocols on COVID-19. The study ensured that the respondents had opportunity to withdraw their participation at any time without providing any justification. The study ensured that data from the study was encrypted and stored in Laptop which is protected from third parties access. The study stated the sources of funding for the research.

CHAPTER FOUR

RESULTS

4.1 Study results

This study results follows the following order in terms of presentation: "demographic characteristics of the respondents, psychological effect of COVID-19 on health professionals, impact of COVID-19 on the mental health of health professionals, influence of the demographic characteristics of healthcare professionals on psychological and mental health, coping social support systems utilized by healthcare professionals".

4.1.1 Demographic characteristics

The demographic characteristics are shown in Table 5. There were 283(66.6%) females whiles the remaining 142(33.4%) were males. The study results on the age distribution of the respondents showed that 205(48.2%) were aged 20-29 years, 202(47.5%) were aged 30-49 years and the rest 18(4.2%) being aged 50-69 years. The marital status of the respondents showed that 228(53.6%) were married, 172(40.5%) were single, 21(4.9%) were divorced and 4(0.9%) being widow/widower. There were 266(62.6%) Nurses, 80(18.8%) General Physicians (Doctors), 49(11.5%) Laboratory Technicians and 30(7.1%) Midwives. On the religious affiliation of the healthcare professionals, the results showed that 268(63.1%) were Christians, 153(36%) were Muslims and 4(0.9%) were Traditionalists.

Table 5: Demographic characteristics

		Frequency	Percent
Gender			
	Female	283	66.6
	Male	142	33.4
Age			
	20-29 years	205	48.2
	30-49 years	202	47.5
	50-69 years	18	4.2
Marital Status			
	Married	228	53.6
	Single	172	40.5
	Divorced	21	4.9
	Widow/Widower	4	0.9
Healthcare Professional			
	Nurse	266	62.6
	General Physician (Doctor)	80	18.8
	Midwife	30	7.1
	Laboratory Technician	49	11.5
Religion			
	Christian	268	63.1
	Muslim	153	36
	Traditionalist	4	0.9

Source: Field Data, 2022

4.1.2 Psychological effect of COVID-19 on health professionals

The objective of the study under this section was to examine the "psychological effect of COVID-19 on healthcare professionals" using the DASS-21. The first part of the analysis focuses on the reliability measure of the instrument and the last part addressed the "psychological effect of COVID-19 on healthcare professionals".

The reliability measure for the instrument has been computed and illustrated in Table 6. From Table 6, the Cronbach alpha value is 0.6 (nearest figure) and shows acceptable measure of internals consistency of the instrument (Mohamad, Sulaiman, Sern, & Salleh, 2015).

Table 6: Reliability measure of DASS-21 instrument for psychological effect

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.559	0.556	21

Source: Field Data, 2022

The "psychological effect of COVID-19 on healthcare professionals" was assessed using DASS-21 instrument and results are reported in Table 7.

The scores of each person was multiplied by 2 as recommended by the authors of the instrument and the score was interpreted as "normal, mild, moderate, severe, extreme severe" based on the score range.

The scores, interpretation together with frequency and percentage is showed in Table 7. It was discovered that 248(58.4%) had extreme severe depression, 163(38.4%) had severe depression and 14(3.3%) had moderate depression.

On the basis on anxiety experienced, it was found that 423(99.5%) had extreme severe

anxiety whiles 2(0.5%) had severe anxiety.

In reference to the level of stress experienced, it was revealed by their responses that 348(81.9%) had severe stress, 54(12.7%) had moderate stress and 23(5.4%) had extreme severe stress.

Table 7: Psychological effect of COVID-19 using DASS-21 instrument

	Interpretation	Score	Frequency	Percent
Depression				
	Moderate	14-20	14	3.3
	Severe	21-27	163	38.4
	Extreme severe	28+	248	58.4
Anxiety				
	Severe	15-19	2	0.5
	Extreme severe	20+	423	99.5
Stress				
	Moderate	19-25	54	12.7
	Severe	26-33	348	81.9
	Extreme severe	34+	23	5.4

Source: Field Data, 2022

4.1.3 Impact of COVID-19 on the mental health of health professionals

The second objective relates with the "impact of COVID-19 on mental health" and is presented in two parts. The first part outlines the reliability measure of the IES-6 and the second part deals with the results of the IES-6 scale as a measure of mental health.

From Table 8, it was discovered that the Cronbach alpha coefficient is 0.6 and shows acceptable rate of internal consistency and scales can be relied upon for measuring mental health impact (Mohamad et al., 2015).

Table 8: Reliability measure for mental health using IES-6

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.612	0.605	6

Source: Field Data, 2022

The results of the study on the "mental impact of COVID-19" are illustrated in Table 9. A mean score of 1 denotes low adverse mental impact, 2 signifies moderate adverse mental impact and 3 and above indicates high adverse mental impact.

The results of the study showed that most of the respondents on average moderate intrusive behaviour (M = 2.25, SD = 0.56). In terms of two items used to measure intrusive behaviour it was discovered that a greater number of healthcare professions experience moderate intrusion in the following: "I thought about it when I didn't mean to" (M = 2.29, SD= 0.62) and "Other things kept making me think about it" (M = 2.21, SD=0.52).

On the second dimension which is concerned with hyper-arousal behaviour, it was observed that a greater proportion of the healthcare professionals exhibited moderate hyper-arousal behaviour (M = 2.17, SD = 0.55). The moderate hyper-arousal behaviour emanated in the

form: I "felt watchful or on-guard" (M = 2.14, SD = 0.54) and "I had trouble concentrating" (M = 2.2, SD = 0.57).

On the last dimension of IES-6 scale address the presence of avoidance behaviour. It was found that on average majority of the respondents had moderate avoidance behaviour (M = 2.30, SD = 0.63). The avoidance behaviour manifested in the following forms: "I was aware that I still had a lot of feelings about it, but I didn't deal with them" (M = 2.28, SD =0.66) and "I tried not to think about it" (M = 2.33, SD = 0.60).

The results demonstrate that overall most of the healthcare professionals (M = 2.2, SD = 0.59) had moderate adverse mental behaviours in the form of moderate intrusion, hyper-arousal and avoidance behaviours which requires immediate attention and counselling.

Table 9: Mental health impact of COVID-19 using IES-9

	N	Min	Max	Mean	Std. Dev.
Intrusion					
"I thought about it when I didn't mean to	425	1	4	2.29	0.628
Other things kept making me think about it"	425	1	4	2.21	0.509
Average Intrusion score				**2.25**	**0.5685**
Hyper-Arousal					
"I felt watchful or on-guard"	425	1	4	2.14	0.543
"I had trouble concentrating"	425	1	4	2.2	0.571
Average Hyper-Arousal score				**2.17**	**0.557**
"I was aware that I still had a lot of feelings about it, but I didn't deal with them"	425	1	4	2.28	0.66
"I tried not to think about it"	420	1	4	2.33	0.608
Average Avoidance score				2.305	0.634
Overall mean and standard deviation				**2.238**	**0.5955**

Source: Field Data, 2022

Table 10: Differences in experiences of Healthcare Professionals

Characteristics						
		Frontline	**Others**	**Total**	**X^2**	**P-value**
Depression	Moderate	0	14	14	**2.091**	**0.351**
	Severe	18	145	163		
	Extreme severe	31	217	248		
		49	376	425		
Anxiety	Severe	0	2	2	**0.262**	**0.609**
	Extreme severe	49	374	423		
		49	376	425		
Stress	Moderate	4	50	54	**1.696**	**0.428**
	Severe	41	307	348		
	Extreme severe	4	19	23		
		49	376	425		
Mental Health	Moderate	36	292	328	**0.432**	**0.511**
	Severe	13	84	97		
		49	376	425		

Source: Field Data, 2022

The study sought to determine if the experiences of frontline healthcare professionals in terms of psychological health (depression, anxiety and stress) and mental differed from other category of healthcare professionals (Table 10). The frontline healthcare professionals include nurses, midwives and doctors and others include laboratory technicians. It is evident from Table 10 that depression (X^2 = 2.09, p > 0.05), anxiety (X^2 = 0.269, p > 0.05), and stress levels (X^2 = 1.696, p > 0.05) of the frontline professionals did not significant differ from other category of healthcare professionals. Also, there was insignificant difference (X^2 = 1.696, p > 0.05) between the mental health of frontline healthcare professionals and other category of healthcare professional.

4.1.4 Influence of the demographic characteristics of healthcare professionals on psychological and mental health

The third objective of the study addresses the influence of the demographic profile of the healthcare professionals on both psychological and mental health using DASS-21 and IES-6 instruments.

The first part of the results deal with the presence of relationship between the demographics and psychological health using the chi-square statistics. From Table 11, it was identified that religion had significant association (X^2 = 19.4698, $p < 0.05$) with psychological health. The remaining demographic variables, gender (X^2 = 0.972, $p > 0.05$), age (X^2 = 4.1654, $p > 0.05$), marital status (X^2 = 11.2310, $p > 0.05$) and cadre of healthcare professionals (X^2 = 3.5493, $p > 0.05$) weak or insignificant association with psychological health.

The second part of the analysis is presented in Table 12. The study examined the presence of relationship between the demographics and mental health of the respondents. The results of the chi-square statistics indicate that marital status of the healthcare professional had significant association (X^2 = 14.954, $p < 0.05$) with mental health. This result implies that changes in the marital status of the healthcare professionals is significant predictor of the mental health status of the respondents during the wake of the COVID-19 outbreak. Nonetheless, it was observed that gender (X^2 = 1.028, $p > 0.05$), age (X^2 = 6.061, $p > 0.05$), cadre of healthcare professionals (X^2 = 10.108, $p > 0.05$) and religion (X^2 = 7.651, $p > 0.05$) had weak or insignificant association with mental health.

Table 11: Influence of demographics on psychological health

Characteristics		Psychological Health					
		Moderate	Severe	Extreme severe	Total	X^2	P-value
Gender	Female	38	230	15	283	**0.972**	**0.0560**
	Male	20	115	7	142		
		59	345	22	425		
Age	20-29 years	24	167	14	205	**4.1654**	**0.384**
	30-49 years	30	165	7	202		
	50-69 years	4	13	1	18		
		58	345	22	425		
Marital Status	Married	31	189	8	228	**11.2310**	**0.081**
	Single	23	137	12	172		
	Divorced	2	18	1	21		
	Widow/Widower	2	1	1	4		
		58	345	22	425		
Cadre of Healthcare Professional	Nurse	36	216	14	266	**3.5493**	**0.737**
	General Physician	12	65	3	80		
	Midwife	6	23	1	30		
	Laboratory Technician	4	41	4	49		
		58	345	22	425		
Religion	Christian	34	218	16	268	**19.4698**	**0.001***
	Muslim	24	125	4	153		
	Traditionalist	0	2	2	4		
		58	345	22	425		

Source: Field Data, 2022 ***significant @5%**

Table 12: Influence of Demographics on Mental Health

Characteristics		Mental Health					
		A little bit	Moderate	Quite a bit	Total	X^2	P-value
Gender	Female	32	242	9	283	**1.028**	**0.598**
	Male	18	117	7	142		
		50	359	16	425		
Age	20-29 years	26	172	7	205	**6.061**	**0.195**
	30-49 years	19	175	8	202		
	50-69 years	5	12	1	18		
		50	359	16	425		
Marital Status	Married	29	194	5	228	**14.954**	**0.021***
	Single	17	148	7	172		
	Divorced	3	15	3	21		
	Widow/Widower	1	2	1	4		
		50	359	16	425		
Cadre of Healthcare Professional	Nurse	36	225	5	266	**10.108**	**0.120**
	General Physician	8	67	5	80		
	Midwife	3	24	3	30		
	Laboratory Technician	3	43	3	49		
		50	359	16	425		
Religion	Christian	30	231	7	268	**7.651**	**0.105**
	Muslim	20	125	8	153		
	Traditionalist	0	3	1	4		
		50	359	16	425		

Source: Field Data, 2022 ***significant @5%**

4.1.5 Coping social support systems utilized by healthcare professionals

The fourth objective of the study explores the "coping social support systems (CSS) adopted by the healthcare professionals during the COVID-19 outbreak". The first part of the analysis presents the reliability measure of the instrument using the CSS-12 instrument. The results of the Cronbach alpha coefficient in Table 12 indicates a reliability measure of 0.9, which demonstrates high internal consistency of the constructs used to measure availability of social support for the healthcare professionals (Mohamad et al., 2015).

Table 13: Reliability measure for coping social support

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.912	0.92	12

Source: Field Data, 2022

The CCS-12 instruments results is illustrated in Table 13. The interpretation of the instrument is as follows: "a mean score of 1-2.9 is considered a low support, a score of 3-5 is deemed as a moderate support and a score of 5.1 to 7 considered as a high support".

From Table 14, on the Family sub-scale score, the findings revealed that on average majority of the respondents had high social support (M = 5.36, SD = 0.87) from their family.

The study also found that generally the respondents had high social support in all the items used to measure family support, which included the following: "My family really tries to help me" (M = 5.37, SD = 0.881), "I get emotional help and support I need from my family" (M = 5.32, SD = 0.848), "I can talk about my problems with my family" (M = 5.36, SD = 0.885), and "My family is willing to help me make decision" (M = 5.39, SD =

0.87).

With reference to the second sub-scale which is social support from friends, the results postulate that on average a predominant number of the respondents had high social support (M = 5.58, SD = 0.737) from friends.

The study similarly found that all the four items used to measure the social support from friends showed evidence of high social support: “My friends really try to help me” (M = 5.63, SD = 0.744), “I can count on my friends when things go wrong” (M = 5.53, SD = 0.739), “I have friends with whom I can share my joys and sorrows” (M = 5.58, SD = 0.742), and “I can talk about my problems with my friends” (M = 5.58, SD = 0.723).

On the last sub-scale, which relates with support from significant others, the results of the descriptive statistics indicate that on average majority of the respondents had high social support (M = 5.5, SD = 1.003) from significant others.

In terms of all the four items used to the determine the presence of support from significant others, significant number of them stated that they had high social support in the following items: “There is a special person who is around when I am in need” (M = 5.48, SD = 1.005), “There is a special person with whom I can share my joys and sorrows” (M = 5.5, SD = 0.993), “I have a special person who is a real source of comfort to me” (M = 5.49, SD = 0.993), and “There is a special person in my life who cares about my feelings” (M = 5.53, SD = 1.021).

The study results established that majority of the respondents had high social support from family, friends and significant others (M = 5.513, SD = 0.870) to mitigate the adverse effect of the COVID-19 outbreak on their general health and wellbeing

Table 14: Coping social support for the healthcare professionals

	N	Min	Max	Mean	Std. Dev.
Family					
"My family really tries to help me"	425	3	7	5.37	0.881
"I get emotional help and support I need from my family"	425	3	7	5.32	0.848
"I can talk about my problems with my family"	425	3	7	5.36	0.885
"My family is willing to help me make decision"	425	3	7	5.39	0.87
Average Family sub-scale score				**5.36**	**0.871**
Friends					
"My friends really try to help me"	420	3	7	5.63	0.744
"I can count on my friends when things go wrong"	425	3	7	5.53	0.739
"I have friends with whom I can share my joys and sorrows"	425	3	7	5.58	0.742
"I can talk about my problems with my friends"	425	3	7	5.58	0.723
Average Friends sub-scale score				**5.58**	**0.737**
Significant Others					
"There is a special person who is around when I am in need"	425	3	7	5.48	1.005
"There is a special person with whom I can share my joys and sorrows"	425	3	7	5.5	0.993
"I have a special person who is a real source of comfort to me"	425	3	7	5.49	0.993
"There is a special person in my life who cares about my feelings"	425	3	7	5.53	1.021
Average Significant Others sub-scale score				5.5	1.003
Overall scale score				**5.513**	**0.870**

Source: Field Data, 2022

CHAPTER FIVE

DISCUSSION

4.1 Discussion

The discussion of findings is presented in the following order: "psychological effect of COVID-19 on health professionals, impact of COVID-19 on the mental health of health professionals, influence of the demographic characteristics of healthcare professionals on psychological and mental health, coping social support systems utilized by healthcare professionals".

4.1.1 Psychological effect of COVID-19 on health professionals

The findings demonstrate that generally the respondents had adverse psychological outcomes. For instance it was revealed that majority of the healthcare professionals had extreme severe depression (n = 248, 58.4%), extreme severe anxiety (n = 423, 99.5%) and severe stress level (n = 348, 81.9%) which required immediate attention and treatment. These results corroborates with Raj et al. (2017) that showed different cadre of healthcare professionals had high levels of anxiety, insomnia, depression and stress. However, less than half of healthcare professionals in China was reported mild to moderate anxiety levels (Liu et al., 2020). Notwithstanding a meta-analysis on impact of healthcare professionals on China showed that healthcare professionals had reported high stress, anxiety and depression than any other professional in the general population (Pan, Zhang, & Pan, 2020). Additionally, a study in Ghana rather found low levels of "anxiety, depression and stress" among respondents in a hospital in the Ashanti region. The disparity in the results might be attributed to the fact that a greater burden of COVID-19 cases were reported in the Greater Accra region. Moreover, a study in the Kingdom of Saudi Arabia found that majority of the healthcare professional exhibited elevated levels of

"anxiety and depression" coupled with moderate level of stress and was attributed to insufficient training on infection prevention (Qasem Surrati, Asad Mansuri, & Ayadh Alihabi, 2020). The implication of this findings demonstrate that all cadre of healthcare professionals encounter severe adverse psychological outcome following their exposure to COVID-19 and requires immediate redress. The continuous adverse psychological effect can lead to loss of productivity (through increase in sick leave), nurse burnout, poor quality of nursing care, increase in intention to quit the profession and sometimes shirking of responsibility. The study found that there was no significant difference between frontline healthcare professionals and other category of healthcare professionals in terms of psychological experience. Contrary to this result, Danet (2021) found that the psychological adverse effect of COVID-19 was higher for the frontline workers than any other healthcare personnel. In addition, the psychological adverse effect of the pandemic was higher for healthcare professionals in Asia than those in other continents. However, a related study also found insignificant difference between different cadre of healthcare professionals in terms of psychological effects (Qasem Surrati, Asad Mansuri, & Ayadh Alihabi, 2020).

4.1.2 Impact of COVID-19 on the mental health of healthcare professionals

The study found that overall most of the respondents had moderate adverse mental behaviours in the form of moderate intrusion, hyper-arousal and avoidance behaviours which requires immediate attention and counselling. The findings established that most of the respondents on average exhibited/had moderate intrusive behaviour. Also, on the second dimension of the scale, majority of the healthcare professionals exhibited moderate hyper-arousal behaviour. On the last dimension of the scale on presence of avoidance behaviour, it was found that majority of the respondents had moderate avoidance behaviour. These results suggest that the healthcare

professionals had adverse mental health following the outbreak of COVID-19 and is consistent with a study among healthcare professionals in the United Kingdom (Greene et al., 2021). Also, a review study on COVID-19 effect on healthcare professionals also found several symptoms of negative mental health behaviours such as depression, anxiety, sleep disorders and posttraumatic stress disorder (Giorgi et al., 2020). In addition, a study among healthcare professionals in the United States of America showed that several symptoms of adverse mental health following the outbreak of COVID-19 and included depression, alcohol abuse and posttraumatic stress disorder (Hennein, Mew, & Lowe, 2021). In agreement to the study findings, El-Hage et al. (2020) found that the uncertainty about COVID-19 in terms of its rapid spread, lack of knowledge of the virus, deaths among healthcare professionals and severity of symptoms have predispose them to a higher probability of developing elevated levels of burnout, depression, anxiety and posttraumatic stress disorder. Similarly, a study among healthcare professionals in Pakistan stood a higher probability of developing depression and insomnia (Wasim, Raana, Bushra, & Riaz, 2020). Early screening and treatment of healthcare professionals is crucial as a preventive measure against developing adverse mental conditions such as posttraumatic stress disorder and sleep disorder. Flexible rotation routine coupled with provision of adequate personal protective equipment is required to ensure that they have adequate rest and sense of protection from COVID-19 infection.

4.1.3 Influence of the demographic characteristics of healthcare professionals on psychological and mental health

The findings established that religion had significant association ($X^2 = 19.4698$, $p < 0.05$) with psychological health. This result suggests that religious affiliation influences the psychological health of respondents during the wake of the COVID-19 outbreak in Ghana. In contrast, Conti et al. (2020) study that found that demographic variables such as gender is a predictor of

psychological health of healthcare professionals. In the same light, Ofori et al. (2021) revealed that only one demographic variable (job description) had significant influence on psychological health of healthcare professionals in Ghana. However, the study also found that religion of the respondents did not predict psychological health. Notwithstanding a review study by Philip and Cherian (2020) suggest that middle-age healthcare professionals, gender, marital status, having a relations diagnosed of COVID-19, lower level of education and previous mental condition predicts higher chance of developing adverse psychological outcome. Moreover, a study across four countries in Europe found that area, employment, education and gender have strong predictive power on psychological health of healthcare professionals (Østertun Geirdal et al., 2021).

The findings revealed that marital status of the healthcare professional had significant association ($X^2 = 14.954$, $p < 0.05$) with mental health. This result implies that changes in the marital status of the healthcare professionals is significant predictor of the mental health status of the respondents during the wake of the COVID-19 outbreak. Khanal et al. (2020) study contends that previous history of mental condition, inadequate precautionary measures and stigmatization predicts mental health of healthcare professionals. In Korea, a study found that healthcare professionals with chronic disease had higher probability of developing high levels of depression and anxiety (Yang, Kwak, & Chang, 2021). In the Mexico, a study among healthcare professionals contend that grieving over a friend or love one who had passed away from COVID-19, status of healthcare professional, unavailability of resting time and being a frontline healthcare worker predicted insomnia, depress and posttraumatic stress disorder (Robles et al., 2020). The findings of the study postulate that religious affiliation and marital status of healthcare professionals are important variables that should be considered when attending to psychological and mental health of healthcare professionals. This is because they

have substantial outcomes on how healthcare professionals perceive psychological and mental effects of COVID-19 pandemic.

4.1.4 Coping social support systems utilized by healthcare professionals

The study results showed that majority of the respondents had high social support from family, friends and significant others to mitigate the adverse effect of the COVID-19 outbreak on their general health and wellbeing. On the Family sub-scale score, the findings revealed that on average majority of the respondents had high social support from their family. With regards to the second sub-scale which is social support from Friends, it was identified that a most of the healthcare professionals had high social support from friends. In the same light, on the last sub-scale which is on support from Significant Others, the study found that majority of the respondents had high social support from significant others. These results resonate with Htay et al. (2021) that found that majority of the healthcare professional were getting family support and coping with the pandemic and having positive outlook to life. Another study conducted in Saudi Arabia reported that most of the healthcare professionals were stress, felt compelled to work and adopted the following coping mechanisms: having comfort in religion, receiving advice from family, friends and colleagues, making jokes out of the situation and having a positive outlook to the situation (Natividad, Aljohani, & Gamboa, 2021). Nevertheless, a study found that most of the healthcare professionals did not receive social support from healthcare professionals (physicians and therapists) and they learned to cope with the situation by creating humour at the work place, engaging frequent and transparent communication and donning personal protective equipment. (Rose, Hartnett, & Pillai, 2021). This results of the study have demonstrate the relevance of social networks in helping healthcare professionals to cope with the adverse effect of COVID-19. The social protection provided by "family, friends and significant others" are very vital in helping healthcare professionals cope with the pandemic

and have the inner strength deliver their best performance.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study found that majority of the healthcare professionals are suffering from adverse psychological effects from their exposure to COVID-19. The findings demonstrate the respondents have been bedeviled with severe symptoms of depression, anxiety and stress which can lead to deterioration of their psychological health and translate into mental conditions like posttraumatic stress disorder. Also, the study revealed the most of the healthcare professionals had symptoms of poor mental health in the form of high levels of intrusive, hyper-arousal and avoidance behaviours. These behavioural tendencies denotes poor mental health which can lead burnout, poor quality of care and high intention to quit the profession. The study also found that demographic characteristics (religion and marital status) of the respondents had high significant association with psychological and mental health and this relates with existing literature that found that healthcare professionals relied on God to cope with adverse effects of COVID-19. The coping mechanism adopted by the respondents in the forms of social support from family, friends and significant others relates with comparable literature. The findings of the study showed the relevance of social support system in dealing with mental and psychological issues facing healthcare professions in the wake of COVID-19 outbreak.

6.2 Recommendations

1. The study proposes that the management of the Hospital psychological support should be provided to all healthcare professionals.

2. The study suggests that Ghana Health Service should liase with Ministry of Health to provide clinical psychologists for all healthcare facilities that are receiving and treating COVID-19 patients to provide mental and psychological support.
3. The study proposes that religious beliefs and marital status of each healthcare professional should be of concern to policy makers in the Ministry of Health when drafting policy intervention programmes aimed help healthcare workers cope with adverse effect of COVID-19.
4. The study suggest that family, friends and loved ones should be encouraged to show emotional and psychological support to healthcare professionals since they have been found to be a great source of social support system.
5. The study proposes that the management the Hospital should ensure that all healthcare professionals are closely monitored and evaluated for signs of adverse mental and psychological health in order to intervene on time to save them from developing mental conditions.

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APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

UNIVERSITY OF GHANA

Dear Respondent,

I am a student of University of Ghana and conducting a research on "**IMPACT OF COVID-19 OUTBREAK ON HEALTH CARE PROFESSIONALS IN GHANA: A STUDY AT GREATER ACCRA REGIONAL HOSPITAL**". "It is to collect information for solely academic exercise. Any information provided will be kept safe, treated confidential and will not be divulged to any third party without recourse to you. Thank you for your cooperation. Kindly, read and tick or fill the appropriate box or space".

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 20-29 ☐ 30-49 ☐ 50-69 ☐ 70 and above
3. Marital Status: ☐ Married ☐ Single ☐ Divorced ☐ Widow/Widower
4. Healthcare professional : ☐ Nurse
   ☐ General Physician (Doctor)
   ☐ Midwife
   ☐ Laboratory Technician
   ☐ Others, please specify ……..
5. Religion: ☐ Christian ☐ Muslim ☐ Traditionalist
   ☐ Others, please specify ……..

SECTION B: PSYCHOLOGICAL EFFECT OF COVID-19 OUTBREAK

"You are requested to state the extent to which you agree or disagree with the following statements. Where **NEVER** means not at all, **SOMETIMES** suggest some of the time, **OFTEN** refers to a good part of the time and **ALMOST ALWAYS** denotes most of the time".

0	1	2	3
Never	Sometimes	Often	Almost always

No	Statements	0	1	2	3
	Depression subscale				
1.	"I could not seem to experience any positive feeling at all"				
2.	"I found it difficult to work up the initiative to do things"				
3.	"I felt that I had nothing to look forward to"				
4.	"I felt down-hearted and blue"				
5.	"I was unable to become enthusiastic about anything"				
6.	"I felt I was not worth much as a person"				
7.	"I felt that life was meaningless"				
	Anxiety subscale				
1.	"I was aware of dryness of my mouth"				

2.	"I experienced breathing difficulty"				
3.	"I experienced trembling (e.g., in the hands)"				
4.	"I was worried about situations in which I might panic and make a fool of myself"				
5.	"I felt I was close to panic"				
6.	"I was aware of the action of my heart in the absence of physical exertion"				
7.	"I felt scared without any good reason"				
	Stress subscale				
1.	"I found it hard to wind down"				
2.	"I tended to over-react to situations"				
3.	"I felt that I was using a lot of nervous energy"				
4.	"I found myself getting agitated"				
5.	"I found it difficult to relax"				
6.	"I was intolerant of anything that kept me from getting on with what I was doing"				
7.	"I felt that I was rather touchy"				

Source: (Lovibond & Lovibond, 1995)

SECTION C: IMPACT OF COVID-19 ON MENTAL HEALTH OF HEALTHCARE PROFESSIONALS (IES-6)

"You are required to indicate the extent to which you have been stressed or bothered by difficulties you have faced following the outbreak of the COVID-19".

0	1	2	3	4
Not at all	**A little bit**	**Moderate**	**Quite a bit**	**Extreme**

No	Statement	0	1	2	3	4
	Intrusion					
1.	"I thought about it when I didn't mean to"					
2.	"Other things kept making me think about it"					
	Hyper-Arousal					
1.	"I felt watchful or on-guard"					
2.	"I had trouble concentrating"					
	Avoidance					
1.	"I was aware that I still had a lot of feelings about it, but I didn't deal with them"					
2.	"I tried not to think about it"					

Source: (Thoresen et al., 2010)

SECTION D: COPING SOCIAL SUPPORT SYSTEMS EMPLOYED BY HEALTHCARE PROFESSIONALS

"You are required to indicate the extent to you agree or disagree to the support you have received from family, friends and significant others following the outbreak of COVID-19".

1	2	3	4	5	6	7
Very strong disagree	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**	**Very strongly agree**

No	Statements	1	2	3	4	5	6	7
	Family							
1.	"My family really tries to help me"							
2.	"I get emotional help and support I need from my family"							
3.	"I can talk about my problems with my family"							
4.	"My family is willing to help me make decision"							
	Friends							
1.	"My friends really try to help me"							
2.	"I can count on my friends when things go wrong"							
3.	"I have friends with whom I can share my joys and sorrows"							

4.	"I can talk about my problems with my friends"							
	Significant Others							
1.	"There is a special person who is around when I am in need"							
2.	"There is a special person with whom I can share my joys and sorrows"							
3.	"I have a special person who is a real source of comfort to me"							
4.	"There is a special person in my life who cares about my feelings"							

Source: (Zimet et al., 1990)

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

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9th September, 2022

My Ref. GHS/RDD/ERC/Admin/App 22/312
Your Ref. No.

Yvonne Afriyie Prempeh
Department of Health Policy, Planning and Management, School of Public Health
P.O. Box LG 13, University of Ghana, Legon

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC: 045/06/22**
Study Title	Impact of Covid-19 Outbreak on Healthcare Professionals in Ghana: A Study at the Greater Accra Regional Hospital
Approval Date	9th September, 2022
Expiry Date	8th September, 2023
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED .....

Mr. Kofi Wellington
(GHS ERC Vice Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra