HEALTH CARE PROVIDERS' PSYCHOLOGICAL RESPONSES AND ASSOCIATED FACTORS DURING THE COVID – 19 PANDEMICS AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL KISUMU COUNTY, KENYA

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DEDICATION

To my dear and loving parents Mr. Thomas Bundi and Isabella Moraa, my wife and children. They gave me the will and determination to complete my master's degree. May the Almighty God bless you.

ABSTRACT

Sustainable Development Goal (SDG) number three targets to ensure healthy lives and promotion of well-being for all. However, COVID – 19 pandemic is an unprecedented challenge to economies, livelihood, physical and mental well-being of people globally hindering the achievement of the goal. The purpose of the study was to assess the health care providers' psychological responses and associated factors during COVID - 19 pandemic at Jaramogi Oginga Odinga Teaching and Referral Hospital. This study measured the levels of health care providers' psychological responses during COVID – 19, determined the association of occupational, socioeconomic factors and health care providers' psychological responses during the pandemic. A total of 202 respondents participated in the study. This was a hospital based cross sectional study at JOOTRH. Stratified sampling method was used to select the study participants. The survey questionnaire consisted of six components: demographic factors, occupational factors, socioeconomic factors and the multi - dimensional scale of perceived social support. Depression and anxiety were measured by standardized questionnaires, the 9 – item Patient Health Questionnaire (PHQ - 9) and the 7 – item Generalized Anxiety Disorder scale (GAD - 7) respectively. Data was analysed using the statistical package for Social Science version 28. Pretesting of the questionnaire was done at Kisumu County Hospital to appraise the tools and determine their feasibility. Face and content validity was used to determine validity. Pearson chi- Square was used to determine the factors associated with the health care providers' psychological responses at $p \leq 0.05$. The overall prevalence of depression was 57.4% and GAD at 59.9%. Age (OR 0.1, p = < 0.001), gender (OR 0.4, p = 0.002), marital status (OR 4.2, p = < 0.001), years of experience (OR 0.2, p = < 0.001), Personal Protective Equipment (OR 0.4, P = 0.013), facing stigma (OR 3.1, p = < 0.001), risk perception (OR 2.7, p = 0.015), level of education (OR 0.5, p = 0.019), living with partner and children (OR 2.4, p = 0.002), were associated with GAD. With regard to depression, age (OR 0.5, p = 0.006), marital status (OR 3.2, p = < 0.001), years of experience (OR 0.5, p = 0.018), facing stigma (OR 2.1, P = 0.008), living with partner and children (OR 1.7, p = 0.045), low support from family (OR 2.1, p = 0.038), were associated with depression. The study concluded that there were high rates of anxiety and depression with the old, married, being stigmatised, insufficient personal protective equipment and living with partner and children being associated with high risk of GAD and depression. It is recommended that health care institutions should provide psychological support to health care providers during pandemics and create conducive working environment. Results from this study will enhance policies and programs that address the needs of healthcare providers during a pandemic.

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LIST OF ABBREVIATIONS AND ACRONYMS

COVID – 19	:	Coronavirus disease of 2019
EBV	:	Ebola Virus
JOOTRH	:	Jaramogi Oginga Odinga Teaching and Referral Hospital
KMPDU	:	Kenya Medical Pharmacists and Dentists Union
MERS – CoV	:	Middle East Respiratory syndrome coronavirus
MMUST	:	Masinde Muliro University of Science and Technology
MOH	:	Ministry of Health
NACOSTI	:	National Commission for Science, Technology and Innovations
PPE	:	Personal Protective Equipment
SARS	:	Severe Acute Respiratory Syndrome
SARS – CoV-2:		Severe Acute Respiratory Coronavirus 2
SDGs	:	Sustainable Development Goals
SPSS	:	Statistical Package for the Social Sciences
WHO	:	World Health Organization

OPERATIONALIZATION OF VARIABLES

The following words will be used for the purpose of this research:

COVID - 19 – Refers to a viral disease first detected in Wuhan China in 2019 caused by corona virus.

Health care providers - Refers to trained, qualified and registered doctors, nursing staff members, dentists, pharmacists, laboratory officers, and clinical officers.

Psychological responses – Refers to a state of emotional suffering associated with depression and anxiety.

Occupational factors – Refers factors relating to the facility's capability in providing infrastructure in running the hospital

Psychological factors – Refers to factors relating to one's personality limiting or enhancing the way that one responds to stress.

Socioeconomic factors – Refers to the support system, social and financial matters of the health care providers

Resilience – Refers to the generalized capacity to positively adapt after experiencing hardship.

Traumatic event – Refers to an occurrence that brings about exceptionally strong reactions with a likelihood of overwhelming an individual's capabilities to deal with the event.

CHAPTER ONE

INTRODUCTION

1.1 Overview

Chapter one presented the study background, statement of the problem, the broad objective, specific objectives, research questions, justification, limitations, conceptual framework and finally operationalization of variables.

1.2 Background of the Study

During public health emergencies the health care systems are normally overwhelmed and health care providers during the pandemic work for more time as before the pandemic, and they also become susceptible to infection when caring and treating patients who have the infection (Almaghrabi et al., 2020). The ongoing Corona Virus Disease of 2019 becomes the number six health crisis of public health in the world, with the first case recognized in the month of December, 2019 in Wuhan China (Adnan *et al.,* 2020 ; Kuldeep et al., 2020). The pandemic has created a global, regional and local crisis and due to its threatening worldwide effect, the World Health Organization on 30TH January 2020 declared it a pandemic on 11th March 2020 (WHO, 2020). The immense toll of the pandemic has continued to rise and by June 2021 the total confirmed cases globally stood at 176,703,325 with 3,824,115 deaths, Africa having 3, 656,605 cases and 90,122 deaths (WHO, 2021). Locally in Kenya the total number of confirmed cases stood at 176,137 with 3,428 deaths (MoH, 2021).

Multiple studies conducted recently in Europe, USA and Asia have demonstrated anxiety, depression and burnout had high rates during the current pandemic (Pappa et al., 2020 ; Chew et al., 2020 ; Shechter et al., 2020; Martínez et al., 2020 ; Wang *et al.,* 2021; Preti

et al., 2020 ; Lai *et al.,* 2020 ; Si et al., 2020). A study across 31 countries globally done between April and May 2020 at the beginning of the COVID - 19 pandemic to assess mental health outcomes portrayed a general prevalence of 60% anxiety and prevalence of depression at 53%. The findings from the study highlighted mental health problems at a substantial level among health care providers and warranted effective mental health support measures (Htay et al., 2020).

In Kenya a study on anxiety and depression among the frontier health care workers established that the majority of health care workers presented with mild anxiety at 34% and the prevalence of depression was 54%. The levels of anxiety differed from one cadre to another similar to depression (Onchonga et al., 2021).

The susceptibility during the public health emergencies and pandemics among health care providers is specifically related to fear of contracting the virus as a health care provider, spreading to family members, increased work stressors in addition to making key life saving measures (Xiang *et al.,* 2020). Similarly the ever increasing case load of the pandemic, deaths, immense work, insufficient supplies and the personal protective equipment, widened coverage by the media, lack of definitive management insufficient family, friend and significant other support can have major impacts on the psychological wellbeing during disease outbreaks (Lai et al., 2020; Zhang et al., 2020).

Risk factors for psychological responses include being female health care provider, a nurse (Onchonga et al., 2021), having few years of experience, being young, single, working as a frontline health care provider, being young or less than 30 years (Rumeysa et al., 2020 ; Slama *et al.,* 2021).

Health care providers' psychological responses during a crisis have been associated with a number of adverse outcomes which can be short or long term (Sirois & Owens, 2021;

Lai *et al.,* 2020). This includes occupational effects such as diminished quality of patient health care, getting easily irritated with colleagues and impairments in cognition (Ora *et al.,* 2015 ; Gilboa *et al.,* 2008 ; Sirois & Owens, 2021)

It was therefore necessary to conduct a study to get more information on health care providers' psychological responses during COVID – 19 pandemic at JOOTRH, Kisumu, Kenya.

1.3 Statement of the Problem

The global development agenda targets to make sure people live healthy lives and promotion of welfare and prosperity for all through Sustainable Development Goal (SDG) number three (KNCHR, 2017) This has had negative influence on the world economic situation, the people's livelihood and well-being of people mentally and physically hindering the achievement of the global development agenda (WHO, 2020). Naturally, psychological problems are common in the general population but at times, they are more pronounced among health care providers due to their work responsibilities (Preti *et al.,* 2020). Health care providers' studies on those involved in emergencies of public health, such as the outbreak of an diseases which are infectious described that majority one in six might develop remarkable symptoms of psychiatric illnesses (Carmassi *et al.,* 2020;Mealer *et al.,* 2009). Health care providers who have the occurrence of psychological responses are also at risk of experiencing unfavourable outcomes at personal level including abuse and misuse of substances, suicide and physical problems, a study during the current pandemic has demonstrated that when anxiety is above normal it weakens the defenses in the body increasing the risk of contracting the virus (Jawad *et al.,* 2021 ; Taylor *et al.,* 2007).

The health care providers' circumstances in still developing countries will be worsened due to challenges of prolonged low funding, instabilities in countries, increased disease burden, understaffing, decreased human resources to take care of the population health and reduced allotment of funds in the sector of health in those countries (Jenkins *et al.,* 2015). As a consequence, the providers of health care will be working for prolonged periods in demanding work environment (Jenkins *et al.,* 2011). In Africa many parts continue to grapple with the pandemic cases which are significantly rising due to limited resources to adequately tackle the pandemic including minimal intensive care units, insufficient medical resources and infrastructure (Chersich et al., 2020).

Kenya with similar and perhaps worse situation should be prepared for adverse effects of the pandemic owing to inadequacies in the health infrastructure, funding of health in both national and county government and poor policies to address systemic challenges within the health sector (Onchonga *et al.,* 2020; MoH, 2015). A preliminary report looking into the mental health status of health providers in Kenya during the current pandemic has indicated; 36% reported anxiety, majority 68% had mild symptoms of depression; seventeen percent had moderate symptom while the remaining 16% had moderately severe to severe symptoms (Kwobah *et al.,* 2020).

Kisumu County, in western Kenya around Lake Victoria is among the worst hit counties in the country with COVID-19 pandemic being strategically located as an entrance for Kenya into the regions around the lake in Africa and being the main commercial and transport hub. The first COVID – 19 case was reported on May 27, 2020 (MoH, 2021) and on May 2021 the County became the first county in Kenya to report cases of the delta variant of corona virus from India (MoH., 2021). There were 8,897 cases with 285 deaths

as of August 2021 (van Duijn *et al.,* 2021). The County has continued to face tremendous economic challenges and limited medical resources to maintain physical and mental well-being during the pandemic.

The County's Integrated Development Plan (CIDP) indicates the doctor: population ration to be at 1: 44,634 and the nurse: population to be at 1: 2, 383. Further 14% of patients seeking services at JOOTRH report waiting between 2 – 5 hours in the queue pointing to insufficient number of health care providers within the county (KNCHR, 2017 ; Ministry of Health in Kenya, 2015). The problem is compounded by a high prevalence of HIV/AIDS infection 16.3 % and the fact that the county has no well laid official plan to respond to mental health issues within the large strategic responses for COVID – 19 as the cases continue to surge (MoH, 2015; NACC, 2018). It was therefore of utmost priority to get an understanding of how this will affect their psychological well-being during the pandemic. For that basis this study sought to assess the health care providers' psychological responses during the pandemic at JOOTRH, Kisumu County, Kenya.

1.4 Broad Objective

To assess the health care providers' psychological responses and associated factors during the COVID – 19 pandemic at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kisumu county, Kenya.

1.5 Specific Objectives

1. To measure the levels of health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu County, Kenya.

2. To determine the association of occupational factors and health care providers' psychological responses during the COVID - 19 pandemic at JOOTRH, Kisumu County, Kenya.

3. To examine the association of psychological factors and health care provider' psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu County, Kenya.

4. To determine the association of socio-economic factors and health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu county, Kenya.

1.6 Research Questions

1. What are the levels of the health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu County, Kenya.?

2. What is the association of occupational factors and health care providers' psychological responses during COVID – 19 at JOOTRH, Kisumu County, Kenya?

3. What is the association of psychological factors and health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu County, Kenya?

4. What is the association of socio-economic factors and health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu county, Kenya.

1.7 Justification of the Study

This study sought to assess health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH. This is relevant because evidence from other regions demonstrate that during health crises, those who provide health services during a pandemic are at risk of a number of psychological problems during impactful pandemics like the ongoing corona virus pandemic which can present as anxiety, fear and depression (Mo et al., 2021 ; Lai *et al.,* 2020). The problems can be a precursor to emotional, physical and mental breakdown. The high levels of psychological responses have been `linked with reduced enthusiasm for work through reduction of work morale, high numbers of absenteeism from work among the health work force which ultimately impairs with the quality of health care offered (Brooks et al., 2018).

Worldwide there has been sustained efforts to strengthen and protect health care providers adaptability and institutions charged with the mandate to spearhead accelerated strides to secure psychological wellbeing of the health care staffs (Greenberg *et al.,* 2020). The endeavours require to have evidence about the magnitude of the psychological and mental morbidity among the health care. Unfortunately currently there is limited data and lack of clarity in the Kenyan context regarding the psychological responses among health care providers working during the pandemic (Jaguga & Kwobah, 2020). It is therefore a priority to comprehend the psychological responses of providers of health care in order to provide them with the relevant tools to curb the adverse effects of working during the crises, start interventions and preventive measures to curb emotional, physical and mental breakdown among health care providers which can be realized with the availability of research data. This will lead to higher resilience, optimize overall health, lower

psychological responses and orient health care providers to manageable patient needs ultimately improving on organizational outcomes (Khanal *et al.,* 2020;Yates, 2020).

Key contributions expected as a result of conducting this research, first the pragmatic results that have been generated will identify recommendations for tailored psychological interventions to reduce the risk of adverse psychological outcomes and foster post – pandemic resilience within health care organizations who may be affected by pandemics or emerging public health emergencies. Secondly there is scanty information on how best to prepare the health care providers for epidemics and pandemics. Prior to development of effective interventions to assist health care providers it is important to comprehend the magnitude of psychological responses of the pandemic on health care providers.

1.8 Study Limitations

The current research depended on the data reported by the health care providers which may lead to inaccuracies relating to social desirability bias. This threatened the internal validity of the study. This may result in under or overestimation of the variables. This was minimized by using a survey conducted online and anonymous too.

This study used an online survey which posed an increased risk of non-response. This was minimized through sending constant reminders and follow-ups to the respondents.

This was an online study which may have selection bias whereby non respondent health care providers who were old or lacked internet access may have had different characteristics compared with the health care providers who responded.

The study design used is a cross - sectional design. Cross sectional data from the study can identify associations but not the causal relationship. With consideration a longitudinal study should be done to ascertain the causal relationship.

1.9 Conceptual Framework

This is a buildup which the researcher uses to explain the advancement of the phenomena being studied (Adom *et al.,* 2018). It helps the researcher to identify and construct their world view of the phenomena to be studied. (Grant & Osanloo, 2014). It had the dependent variable, modifying variable and the independent variable. The items in the independent variable have been arrived through the review of literature and psychiatric judgement.

Independent Variable	**Modifying Variable**	**Dependent Variable**

Occupational factors
- COVID-19 training, previous pandemic experience
- Cadre, work experience
- Precautionary measures
- Nature of job, PPEs
- Direct patient care, vaccination status
- Contact with CPOVID-19 patient

Sociodemographic factors
- Age
- Gender
- Religion
- Marital status

Psychological factors
- Fear/worry, psychological support at work
- Stigmatization, risk perception at work
- Rating of psychological effects on workmates
- Excessive information (odemic)
- Knowledge of HCP who had COVID

Psychological responses during the covid -19 pandemic
- Anxiety
- Depression

Socioeconomic factors
- Social support, living arrangements
- Income level
- Terms of employment, cultural practices
- Level of education, habits
- Comorbidities, prior exposure

Figure 1.1 Conceptual Framework
Source : Researcher 2021

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

Chapter two is a critical review of related literature relevant to the research problem. The literature was reviewed under various major headings which included: The levels of psychological responses, occupational factors and health care providers' psychological responses, psychological factors and health care providers' psychological responses, socioeconomic factors and health care providers' psychological responses during the COVID – 19 pandemic. A summary of literature review was presented at the end of the chapter providing a review of the knowledge gaps to be filled.

2.2 Levels of psychological responses of health care providers

The psychological responses are related to the mental and emotional state of a person. The responses can occur immediately following a crisis or subsequently and they take longer, depending on the severity of the crisis or trauma. The responses to a crisis are usually multifactorial and relies not only on external components, but on personal and innate ones as well. The common emotional states and psychological responses for health care providers which are negative are mainly depression and anxiety (Li et al., 2015). The levels of depression are measured in terms of minimal, mild, moderate, moderately severe and severe depression (Kroenke et al., 2001). Anxiety on the other hand entail mild , moderate, moderately severe and severe (Spitzer et al., 2006).

The manual of mental disorders fifth edition, DSM V classifies anxiety as disorders which share characteristics of extreme fear, anxiety and associated disturbances in behaviour. It is categorized based on the objects that are responsible for the anxiety and begin at

different ages. The anxiety disorders cause impairment in social , occupational and functional in vital areas of functioning (American psychiatry association, 2013). Generalized anxiety involves foreseeing a future threat and it's related with keenness in readiness for a future danger or avoidant behaviours (American psychiatry association, 2013; Rector *et al.,* 2016).

For one to meet the diagnostic criteria for anxiety, their must be experiences of being worried and fear that an individual gets it hard to control for at least six months to the level that it leads to remarkable suffering or disturbance in key functional areas. Additionally one should also have three or more than three of the following symptoms; interferences with sleep, concentration problems, easy to be irritated, nervousness, easy to get tired and muscle tightness (Rector *et al.,* 2016 ; American psychiatry association, 2013;Milne & Munro, 2020). According to Hapter, (2014) the above anxiety symptoms can worsen with stress. Anxiety is a common mental disorder with its proportion approximated at 3.6 % at the global level. It is characterized by uncomfortable, vague feelings exacerbated by exposure to multiple prolonged stress.

Depression on the other hand is a mental condition which is very mainly affecting the mental operations and thinking processes. It is caused by an amalgamation of many factors ranging from psychological factors, biological factors and social factors. It has a prevalence of 14.6% and 11.1% among adults in high income and developing countries respectively (Pouralizadeh *et al.,* 2020). According to WHO, it projected depression to be the leading cause of disability adjusted life years lost by 2020 (WHO, 2016).

Studies conducted during public health emergencies have depicted varying trends in term of the levels of the psychological responses. A study in Spain to assess the psychological

responses and its associated factors during the initial stage of the COVID – 19 pandemic on general population demonstrated 25% and 41% had mild to severe levels of anxiety and depressive symptoms respectively (Rodríguez-Rey et al., 2020). The study was conducted among the general population which is not a high risk and vulnerable population compared to the health care providers who are vulnerable due to the nature of their work during public health emergencies (Preti et al., 2020). The study was also conducted during the initial period of the pandemic which can depict the pre pandemic situation.

The findings from an empirical study from Vietnam to assess depression, anxiety and associated factors among frontline health care workers in the ongoing pandemic showed frontline health care workers with 61percent, 27 percent, 8 percent , 4 percent for absence, mild, moderate and severe depression respectively. Absence of anxiety 74 percent , 21 percent mild anxiety, 3 percent moderate anxiety and 1 percent had severe anxiety. The study did not look into social support and its association with the anxiety and depression. The current study will objectively assess social support and its association with the psychological responses.

In Kenya, a study by Kwobah et al., (2020), to assess the mental health of health care workers in Kenya at the beginning of the COVID – 19 pandemic established a mean score of 4.6 for generalized anxiety disorder and 4.8 for depression. Health care providers with no anxiety were 64 %, mild had 20 %, moderate had 9 % and severe was 7 %. The extent of depression was mild 68 %, moderate 17 %, moderately severe 11 % and severe 5 %. This study was conducted at the beginning of the pandemic which implies that the findings can be a reflection of the psychological responses even before the occurrence of the pandemic.

Studies done to assess anxiety disorders among the health care providers and factors associated with the disorder have demonstrated the disorder to be common among the female gender, health care providers with less working experience and among the nurses than other cadres of the health care providers (Lai *et al.,* 2020 ; Onchonga *et al.,* 2021). The female gender can be related with the role they play and the frequent interaction. Their duties and responsibilities at the health facility can place their families at an increased risk of transmission to their families (Van *et al.,* 2010).

2.3 Occupational factors and health care providers' psychological responses during the COVID – 19 pandemic

The World Health Organization (2021) indicated an alarming picture of the effect of the ongoing pandemic on health care providers working during the pandemic. This is a call to provide health care providers with better protection which include; access to vaccines, personal protection, training and psychosocial support. This should be accompanied with descent working conditions including adequate renumeration and protection against excessive workloads.

According to Chen et al., (2006), health care providers who received training during the Severe Acute Respiratory Syndrome (SARS) experienced reduction in the psychological responses during the pandemic weeks later after the commencement of the training. This is corroborated by findings from a study by Tam, (2004) which indicated, health care providers who received training presented with lower psychological morbidity during severe acute respiratory syndrome pandemic.

Similarly during the Avian influenza (H7N9) public health emergency Kim & Choi, (2016) postulated that health care providers who received inadequate training related to the management of the condition had higher psychological morbidity than those who had been given appropriate training. This points to the significance of training during the pandemic. According to Almaghrabi et al., (2020), sustained exposure to emergency preparations through training, performing emergency drills and educational sessions by the various disaster and emergency teams of the hospitals will help the health care providers in dealing with the pandemic. This will be instrumental in increasing awareness and responsibility among the health care providers during the pandemic.

On professional roles studies have included several professional cadres to compare psychological well-being across different cadres during infectious diseases outbreaks. Nurses during SARS were found to have poor psychological outcomes that any other cadre. This is related with nurses direct involvement in patient care and also they are the cadre which reported increased workload (Maunder et al., 2006). Nurses also expressed concern about being close with infected patients, the epidemic, uncertainty of how long the pandemic will take and the likelihood of transmitting the disease to family members (Chen *et al.,* 2020).

In a more recent systematic review involving 24 studies across China and surrounding countries nurses have been found to be the cadre at high risk of poor psychological outcomes (Kock et al., 2021). This findings are reflected in a study in Kenya to assess anxiety and depression among frontier health care workers (Onchonga et al., 2021) at the beginning of the pandemic. Nurses are usually the first contact with patients after they have tested positive for COVID – 19 disease which puts them at risk of transmitting the disease to those who are close to them. According to Gong et al (2015) the nursing profession is regularly considered a profession prone to stress within the health workforce and nurses experienced a myriad of work related stressors including heavy workload, limited time to attend to patients, irregular work schedules, poor work environment for nurses and stubborn patients. All this will affect nurses' health status hindering their maximum work performance subsequently affecting the quality of health care they will provide. This study aims to identify whether there is any cadre vulnerable to poor psychological outcomes during the COVID -19 pandemic at JOOTRH to inform policy and targeted interventions.

Years of experience has also been examined by various studies to determine its association with psychological responses. According to Maunder *et al.,* (2006), health care providers during the previous SARS who had less years of experience (less than 10 years)are the ones who reported increased cases of severe psychological responses. Similar findings were established where health care providers who had worked for less years during the same pandemic presented with significantly increased psychological responses compared with those who had a higher work experience (Chong *et al.,* 2004). Health care providers who had less clinical experience were also more likely to experience stress during the COVID-19 outbreak (Arafa *et al.,* 2021 ; Gupta *et al.,* 2021).

The level of work experience was also significant to mental distress with newly inducted staff with work experience less than two years had significantly higher psychological responses (Song *et al.,* 2020).

Hours spent treating symptomatic patients during the infectious disease outbreak in China was examined by Chen *et al.,* (2007) who established that health care providers who were directly caring for patients at close quarters suffered from psychological responses which is backed by studies which have also demonstrated health care providers on the frontlines of an infectious disease outbreak are more prone to psychological problems (Sun, *et al.,* 2017; Lai *et al.,* 2020).

During the ongoing COVID – 19 pandemic several occupational factors have been examined and its association determined in other regions of the globe. According to Chen *et al.,* (2021) and Martínez *et al.,* (2020) provision of adequate information at the work place, personal protective equipment (PPE), feeling of safety at the work place and logistic support. Health care providers who had inadequacies of the above occupational

factors presented with higher levels of anxiety, depression and acute stress symptoms. It would be interesting to see if this is the case with the present study.

However, very little information exists on the salient occupational factors that predispose the health care providers to psychological responses during the COVID – 19 pandemic. It was therefore, important to establish how these occupational factors predispose the health care providers to psychological responses during the COVID – 19 pandemic at JOOTRH, Kisumu county.

2.4 Psychological factors and health care providers' psychological responses during the COVID – 19 pandemic

Psychological factors were examined in this study to see their influence on the occurrence of psychological responses.

During the previous infectious disease outbreaks, stigma has been examined in studies in different study sites. One paper postulated that health care workers who believed their family or themselves were being avoided due to taking care of patients during the Severe Respiratory Syndrome (SARS) suffered severe psychological responses. Health care providers who were stigmatized or isolated from others because of working in the hospital during the pandemic were associated with adverse psychological outcomes for health care providers (Nickell et al., 2004). This is similarly reflected in a study which found out that health care providers who were discriminated for caring for patients during the infectious disease outbreak were associated with poor mental health outcomes (Tam et al., 2004).

Preliminary studies during the COVID – 19 pandemic have examined fear among health care providers during the ongoing pandemic. According to Ahmed *et al.,* (2020), majority of the health care providers in the study(dentists) described having fear of contracting the

virus from the patient or a colleague in the workplace. This is backed by a study in Pakistan where fear of infecting family was also identified in 79.7% of the study participants (Urooj *et al.,* 2020). Health care providers are not a homogeneous population. Therefore, it is appropriate to identify if this is the case with Jaramogi Oginga Teaching and Referral Hospital which is a different study site.

A research study has demonstrated that following of news relating to COVID-19 is associated with anxiety (Jawad *et al.,* 2021). This is in tandem to a reviewed research which suggested that repeated media exposure to crisis can lead to increased anxiety, heightened stress response that can lead to downstream effects on health (Garfin et al., 2020). This informally published news pertaining to COVID - 19 can cause a lot of distress since most of the news are made up of rumours and propaganda which is why anxiety levels rise when a person is constantly exposed to COVID-19 news (Moghanibashi, 2020). Falsified and misinformation relating to COVID – 19 can heighten the symptoms of depression in the general population (Zhou *et al.,* 2020). The current study will look into psychological well-being of health care providers at a different study site having different circumstances.

2.5 Socioeconomic factors and health care providers' psychological responses during the COVID – 19 pandemic

Social and economic factors refer to the social standing of an individual in society, it is measured by income, education and social support. They have an effect on one's ability to make choices on their own health, access medical care, afford other basic need, manage and respond to life stressors. It is widely known that low socio economic status is associated with psychological problems such as anxiety and depression in the general population (Ochi et al., 2014).

A myriad and interpersonal factors and social factors have been shown to prevent or contributed to psychological responses during pandemics among health care providers. Directly receiving, family, friend and significant other social support has been shown to be protective of psychological effects during pandemics. For instance during the COVID-19 outbreak, increased social support were linked with significant low levels of anxiety, depression and post-traumatic stress disorder (Arafa *et al.,* 2021 ; Nie *et al.,* 2020). Similar findings are reflected in studies where health care providers directly dealing with COVID – 19 patients who reported support and positive outlook from their colleagues had reduced stress levels with improved mental and psychological outcome (Cai *et al.,* 2020 ; Lai et al., 2020). Similarly, the nurses who were involved in the management of MERS outbreak and reported having inadequate family and support from friends had an their psychological levels elevated (Kim & Choi, 2016).

Studies on health care providers during the Severe Acute Respiratory Syndrome (SARS) outbreak demonstrated lower levels of anxiety and depression were due the increased family support while elevated psychological responses were linked with lack of recognition, decreased support from close family members and lack of cooperation from their colleagues (Chen *et al.,* 2006). The current study aims to objectively measure the social support using the Multi-dimensional Scale of Perceived Social Support rating scale (MSPSS) rather than just asking if they received the social support.

Having an underlying chronic illness has also been found to be an independent risk factor for poor psychological outcomes in a number of studies. A study during the ongoing COVID – 19 pandemic by Shacham et al., (2020) in Israel on health care providers mainly dentists found an increase in psychological morbidities in those with an underlying illness as well as increased worry and fear of contracting the virus. These findings are reflected

in a study in China where the presence of an organic illness was established to be an independent risk factor for psychological responses and somatizing symptoms (Zhang et al., 2020). The socioeconomic factors which this study will look at include; social support (Friends, family and significant other), family status, income level, sole family provider, terms of employment, educational qualification, comorbidities, alcoholism, smoking, cultural practices, prior exposure to infectious outbreak and disciplinary measures.

2.5 Research summary and gaps

Relevant literature review in relation to the research questions was done and a summary of the gaps identified in several studies.

A study by Cai et al. (2020) to assess the psychological responses and coping strategies of frontline medical staff in Hunan, Hubei province during the outbreak of coronavirus disease found out that the COVID-19 epidemic in Hubei lead to relating to ever increasing case load subsequently increasing the health care providers psychological problems. The knowledge gap identified is the study did not analyze differences between workers in different departments. The study was also based on subjective responses using a questionnaire and did not try to determine objectively the levels of anxiety and depression. The current study will cover the gap by objectively measuring anxiety and depression.

A study to determine the mental health impact of COVID - 19 among Health care workers in Kenya at the beginning of COVID - 19 (Kwobah *et al.,* 2020). The study sampled only 24 (2.8%) health care providers from Kisumu County. The findings from the study were a very high rate of worries and mental disorders among health workers at the beginning of the COVID-19 pandemic. The small sample size may not be representative of the health

care providers in Kisumu. The findings at the beginning of the pandemic can indicate the situation before the pandemic.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

Chapter three of this study outlined the research methods and procedure that were used in order to achieve the purpose of the study. It discusses the research design, study site, target population, sampling procedure as well as the sample size determination. It involved development of the instruments that were used, validity and reliability of the instrument, the procedure for data collection, inclusion and exclusion criteria, data management, explanation of the variables of the study variables and analysis of data analysis techniques. It also included the ethical considerations which were the guiding principle.

3.2 Study Design

Descriptive cross-sectional design was used in this study, using a quantitative approach conducted at JOOTRH Kisumu county. According to Mohajan (2018), descriptive research helps us to understand a complex problem or subject and previous studies can be enhanced or strengthened. They are useful for establishing preliminary evidence in planning future advanced studies. They are easy to conduct, can be conducted faster and they are relatively economical (Wang & Cheng, 2020).

3.3 Study Area

This study was conducted at the Jaramogi Oginga Odinga Teaching and Referral Hospital, situated at Kondele area in Kisumu County in the western parts of Kenya. The county is designated number 42 and it is one of the counties in kenya among the total of 47 counties. The counties of Homa Bay and Nandi border Kisumu to the south and North East respectively. Kericho County is to the East, Siaya County to the West and Vihiga County to the North West. It has an approximate land cover of 567km2 and 2086 km2 on water and land area respectively which represents (Kisumu County, 2018).The County has an estimated population of 1,155,574 people (KNBS, 2019) comprising of different tribes from various parts of Kenya. Activities mainly done in the county include trading, fishing mainly in L. Victoria and farming.

Jaramogi Oginga Odinga Teaching and Referral Hospital is a level 5 facility in Kisumu County located about 3 kilometers from Kisumu town center on Lake Victoria shores (Maoulidi, 2015). Since its inception, it has grown from a small hospital to become a regional referral hospital. More than 10 counties in the western region of Kenya depend on the hospital including the county, sub county hospitals and private hospital. The hospital has an inpatient bed capacity of 467 serving an estimated population of over 5 million. The hospital is made up of 880 staffs with 492 being regular the ones on contract accounting for 140, 107 from the partners of the hospital and outsourced services accounting for 141 staffs https://www.jootrh.go.ke.

The annual workload (2020) includes 197,200 outpatients and 21,000 inpatients. The hospital provides a number of services from diagnostic services to curative, preventive,

promotive and rehabilitative services. It provides a variety of specialized services and it is also a center for research activities in the region (JOOTRH strategic plan, 2016). The hospital serves as a key training facility for a number of universities in the county and around including Maseno, Uzima and Great Lakes University of Kisumu (GLUK) schools teaching with health sciences   https://www.jootrh.go.ke. The hospital was selected purposely for this study because all the health professions can be found within the hospital, the county has had a series of health care providers strikes recently pertaining the working environment and it is the main referral hospital handling COVID-19 patients in Kisumu County and the regional epicenter around Lake Victoria.

3.4 Target Population

This study targeted 352 health care providers including 206 nurses, 77 doctors, 32 clinical officers, 20 laboratory technicians, 12 pharmacists and 5 dentists. This group of health care providers was targeted because they have been actively involved in caring of patients during the pandemic at the hospital. Allen, M., 2017 described the study population as the population from which the study subjects are drawn. Study population were the health care providers aged 18 years and above who have been employed to work in the hospital on permanent or contract terms working during the COVID – 19 pandemic at JOOTRH. Sample population is a smaller group or sub – group obtained from the accessible population that data will be collected from. This were the health care providers who participated in the study drawn from JOOTRH after sampling. The main sampling unit were the health care provider.

3.5 Sample size calculation

The population of health care providers (doctors, nurses, clinical officers, pharmacists, laboratory technicians and dentists) working at JOOTRH is 352. A formula developed by Fisher and Laing (1998) was used to calculate the number of health care providers for this study. Where $n = Z^2pq/d^2$

n is the intended sample size when the population targeted is more than. 10,000.

Z - is the standard normal deviate = 1.96 (which is corresponding to 95% confidence interval),

p - is the proportion of the target population estimated to have a particular characteristic. If there is no reasonable estimate then use 50%, therefore p = 0.50.

q=1.0 – p,

d - is the degree of accuracy desired usually set as 0.05, q = 1- 0.50 = 0.50,

Therefore, the desired sample size (n) will be calculated as follows;

$n = Z^2pq/d^2$

$n = 1.96^2$ x 0.5 x 0.5/ $(0.05)^2$

n =384.16. Since the target population is less than 10,000, the sample size is adjusted using the formula nf = n/1 + (n/N)

Since our target is less than 10,000 the sample size will be determined as below;

nf = n/1+ (n/N),

nf - is the desired sample size when the population is finite and less than 10,000, n is the intended sample size when the population greater than 10,000,

N - is the estimated population

N = estimated population size

nf = 384/1+ (384/352)

nf = 184

10% will be added to take care of the non-responses and the spoilt questionnaires;

10% of 184=18; 184+18=202

202 health care providers will be involved in this study.

The participants per job cadre were selected proportionate to the study population to attain the required sample size.

3.6 Sampling procedure

This study used multi stage sampling method to select the sample for the study. The sampling method divides a population into groups to make sampling more practical. First stratified sampling method was used in this study to assign different cadres of healthcare providers into strata. Proportionate probability sampling method was then applied to determine the health care providers who participated in the study. In this sampling procedure the probability of a unit being selected is proportional to the size (Asiamah *et al.,* 2017). Within the cadres the study adopted simple random sampling. The method selects units of observation from a given set without any particular criteria (Patten. 2021; Mostafa & Ahmad, 2018). The table below illustrates the total number of health care providers and the sample selected from each profession (strata).

Table 3.1 Distribution of the sample

Population targeted (Healthcare providers professions)	Total number/ strata (N)	Total Sample (n)	Percentage (%)	Sampling procedure
Nurses	206	118	58	Proportionate
Doctors	77	44	22	Proportionate
Clinical officers	32	18	09	Proportionate
Laboratory technicians	20	12	06	Proportionate
Pharmacists	12	7	03	Proportionate
Dentists	5	3	02	Proportionate
GRAND TOTAL	352	202	100	Proportionate

3.7 Inclusion criteria

1. Health care providers aged at least 18 years old.

2. Health care providers who have been employed to work in the hospital on permanent and pensionable terms or contract terms to include, doctors, nurses, clinical officers, dentists, laboratory officers and pharmacists.

3. Health care providers who provided consent to participate in the study.

3.8 Exclusion criteria

1. Health care providers who in the past two weeks have been engaged in some psychological support.

2. Those who might have experienced a traumatic event in the past one month like loss of a loved one.

3.9 Development of Research Instruments

A structured questionnaire and validated tools were utilized to collect data from the health care providers. It was sub divided into sections. The first section A of the questionnaire

for health care providers had the demographic characteristics; age gender, religion and marital status. The next Section B included the occupational factors; personal protective equipment, COVID – 19 training, cadre, work experience, precautionary measures in the workplace, nature of job, direct COVID – 19 patient care, vaccination status. Section C entailed the psychological factors; fear during the pandemic, stigmatization due to the pandemic, risk perception at work and infodemic. Section D included socioeconomic factors; social support, family status, income level, sole family provider, terms of employment, educational qualification, comorbidities, alcoholism, smoking, cultural practices, prior exposure to such pandemics, disciplinary measures.

The study also adopted two validated tools to measure health care provider's psychological responses. The 9 - item Patient Health Questionnaire (PHQ - 9), the 7 – item Generalized Anxiety Disorder scale (GAD - 7) are the frequently used tools to assess and screen for the presence and extent of depression and anxiety respectively. The multi – dimensional scale of Perceived Social Support (MSPSS) was used to assess for the perceived social support.

PHQ – 9 has nine items with each item assigned scores of 0, 1, 2, and 3, representing not at all, several days, more than half the days and nearly every day respectively. The total score that was generated from the tool is 27 with score ranges of; 1 – 4, 5 – 9, 10 – 14, 15 – 19 and 20 – 27 representing minimal, mild, moderate, moderately severe and severe depression respectively. The nine items are assessed over the past two weeks are: anhedonia, depressed, feeling down or hopeless, insomnia or hypersomnia, fatigue or having little energy, poor appetite or over eating, guilt or worthlessness, trouble concentrating, psychomotor agitation or retardation and suicidal thoughts or ideas (Kroenke *et al.,* 2001). The tool has been validated for use in primary care with aspects of

its construct validity have been documented in studies both in the general population and medical settings (Kroenke et al., 2001).

The GAD – 7, is a 7-item scale with each item assigned scores of 0, 1, 2, and 3 representing not at all, several days, over half the days and nearly every day respectively. The total score 21 was generated from the tool with score ranges of 0 – 4, 5 – 9, 10 – 14 and 15 – 21 representing mild, moderate, moderately severe and severe anxiety (Spitzer *et al.,* 2006).The items in the scale are: nervousness feelings, inability to regulate worrying, great worry about a number of things, relaxing problems, being restless, irritability, and having feelings of fear as if something awful might happen. A computed score of 10 or more represent a practical cutoff point for recognizing cases of generalized anxiety disorder and depression (Spitzer et al., 2006 ; Pouralizadeh et al., 2020).

The Multi-dimensional Scale of Perceived Social Support (MSPSS) will be used to gather information about social support. It consists of 12 questions to assess aspects of social support, including from family, friends and significant others. The items are assigned scores from 1 – 7 representing, very strongly disagree to very strongly agree respectively. The tool has a total score of 84. The sum across the 12 items is then divided by 12. A score range of 1 – 2.9, 3 – 5, 5.1 – 7, represent low, moderate and high support respectively (Zimet *et al.,* 1988).

3.10 Validity of the instrument

The study used face and content validity to test the accuracy of data collecting instrument in order to increase validity strength of the questionnaire. In face validity, an expert looks at the items in the questionnaire and agrees that the test is a valid measure of the concept being measured just at the face of it. Content validity refers to the accuracy with which an

instrument measures the constructs of interest under study. Content validity helped ensure the questions elicited the intended information (Taherdoost, 2018). Content validity helps in measuring the items in the questionnaire and provides feedback on what needs to be improved. The health care providers questionnaire was given to the supervisors, experts in mental health, public health and psychology to see whether the tool was likely to collect the intended information and gave suggestions on the improvement of the tool. This helped to improve the tool before proceeding to the field for final data collection.

3.11 Reliability of the instrument

A reliable measurement is the one where an individual scores twice the same result when tested with a similar tool (Meakim *et al.,* 2013). The study adopted test – retest method to test for reliability. In test – retest method the questionnaire was administered twice to the same respondents to test for internal consistency. The two results were correlated and calculated to check for the reliability index. According to Kothari (2014), the acceptable reliability index should be more than 0.7. Reliability in this study was increased by including many similar items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. The reliability test is vital as it refers to the consistency across the parts of a measuring instrument. The internal consistency will be measured with the Cronbach Alpha coefficient with the aim of achieving a minimum score of 0.70.

A pilot study was done at the Kisumu county hospital which is a county hospital within the Kisumu city. During the pilot study a sample of 20 health care providers was systematically selected and the questionnaire administered to them. The results were then

reviewed for any variations in the data captured, omissions and typographical errors which ensured that the questions are clear to the respondents, acceptable and reasonable amount of time allocated for administering the questionnaire to the respondents. The final analysis did not include data from the pilot study

3.12 Data Collection Procedure

Data collection is the process of gathering and measuring information on the variables of interest for the researcher in a systematic, established way that enables one to respond to the stated research questions. Data collection process begun after obtaining the relevant approvals and research permits. Respondents were required to provide informed consent before participating in the study.

Data for this study was collected for a period of one month, where 202 health care providers were expected to complete an electronic web-based questionnaire. The electronic questionnaire was used to collect data on demographics, occupational factors, psychological factors and socioeconomic factors from the health care providers. Validated tools, patient health questionnaire – 9 (PHQ - 9), the generalized anxiety disorder – 7 (GAD - 7) and the Multi-dimensional Scale of Perceived Social Support (MSPSS) were also incorporated to measure depression, anxiety and social support. The questionnaire and the validated tools were sent to the health care providers through whatsapp application and also those who had email were sent the questionnaire. The questionnaires to the health care providers virtual groups through the various unit in charges at the JOOTRH.

3.13 Data Management

Regular supervision by the principal investigator was done to ensure that all necessary data are properly collected. The respondents filled the online kobo tool and submitted it online. Data was exported from Kobo collect platform in excel format, cleaned and exported to Statistical Package for Social Sciences version 28 for analysis (SPSS).

3.14 Description of variables

3.14.1 Dependent variable

The dependent variables are the psychological responses of health care providers during the COVID – 19 pandemic.

3.14.2 Independent variable

The independent variable was classified into occupational factors; prior exposure to such incidences, personal protective equipment, COVID – 19 training, cadre, work experience, precautionary measures in the work place precautionary measures, vaccination status, direct COVID – 19 patient care, vaccination status. Psychological factors; fear during the pandemic, stigmatization due to COVID – 19 pandemic, risk perception at work, infodemic. Socioeconomic factors; social support, family status, income level, sole family provider, terms of employment, educational qualification, comorbidities, alcoholism, smoking, cultural practices, prior exposure to such incidences and disciplinary measures.

3.14.3 Modifying variables

The modifying variable were the demographic factors; age, gender, religion and marital status.

3.15 Data analysis

Data was exported from Kobo collect platform in excel format, cleaned and exported to Statistical Package for Social Sciences version 28 for analysis (SPSS). Descriptive analysis such as frequencies, proportions, mean, standard deviation was used to summarize the data. Bivariate analysis had been contemplated and thus most of the variable were converted to binary variable to enable Chi-square statistics and measurement of association strength. Chi-square test was thus used to determine of there was homogeneity in proportions at $p \leq 0.05$ and to establish the strength of association, Odds Ratio (OR) and 95% Confidence Interval (CI) between the demographic, occupational, psychological and socioeconomic factors with psychological responses (anxiety and depression).

3.16 Ethical consideration

The proposed study was conducted according to research ethical principles. Considerable time was taken to address ethical principles. After the conclusion of the study, a score for each psychological responses were computed and if the score was indicative of clinically significant anxiety and depression, they were advised to seek further evaluation.

Permission to conduct the study

Approval letter for this study was be obtained from Masinde Muliro University of Science and Technology directorate of post graduate studies. Ethical approval was obtained from Masinde Muliro University of Science and Technology Institutional Scientific and Ethics Review Committee (MMUST - ISERC) approval number MMUST/IERC/062/2022, the National Commission of Science, Technology and Innovation (NACOSTI) license number NACOSTI/P/22/18058 as per the laws of Kenya before undertaking research. Finally, authorization was obtained from Jaramogi Oginga Odinga Teaching and Referral

Hospital Institutional Scientific Ethical Committee (JOOTRH - ISERC) approval number IERC/JOOTRH/619/22 to access the data and the respondents. Written consent from the health care providers was sought after informing them the purpose of the study, the risks, the tools used and the information needed before commencement of data collection.

Beneficence and non – maleficence

The researcher will communicate the findings from this study which will be of benefit for policy formulation which will help improve their psychological well-being during and after pandemics. A part from the prospective inconvenience connected with the time required to participate in the study, there was no danger or discomfort since the study used a questionnaire and validated tools to collect data

Psychological harm which can occur to the participants was be dealt with by maintaining privacy, confidentiality and anonymity.

Anonymity and confidentiality

Confidentiality is one of the basic ethical principles and anonymity provides one of the measures to ensure confidentiality.

Autonomy

The participants were respected as autonomous individuals. They took part voluntarily in the study, free of coercion, undue influence, receive any kind of compulsion or financial compensation. Participation was on voluntary basis and with full autonomy of the participants. They were enlightened of their freedom to stop participating in the study without explain the rational of leaving.

Justice

This relates to fair treatment of the participants in the study. The researcher gave careful consideration to the principle by treating all participants equally with respect during the study by giving them information prior to taking part in the study. Sample selection followed the inclusion criteria and those who met the criteria had an equal opportunity to be selected to participate in the study.

Informed consent

This is a legal requirement before someone can be allowed to take part in the study. The participants in the research were given full explanation and appropriate information concerning the research without duress or unfitting inducement. The information included the research procedure, the purposes, expected benefits and risks. Participants were then asked to give a written consent before proceeding with the study and allowed leave or discontinue from participating at any given time without any repercussions to withdraw.

CHAPTER FOUR

RESULTS

4.1 Overview

This chapter describes the presentation analysis of the data obtained from the health care providers. This chapter has several sections organized from general characteristics of the sampled population to subsection guided by the objectives and the conceptual framework. The chapter shows the demographics of health care providers and the results as per the study objectives as captured in chapter one.

4.2 Sociodemographic characteristics of health care providers

This subsection has sociodemographic aspects ranging from age, gender, religion and marital status. The mean age of the sampled population was 34.4±8.7 years. Age was regrouped into binary group with median (30) being the grouping criteria. Over 58% of the respondents were males as shown in table 4.1 below.

Table 4.1: Sociodemographic characteristics of health care providers

Sociodemographic Characteristic		Frequency n=220	Percent %
Age (Years)	<=30	98	48.5
	>30	104	51.5
Gender	Male	119	58.9
	Female	83	41.1
Religion	Christian	194	96.0
	Muslim	8	4.0
Marital status	Married	143	70.8
	Not Married	59	29.2

4.3 Health care providers' psychological responses

This section has the analysis of the level of Generalized Anxiety Disorder and depression. Explanation of how each of the types of health care providers' psychological responses

during COVID - 19 is assessed is done in this section. The distribution of GAD and depression on sociodemographic aspects is also done in this section.

4.3.1 Generalized Anxiety Disorder

Seven aspects are used to gauge Generalized Anxiety Disorder (GAD) based on the GAD-7 scale. These aspects are; nervousness or anxious feelings, inability to regulate worrying, being worried greatly over a number of things. Having problems to relax, restlessness making it hard to sit down, easy irritability or being annoyed, being fearful as if something bad may happen. These aspects are then rated on a scale of how often they occur to the individual starting from 0 for not at all up to 3 for nearly every day. The table below shows the distribution of the aspects.

Table 4.2: Distribution of anxiety related aspects on the GAD scale

General anxiety variables on GAD scale	Not at all	Several days	More than half the days	Nearly everyday
Nervousness, anxious feelings	8(4)	62(30.7)	52(25.7)	80(39.6)
Inability to terminate or regulate worrying	20(9.9)	80(39.6)	56(27.7)	46(22.8)
Greatly worrying about a number of things	18(8.9)	76(37.6)	77(38.1)	31(15.3)
Relaxing problems	30(14.9)	89(44.1)	53(26.2)	30(14.9)
Restlessness that it hard to calmly sit down	43(21.3)	84(41.6)	45(22.3)	30(14.9)
Irritability or being easily annoyed	40(19.8)	68(33.7)	73(36.1)	21(10.4)
Having feelings of fear as if something bad might happen	18(8.9)	67(33.2)	74(36.6)	43(21.3)

4.3.1.1 Level of GAD among the respondents

The level of anxiety portrayed by figure 4.1 are classified into four categories based on the summation of the scores for the 7 aspects. The level of minimal anxiety among the respondents was 5%, mild anxiety was 35.1%, moderate anxiety 39.6%, and severe anxiety 20.3%.
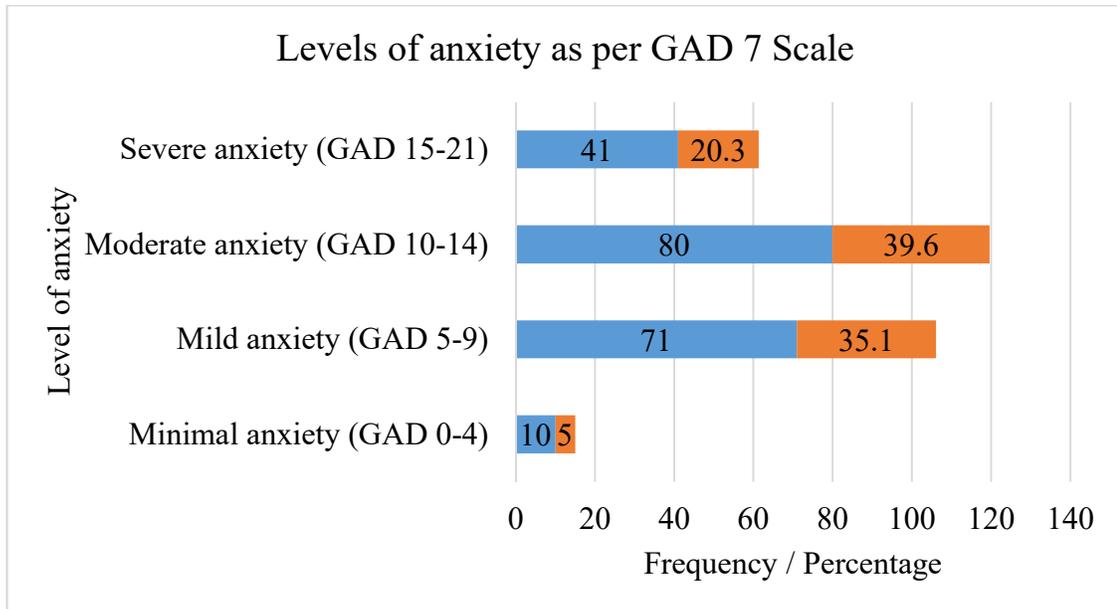
Figure 4.1: Levels of GAD

4.3.1.2 Anxiety and sociodemographic characteristics of health care providers

Generalized Anxiety Disorder (GAD) was reclassified into a binary variable with moderate anxiety and severe anxiety representing GAD of clinical significance. Bivariate analysis is as represented in table 4.3. More than half of the sociodemographic aspects demonstrated a significant relationship with GAD. These aspects were age, gender and marital status, those respondents aged less than 30 years and males were less likely to suffer GAD than their older counterparts and females (OR:0.1, p<0.001; OR:0.4, p=0.002 respectively). Those who were married (OR:4.2) had a 4 times risk of GAD than their counterparts as demonstrated in table 4.3 below.

Table 4.3: Distribution of GAD on sociodemographic characteristics

Sociodemographic characteristics		Generalized anxiety disorder		OR	95% CI	P Value
		Yes	No			
Age	<=30	36(36.7)	62(63.3)	0.1	0.1 - 0.2	<0.001
	>30	85(81.7)	19(18.3)			
Gender	Male	61(51.3)	58(48.7)	0.4	0.2 - 0.7	0.002
	Female	60(72.3)	23(27.7)			
Religion	Christian	117(60.3)	77(39.7)	1.5	0.4 - 6.3	0.407
	Muslim	4(50)	4(50)			
Marital status	Married	100(69.9)	43(30.1)	4.2	2.2 - 8	<0.001
	Not Married	21(35.6)	38(64.4)			

4.3.2 Depression

Nine aspects were used to determine the level of depression based on four factor scale 9 – item Patient Health Questionnaire scale. The aspects were; diminished pleasure or interest in doing things, hopelessness, depressed or being down, sleep problems (staying, falling, staying or too much sleep), fatigue or anergia, poor diminished appetite or eating too much,, feeling bad about self for example failure or let down to self or family, concentration problems, speech or motion which is noticeably slow or fidgety or restless or motion around unusually, and having suicidal thoughts or self-harm as shown in table 4.4. The scale, grades the frequency of the feelings experienced by the respondent ranging from 0 to 3 representing not at all and respectively. The maximum computation for the variables for depression classification is 27.

Table 4.4: Distribution of depression related aspects on the PHQ - 9 scale

Variable on the PHQ-9 Scale	Not at all	Several days	More than half the days	Nearly everyday
Diminished pleasure or interest in doing things	53(26.2)	55(27.2)	73(36.1)	21(10.4)
Hopelessness, feelings of being down or depressed	43(21.3)	105(52)	25(12.4)	29(14.4)
Problems staying asleep, falling or increased	55(27.2)	66(32.7)	64(31.7)	17(8.4)
Fatique or having decreased energy	19(9.4)	78(38.6)	78(38.6)	27(13.4)
Poor appetite or overeating	33(16.3)	56(27.7)	87(43.1)	26(12.9)
Feeling bad about self eg failure or let down to self or family	58(28.7)	106(52.5)	17(8.4)	21(10.4)
Trouble concentrating	56(27.7)	66(32.7)	55(27.2)	25(12.4)
Motion or speech which is observably slow or fidgety or restless or moving around increasingly than normal	74(36.6)	74(36.6)	37(18.3)	17(8.4)
Having suicidal thoughts or self-harm	137(67.8)	38(18.8)	16(7.9)	11(5.4)

4.3.2.1 Levels of depression among health care providers

Figure 4.2 shows the distribution of the levels of depression. The level of depression is classified in four categories based on the summation of the scores for the 9 aspects. The level of minimum depression among the respondents was 19.3%, mild depression was 23.3%, moderate depression 39.1%, moderately severe depression 9.9%, and severe depression 8.4% as shown in figure 4.2 below.
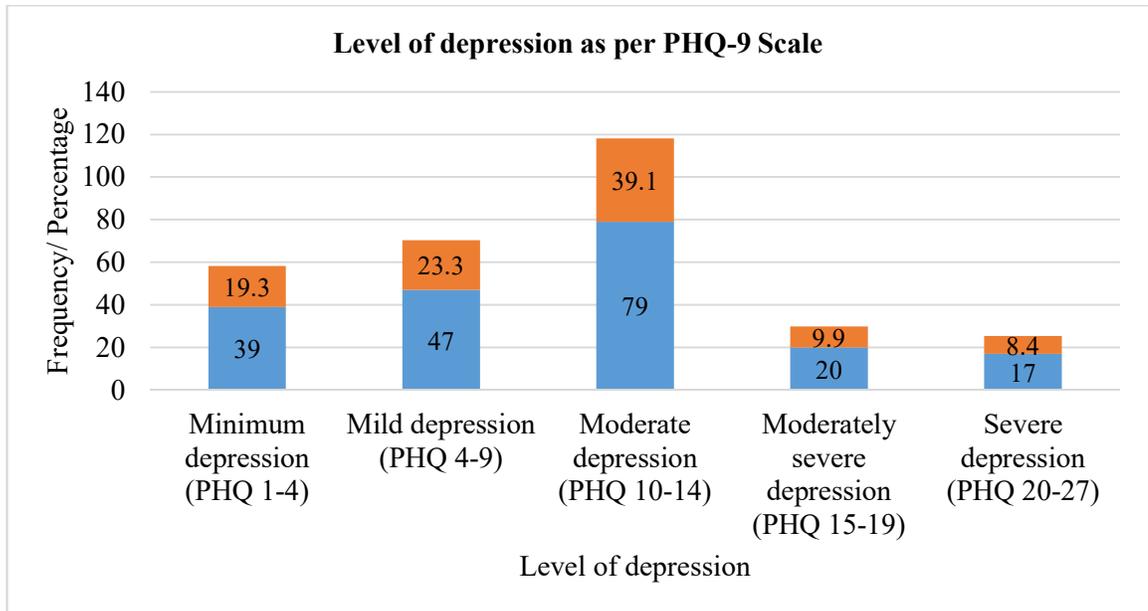
Figure 4.2: Levels of depression as per PHQ-9 scale

4.3.2.2 Depression and sociodemographic characteristics of health care providers

Depression was reclassified into a binary variable with moderate depression, moderately severe depression and severe depression representing depression of clinical significance. Bivariate analysis is as represented in table 4.5 below. Half of the sociodemographic aspects demonstrated a significant relationship with depression. Those that were less than 30 years were less likely to be depressed (OR:0.5; 95% CI: 0.3 - 0.8; p=0.006) and those who were married were more likely to be depressed (OR:3.2; 95% CI: 1.7 – 6.1; p<0.001) respectively as shown in the table 4.5 below.

Table 4.5: Distribution of depression and sociodemographic characteristics of health care providers

Sociodemographic characteristics		Depression		OR	95% CI	P Value
		Yes	No			
Age	<=30	47(48)	51(52)	0.5	0.3 - 0.8	0.006
	>30	69(66.3)	35(33.7)			
Gender	Male	67(56.3)	52(43.7)	0.9	0.5 - 1.6	0.405
	Female	49(59)	34(41)			
Religion	Christian	112(57.7)	82(42.3)	1.4	0.3 - 5.6	0.466
	Muslim	4(50)	4(50)			
Marital status	Married	94(65.7)	49(34.3)	3.2	1.7 - 6.1	<0.001
	Not Married	22(37.3)	37(62.7)			

4.4 Occupational factors and health care providers' psychological responses

This section explores the occupational aspects from showing the distribution of occupational factors to establishing their relationship with GAD and depression among health care providers.

4.4.1 Distribution of occupational aspects

Occupational factors comprised whether work exposes the health care provider to COVID - 19, cadre, years of experience, COVID - 19 vaccine provision, previous pandemic experience, adequacy of precautionary measures, COVID- 19 training, nature of work duties, state of PPEs, having been subjected to disciplinary measures, fears of work-related exposure to COVID - 19, perceived susceptibility to COVID - 19 due to work, availability of psychological support for those experiencing psychological responses to the pandemic and contact with COVID – 19 patient. Table 4.6 shows that more than 50% of the workers interviewed had less than 6 years of work experience. The mean work experience was 9.3±7.6 SEM=0.5 and this variable was regrouped to binary variable using the median (6) and the grouping criteria. More than 45% of the respondents directly provided COVID - 19 care and 93.1% of the workers had previously been in direct contact with COVID - 19 cases, 94.6% knew a colleague who had contracted COVID - 19 and

had fear of working during the pandemic while 76.2% had been trained on COVID - 19 care. The uptake of COVID - 19 vaccine was at 98% and less than 50% of the staff had previously worked during a pandemic. Workplace precautionary measures were rated as insufficient by 68.3% of the respondents while 77.2% felt that the PPEs were inadequate. Most of the respondents (80%) said that the hospital did not have any measures to support them in case they had psychological problems due to direct COVID - 19 patient care and most (62.9%) had their duties being irregular during the period of the pandemic with 6.4% having been subjected to disciplinary measures during the pandemic period.

Table 4.6: Occupational Characteristics

Occupational Characteristics		Frequency	Percent
	Nurse	118	58.4
	Medical doctor	36	17.8
	Clinical officer	22	10.9
Cadre	Laboratory technician	16	7.9
	Pharmacist	7	3.5
	Dental Officer	3	1.5
Direct COVID-19 patients care	Yes	94	46.5
	No	108	53.5
Years of experience	<=6	106	52.5
	>6	96	47.5
Attended COVID19 training	Yes	154	76.2
	No	48	23.8
COVID19 Vaccinated	Yes	198	98.0
	No	4	2.0
Previous pandemic experience	Yes	85	42.1
	No	117	57.9
Adequacy of workplace precautionary measures.	Sufficient	64	31.7
	Insufficient	138	68.3
Nature of work duties during COVID19 pandemic	Regular	75	37.1
	Irregular	127	62.9
The state of PPEs	Sufficient	42	20.8
	Insufficient	156	77.2
Been subjected to disciplinary measures during the pandemic	Yes	13	6.4
	No	149	73.8
Has been contact of COVID19 patient	Yes	188	93.1
	No	14	6.9

4.4.2 Occupational aspects and GAD

Table 4.7 show the cross tabulation of occupational aspects and GAD. The health care providers who offered direct COVID - 19 care, had less years of service, had sufficient workplace precautionary measure and thought the status of Personal Protective Equipment (PPE) was sufficient had lower risk of GAD (OR:0.5; 95% CI:0.3-0.9; p=0.012), (OR:0.2; 95% CI: 0.1-0.4; p<0.001), (OR:0.5; 95% CI: 0.3 - 0.9; p=0.018), and (OR:0.4; 95% CI: 0.2-0.9; p=0.013) respectively. On the contrary, contact with COVID patients and family member with COVID – 19 posed an increased risk of a health care provider developing

GAD during the COVID – 19 pandemic (OR:4.1; 95% CI:1.2-13.6; p=0.015) and (OR:4.1; 95% CI: 1.4-12.4; p=0.005) respectively.

Table 4.7: Occupational aspects and GAD

Occupational aspects		Generalized anxiety disorder		OR	95% CI	P Value
		Yes	No			
Nurse vs Other cadres	Nurse	70(59.3)	48(40.7)	0.9	0.5 - 1.7	0.479
	Other cadres	51(60.7)	33(39.3)			
Medical doctor vs other cadres	Medical doctor	21(58.3)	15(41.7)	0.9	0.4 - 1.9	0.487
	Other cadres	100(60.2)	66(39.8)			
Direct COVID19 patients care	Yes	48(51.1)	46(48.9)	**0.5**	**0.3 - 0.9**	**0.012**
	No	73(67.6)	35(32.4)			
Years of experience	<=6	45(42.5)	61(57.5)	**0.2**	**0.1 - 0.4**	**<0.001**
	>6	76(79.2)	20(20.8)			
COVID19 Vaccinated	Yes	120(60.6)	78(39.4)	4.6	0.5 - 45.2	0.178
	No	1(25)	3(75)			
Previous pandemic experience	Yes	56(65.9)	29(34.1)	1.5	0.9 - 2.8	0.091
	No	65(55.6)	52(44.4)			
Adequacy of workplace precautionary measures.	Sufficient	31(48.4)	33(51.6)	**0.5**	**0.3 - 0.9**	**0.018**
	Insufficient	90(65.2)	48(34.8)			
Attended COVID19 training	Yes	99(62.7)	59(37.3)	1.7	0.9 - 3.3	0.091
	No	22(50)	22(50)			
Nature of work duties during COVID19 pandemic	Regular	47(62.7)	28(37.3)	1.2	0.7 - 2.2	0.321
	Irregular	74(58.3)	53(41.7)			
The state of PPEs	Sufficient	18(42.9)	24(57.1)	**0.4**	**0.2 - 0.9**	**0.013**
	Insufficient	99(63.5)	57(36.5)			
Been subjected to disciplinary measures during the pandemic	Yes	7(53.8)	6(46.2)	0.7	0.2 - 2.1	0.353
	No	94(63.1)	55(36.9)			
Has been contact of COVID 19 patient	Yes	117(62.2)	71(37.8)	**4.1**	**1.2 - 13.6**	**0.015**
	No	4(28.6)	10(71.4)			
Relationship with the COVID19 contact	Family member	23(85.2)	4(14.8)	**4.1**	**1.4 - 12.4**	**0.005**
	Client/Patient	94(58.4)	67(41.6)			

4.4.3 Occupational aspects and depression

The distribution of depression on occupational aspects is shown in table 4.8. Those health care providers who had fewer years of work experience and had regular duties during the pandemic had a significantly lower risk of depression; (OR:0.5; 95% CI: 0.3-0.9; p=0.018), and (OR:0.5; 95% CI:0.3-0.9; p=0.013) respectively, while those with previous pandemic experience and those who attended COVID – 19 training had a higher risk compared to the rest, (OR:1.8; 95% CI:1-3.3; p=0.027) and (OR:2.7; 95% CI: 1.3-5.3; p=0.004), respectively.

Table 4.8: Occupational aspects and depression

Occupational Aspects		Depression		OR	95% CI	P Value
		Yes	No			
Nurse vs Other cadres	Nurse	68(57.6)	50(42.4)	1	0.6 - 1.8	0.530
	Other cadres	48(57.1)	36(42.9)			
Medical doctor vs other cadres	Medical doctor	20(55.6)	16(44.4)	0.9	0.4 - 1.9	0.472
	Other cadres	96(57.8)	70(42.2)			
Direct COVID-19 patients care	Yes	52(55.3)	42(44.7)	0.9	0.5 - 1.5	0.336
	No	64(59.3)	44(40.7)			
Years of experience	<=6	53(50)	53(50)	**0.5**	**0.3 - 0.9**	**0.018**
	>6	63(65.6)	33(34.4)			
COVID19 Vaccinated	Yes	114(57.6)	84(42.4)	1.4	0.2 - 9.8	0.570
	No	2(50)	2(50)			
Previous pandemic experience	Yes	56(65.9)	29(34.1)	**1.8**	**1 - 3.3**	**0.027**
	No	60(51.3)	57(48.7)			
Adequacy of workplace precautionary measures.	Sufficient	35(54.7)	29(45.3)	0.8	0.5 - 1.5	0.350
	Insufficient	81(58.7)	57(41.3)			
Attended COVID19 training	Yes	99(62.7)	59(37.3)	**2.7**	**1.3 - 5.3**	**0.004**
	No	17(38.6)	27(61.4)			
Nature of work duties during COVID-19 pandemic	Regular	35(46.7)	40(53.3)	**0.5**	**0.3 - 0.9**	**0.013**
	Irregular	81(63.8)	46(36.2)			
The state of PPEs	Sufficient	21(50)	21(50)	0.6	0.3 - 1.3	0.137
	Insufficient	95(60.9)	61(39.1)			
Been subjected to disciplinary measures during the pandemic	Yes	7(53.8)	6(46.2)	0.7	0.2 - 2.2	0.371
	No	93(62.4)	56(37.6)			
Has been contact of COVID19 patient	Yes	109(58)	79(42)	1.4	0.5 - 4.1	0.378
	No	7(50)	7(50)			
Relationship with the COVID 19 contact	Family member	16(59.3)	11(40.7)	1.1	0.5 - 2.4	0.529
	Client/Patient	93(57.8)	68(42.2)			

4.4.4 How hospitals can improve pandemic-related resilience

Most (46%) of the respondents thought the provision of enough supplies especially supply of protective devices was key in improving pandemic related resilience among the health care providers. Provision of psychological services for health care providers was also thought as vital in enhancing resilience.

How facilities can improve pandemic resilience

Improving pandemic resilience

- Provide timely information — 7
- Provide psychological services to Health care workers — 71
- Provide enough supplies — 93
- Better treatment and referral if HCW gets COVID19 — 4
- Assess risk of COVID among those caring for COVID-19 clients — 27

Frequency (0, 20, 40, 60, 80, 100)
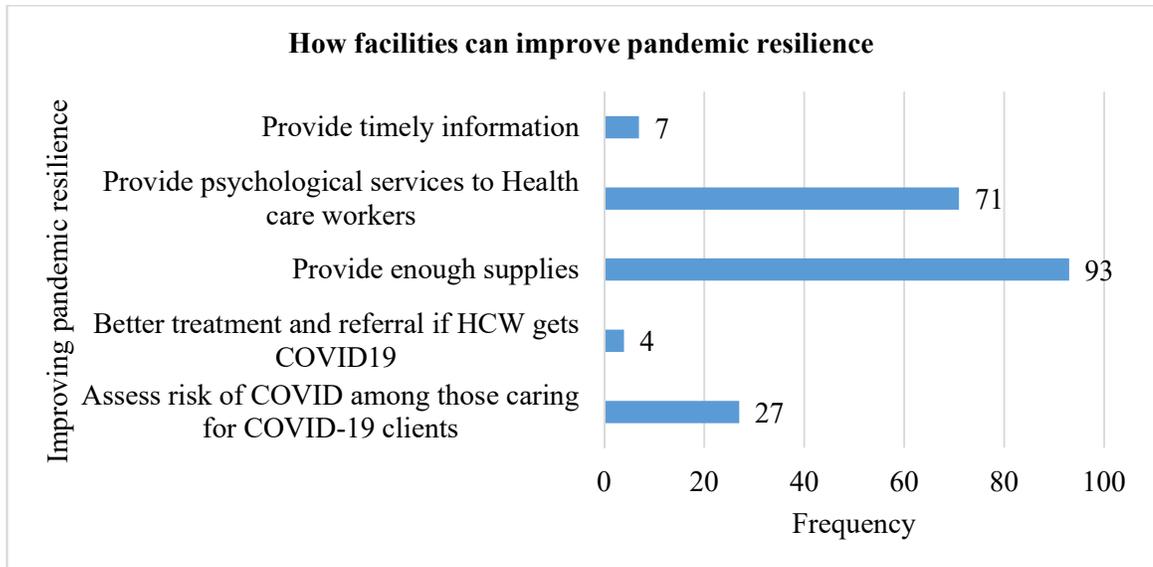
Figure 4.3: How hospitals can improve pandemic resilience

4.5 Psychological factors and health care providers' psychological responses

This section explores the psychological aspects. The section has the distribution of psychological aspects and analyses the relationship between psychological aspects and health care providers' psychological responses during the COVID - 19 pandemic.

4.5.1 Distribution of psychological factors of health care providers

The psychosocial factors explored were; pandemic related fear, stigma related to care and or having contracted COVID - 19, amount of information received especially in informal information about COVID - 19, risk perception at workplace and perception of COVID - 19 related psychological effects among workmates. Equally, the rating of COVID-19-related psychological effects at workplace and the main factors influencing the health care providers' psychological responses during the COVID - 19 were also explored as demonstrated in table 4.9 below.

Table 4.9: Psychological factors of health care providers

Psychological factors		Frequency N=202	Percent %
Has had fear or become worried working during the pandemic	Yes	191	94.6
	No	11	5.4
Knows a health care worker who contracted COVID19	Yes	191	94.6
	No	11	5.4
Hospital has psychological support services for HCW during the pandemic	Yes	33	16.3
	No	162	80.2
Has faced COVID-19-related stigma	Yes	101	50.0
	No	101	50.0
Has received unreliable excessive amount of information about COVID 19	Yes	132	65.3
	No	70	34.7
Perception of risk level at the workplace during the pandemic	High risk	174	86.1
	Low risk	28	13.9
Rating of perceived COVID-19-related psychological effects among workmates	High	168	91.8
	Low	15	8.2

4.5.2 Psychological factors and GAD

Those who had faced COVID - 19 related stigma, received unreliable excessive amount of information about COVID, perception of higher risk level at the work place during the pandemic, rated COVID - 19 related psychological effects among workmates as high had an increased risk of GAD and knowledge of a workmate who contracted COVID - 19 (OR:3.1; 95% CI: 1.7-5.7; p<0.001), (OR:1.6; 95% CI: 0.9-2.8; p=0.091), (OR:2.7; 95% CI: 1.2-6; p=0.015), (OR: 4.6; 95% CI: 1.4-15; p=0.008) and (OR:7.4; 95% CI:1.6-35.4; p=0.005) respectively, as compared to their counterparts. The proportion of GAD among those who thought the hospital has adequate psychological support services for their health care providers during the pandemic was lower (57.6%) as compared to those who thought otherwise (63%). However, there was no significant difference in the proportions (p=0.347). Likewise, there was a higher occurrence of GAD among those who reported having fear of COVID - 19 pandemic (60.7%) and those said they had received unreliable

excessive amount of information about COVID - 19 (63.2%) as compared to their counterparts

(45.5%) and (52.9%), respectively as shown in table 4.10 below.

Table 4.10: Psychological factors and GAD

Psychological factors		GAD		OR	95% CI	P Value
		Yes	No			
Has had fear or become worried working during the pandemic	Yes	116(60.7)	75(39.3)	1.9	0.5 - 6.3	0.243
	No	5(45.5)	6(54.5)			
Knows a health care worker who contracted COVID19	Yes	119(62.3)	72(37.7)	**7.4**	**1.6 - 35.4**	**0.005**
	No	2(18.2)	9(81.8)			
Hospital has a psychological support services for HCW	Yes	19(57.6)	14(42.4)	0.8	0.4 - 1.7	0.347
	No	102(63)	60(37)			
Has faced COVID-19 related stigma	Yes	74(73.3)	27(26.7)	**3.1**	**1.7 - 5.7**	**<0.001**
	No	47(46.5)	54(53.5)			
Has received unreliable excessive amount of information about COVID	Yes	84(63.6)	48(36.4)	1.6	0.9 - 2.8	0.091
	No	37(52.9)	33(47.1)			
Perception of risk level at the work place during the pandemic	High	110(63.2)	64(36.8)	**2.7**	**1.2 - 6**	**0.015**
	Low	11(39.3)	17(60.7)			
Rating of COVID19 related psychological effects among workmates	High	105(62.5)	63(37.5)	**4.6**	**1.4 - 15**	**0.008**
	Low	4(26.7)	11(73.3)			

4.5.3 Psychological factors and depression

There was a significantly higher occurrence of depression among those who had faced
COVID – 19 related stigma (OR: 2.1; 95% CI: 1.2-3.7; p=0.008). Lower occurrence of
depression was demonstrated among those who thought the hospital had psychological
support services for health care providers during the pandemic (OR: 0.5; 95% CI: 0.2 – 1;
p = 0.043).

Table 4.11: Psychological factors and depression

Psychological factors		Depression		OR	95% CI	P Value
		Yes	No			
Has had fear or become worried working during the pandemic	Yes	109(57.1)	82(42.9)	0.8	0.2 - 2.7	0.460
	No	7(63.6)	4(36.4)			
Knows a health care worker who contracted COVID19	Yes	111(58.1)	80(41.9)	1.7	0.5 - 5.6	0.302
	No	5(45.5)	6(54.5)			
Hospital has a psychological support services for HCW	Yes	14(42.4)	19(57.6)	**0.5**	**0.2 - 1**	**0.043**
	No	98(60.5)	64(39.5)			
Has faced COVID-19 related stigma	Yes	67(66.3)	34(33.7)	**2.1**	**1.2 - 3.7**	**0.008**
	No	49(48.5)	52(51.5)			
Has received unreliable excessive amount of information about COVID 19	Yes	75(56.8)	57(43.2)	0.9	0.5 - 1.7	0.465
	No	41(58.6)	29(41.4)			
Perception of risk level at the work place during the pandemic	High	99(56.9)	75(43.1)	0.9	0.4 - 1.9	0.434
	Low	17(60.7)	11(39.3)			
Rating of COVID19 related psychological effects among workmates	High	99(58.9)	69(41.1)	0.5	0.2 - 1.7	0.209
	Low	11(73.3)	4(26.7)			

4.5.4 COVID-19-related psychological effects at workplace

Most (36.6%) of the respondents rated psychological effects among workmates as being moderately high while 46.5% thought it was high or very high. Less than 10% of the respondents rated COVID - 19 related psychological effects at workplace as either moderately low or low.
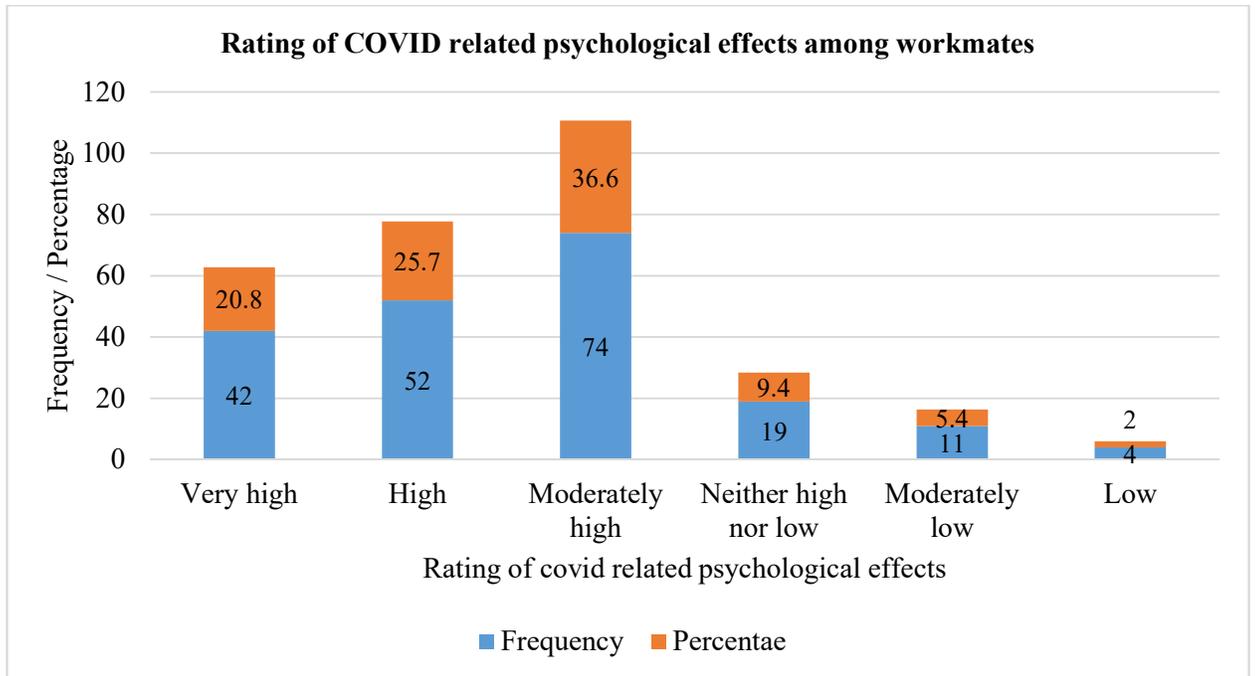
Figure 4.4: Rating of COVID-related psychological effects among health care providers

4.5.5 The main factors influencing health care providers' psychological responses

The main factors rated as major determinants of the psychological responses of health care providers to COVID - 19 were inadequate PPEs (37.6%), poor support from the hospital when one contracts COVID - 19 (29.7%), and lack of debriefing services for workers handling COVID-19 patients (11.9%). The other factors were; the risk of passing COVID - 19 to a vulnerable family member, personal experience with COVID - 19 infection and too much un-confirmed information.
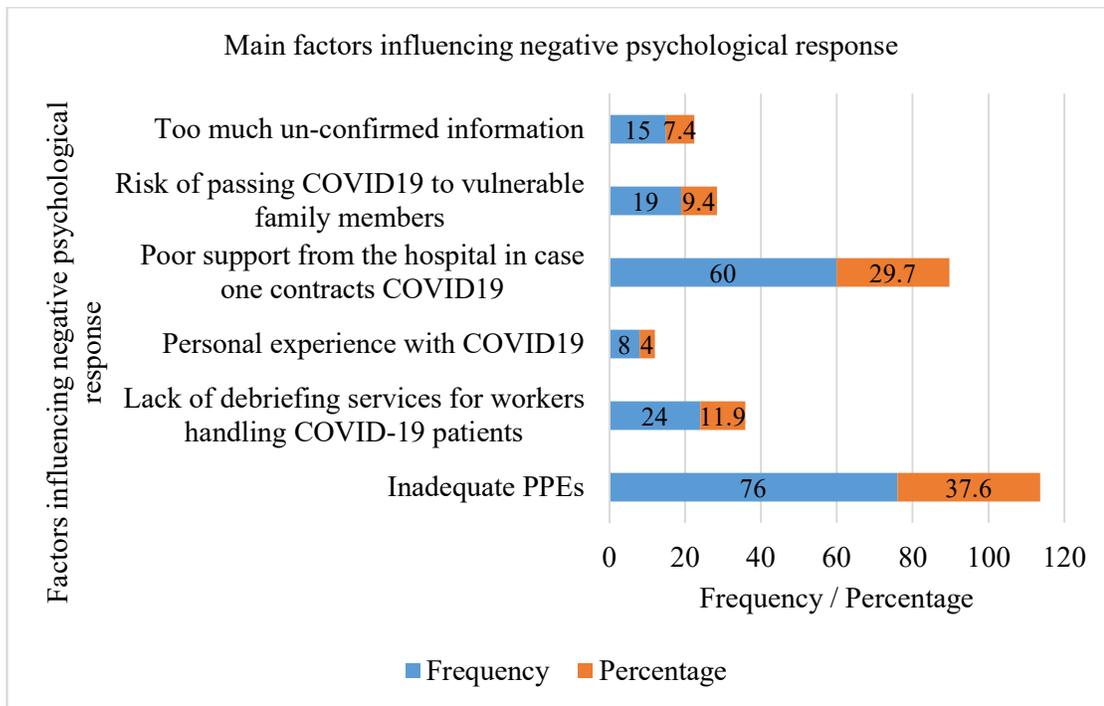
Figure 4.5: Main factors influencing psychological responses

4.6 Socioeconomic factors and health care providers' psychological responses

This section has the distribution of socioeconomic factors and analyses of their influence on the occurrence of GAD and depression as health care providers' psychological responses during the COVID - 19 pandemic. The aspects explored are; socioeconomic characteristics, comorbidities and habits, cultural aspects and the level of perceived social support. These aspects are analyzed separately in each subsection.

4.6.1 Socioeconomic characteristic of health care providers

Socioeconomic aspects are represented by cadre, level of education, living arrangement, employment status, level of education, comorbidities, habits, cultural practices and social support. The sample is represented by the following cadres; medical doctors, nurses, medical laboratory officers, clinical officers, pharmacists and dental officers. Most (70.8%) of the respondents were married with nurses being the majority (58.4%).

Table 4.12: Socioeconomic characteristic of health care providers

Socioeconomic characteristic		Frequency	Percent
Level of education	Masters	12	5.9
	Undergraduate	114	56.4
	Higher national diploma	4	2.1
	Diploma	72	35.6
Income level	>50,000	131	64.9
	<=50,000	71	35.1
Breadwinner	Yes	158	78.2
	No	44	21.8
Living arrangements	Lives alone	51	25.2
	Lives with parents	8	4.0
	Lives with partner	23	11.4
	Lives with partner and or children	116	57.4
	Single parent	4	2.0
Employment terms	Permanent	132	65.3
	Temporary	70	34.7

4.6.1.1 Comorbidities and habits

Twenty-seven of the respondents (13.4%) had comorbidities such as asthma, diabetes mellitus, HIV, hypertension, rheumatic heart disease, and systemic lupus erythematosus (SLE). More than 60% of the respondents had either been diagnosed with COVID - 19 or had clinical symptoms related to COVID - 19 but without laboratory confirmation. Hypertension (45%) was the most prevalent comorbidity followed by HIV (20%) and diabetes (19%). The other comorbidities were asthma (8%), rheumatic heart disease (7%) and systemic lupus erythematosus (1%).

About 10% of the respondents engaged in unhealthy habits like alcohol consumption and cigarette smoking. Alcohol was consumed by 100% of those who said they engage in unhealthy habits and 17.4% also smoked cigarettes besides consuming alcohol.

4.6.1.2 Distribution of GAD on Socioeconomic aspects

In table 4.13, respondents' level of education, income level, living arrangements, employment status, habits and comorbidities were analyzed as aspects that correlated to

the socioeconomic status. Those earning more than KES 50,000 (OR:4.6), living with partner and children (OR:2.4), and being employed on a permanent basis (OR:3.3) portrayed a higher preponderance for GAD. Those with lower qualifications and those that lived alone had lower risk of GAD (OR:0.5; 95% CI: 0.3 - 0.9; p=0.019) and (OR:0.4; 95% CI: 0.2 - 0.8; p=0.004), respectively.

Table 4.13: Socioeconomic aspects and GAD

Socioeconomic aspect		GAD		OR	95% CI	P Value
		Yes	No			
Level of education	Up to Higher diploma	38(50)	38(50)	0.5	0.3 - 0.9	0.019
	Undergraduate & above	83(65.9)	43(34.1)			
Income level	>50,000	95(72.5)	36(27.5)	4.6	2.5 - 8.5	<0.001
	<=50,000	26(36.6)	45(63.4)			
Breadwinner	Yes	92(58.2)	66(41.8)	0.7	0.4 - 1.5	0.229
	No	29(65.9)	15(34.1)			
Lives alone	Yes	22(43.1)	29(56.9)	0.4	0.2 - 0.8	0.004
	No	99(65.6)	52(34.4)			
Lives with partner	Yes	15(65.2)	8(34.8)	1.3	0.5 - 3.2	0.376
	No	106(59.2)	73(40.8)			
Lives with partner and children	Yes	80(69)	36(31)	2.4	1.4 - 4.3	0.002
	No	41(47.7)	45(52.3)			
Lives with parent	Yes	0(0)	8(100)	2.7	2.2 - 3.2	0.001
	No	121(62.4)	73(37.6)			
Employment terms	Permanent	92(69.7)	40(30.3)	3.3	1.8 - 5.9	<0.001
	Temporary	29(41.4)	41(58.6)			
Unhealthy habit	Yes	12(63.2)	7(36.8)	1.2	.4-3.1	0.482
	No	109(59.6)	74(40.4)			
Has chronic medical condition	Yes	19(70.4)	8(29.6)	1.7	.7-4.1	0.163
	No	102(58.3)	73(41.7)			

4.6.1.3 Distribution of Depression on Socioeconomic aspects

Those who lived with a partner (OR:4; 95% CI:1.3-12.3; p= 0.007) and or with children (OR:1.7; 95% CI: 1–3; p=0.045) and those that lived with parents (OR:2.5; 95% CI: 2.1–3; p=0.001) were more at risk of being depressed than their counterparts. These findings are also corroborated by the fact that those who live alone have a lower risk of depression than their counterparts (OR:0.4;95% CI: 0.2 - 0.7; p=0.002). As much as those earned highly, had permanent jobs and those who engaged in unhealthy habits had higher proportions of depression, there was no significant difference in risk status with their counterparts as shown in table 4.14 below.

Table 4.14: Socioeconomic factors and depression

Socioeconomic aspects		Depression		OR	95% CI	P Value
		Yes	No			
Level of education	Up to higher diploma	41(53.9)	35(46.1)	0.8	0.4 - 1.4	0.264
	Undergraduate & above	75(59.5)	51(40.5)			
Income level	>50,000	80(61.1)	51(38.9)	1.5	0.9 - 2.7	0.102
	<=50,000	36(50.7)	35(49.3)			
Breadwinner	Yes	86(54.4)	72(45.6)	0.6	0.3 - 1.1	0.071
	No	30(68.2)	14(31.8)			
Lives alone	Yes	20(39.2)	31(60.8)	**0.4**	**0.2 - 0.7**	**0.002**
	No	96(63.6)	55(36.4)			
Lives with partner	Yes	19(82.6)	4(17.4)	**4**	**1.3- 12.3**	**0.007**
	No	97(54.2)	82(45.8)			
Lives with partner and children	Yes	73(62.9)	43(37.1)	**1.7**	**1 - 3**	**0.045**
	No	43(50)	43(50)			
Lives with parent	Yes	0(0)	8(100)	**2.5**	**2.1 - 3**	**0.001**
	No	116(59.8)	78(40.2)			
Has chronic medical condition	Yes	11(40.7)	16(59.3)	**0.5**	**0.2 - 1**	**0.048**
	No	105(60)	70(40)			
Has been diagnosed with COVID19	Yes	84(66.7)	42(33.3)	**2.8**	**1.5 - 4.9**	**0.001**
	No	32(42.1)	44(57.9)			
Employment terms	Permanent	81(61.4)	51(38.6)	1.6	0.9 - 2.9	0.080
	Temporary	35(50)	35(50)			
Unhealthy habit	Yes	12(63.2)	7(36.8)	1.3	0.5 - 3.5	0.391
	No	104(56.8)	79(43.2)			

4.6.2 Cultural aspects

This subsection explores cultural aspects that were prohibited as part of COVID - 19 control measures and the level to which culture enables social structural support in case of emotional crisis. Table 4.15 shows forbidden cultural activities whose attendance was forbidden by COVID control measures.

Table 4.15: Cultural aspects

Cultural aspects		Frequency	Percent
Engaged in sociocultural practices forbidden	Yes	54	26.7
by COVID19 control measures	No	148	73.3
Religious	Yes	35	17.3
	No	19	9.4
Funeral	Yes	39	19.3
	No	15	7.4
Initiation rites	Yes	16	7.9
	No	38	18.8
Wedding	Yes	28	13.9
	No	26	12.9

4.6.2.1 Distribution of GAD on cultural aspects

GAD distribution on the cultural aspects is as shown in table 4.16. There was a demonstrable lower GAD proportion among those that thought their culture provides social structural support system in case of emotional crisis than those who thought they did not have the support (OR:0.5; 95% CI:0.2-1.1; p=0.049).

Table 4.16: Cultural aspects and GAD

Cultural aspects		GAD		OR	95% CI	P Value
		Yes	No			
Culture enables social structural support in case of emotional crisis	Yes	62(58.5)	44(41.5)	**0.5**	**0.2 - 1.1**	**0.049**
	No	32(74.4)	11(25.6)			
Engaged in prohibited sociocultural practices that could spread COVID19	Yes	29(53.7)	25(46.3)	0.7	0.4 - 1.3	0.178
	No	92(62.2)	56(37.8)			
Religious	Yes	17(48.6)	18(51.4)	0.6	0.2 - 1.7	0.230
	No	12(63.2)	7(36.8)			
Funeral	Yes	20(51.3)	19(48.7)	0.7	0.2 - 2.4	0.395
	No	9(60)	6(40)			
Initiation rites	Yes	11(68.8)	5(31.3)	2.4	0.7 - 8.4	0.127
	No	18(47.4)	20(52.6)			
Wedding	Yes	16(57.1)	12(42.9)	1.3	0.5 - 3.9	0.400
	No	13(50)	13(50)			

4.6.2.2 Distribution of depression on cultural aspects

Table 4.17 shows the distribution of depression on cultural aspects of the respondents. Those who engaged in sociocultural practices forbidden by COVID - 19 control measures had higher preponderance of depression than their counterparts (OR:2.7; 95% CI:1.4-5.4; p=0.003) more so those who engaged in rites of passage and initiation rites (OR:7.8; 95% CI: 0.9 - 65.8; p=0.03).

Table 4.17: Cultural factors and depression

Cultural aspects		Depression		OR	95% CI	P Value
		Yes	No			
Culture enables social structural support in case of emotional crisis	Yes	62(58.5)	44(41.5)	1.5	0.7 - 3	0.186
	No	21(48.8)	22(51.2)			
Engaged in prohibited sociocultural practices that could spread COVID19	Yes	40(74.1)	14(25.9)	**2.7**	**1.4 - 5.4**	**0.003**
	No	76(51.4)	72(48.6)			
Religious	Yes	25(71.4)	10(28.6)	0.7	0.2 - 2.5	0.397
	No	15(78.9)	4(21.1)			
Funeral	Yes	29(74.4)	10(25.6)	1.1	0.3 - 4.1	0.596
	No	11(73.3)	4(26.7)			
Initiation rites	Yes	15(93.8)	1(6.3)	**7.8**	**0.9 - 65.8**	**0.03**
	No	25(65.8)	13(34.2)			
Wedding	Yes	21(75)	7(25)	1.1	0.3 - 3.7	0.558
	No	19(73.1)	7(26.9)			

4.6.3 Level of perceived social support

4.6.3.1 Descriptive statistics for total MSPSS scores for perceived social support

The MSPSS is a 7-point Likert scale that objectively measures social support. It has 12 aspects being assessed thus rating of overall perceived social support is rated as follows; a score of 12 – 35 is rated as low perceived social support, 36 – 60 as medium perceived social support, and 61 – 84 is rated as high perceived social support. The scale is further disaggregated into three groups namely; perceived support from significant others, perceived support from family, and perceived support from friends which are assessed by four aspects. Perceived support from significant others is measured aspects 1,2,5 and 10, perceived support from family is assessed by aspects 3,4,8 and 11, and perceived support from friends is assessed by aspects 6,7,9, and 12. The values for the disaggregated scales are further averaged and rating for perceived support under each is scored as follows; 1-2.9 low perceived support, 3-5 moderate perceived support, and 5.1-7 high perceived support. Table 4.18 summarizes the descriptive aspects of the overall MSPSS

Table 4.18: Descriptive summary of MSPSS aspects

Statistics	Significant other	Family	Friends	Overall
N	202	202	202	202
Mean	3.7	4.2	3.8	46.7
Std. Error of Mean	0.1	0.1	0.1	1.1
Median	3.5	3.9	3.6	45.0
Std. Deviation	1.4	1.4	1.3	14.9
Variance	1.8	1.8	1.7	222.8
Range	6.00	5.25	6.00	68
Minimum	1.00	1.75	1.00	16
Maximum	7.00	7.00	7.00	84

4.6.3.2 Distribution of perceived social support by gender

Table 4.19 shows the distribution of overall perceived social support and disaggregated support. There was significant sex difference in proportions for moderate and high perceived family social support with more males perceiving moderate support and females perceiving more high support (OR:1.7;95% CI:1-3.1; p=0.038) and (OR:0.5;95% CI:0.3-0.9; p=0.015) respectively. Equally perceived friends social support demonstrated sex difference with more males perceiving moderate support and females perceiving more high support (OR:1.7; 95% CI:1-3; p=0.048) and (OR:0.3; 95% CI: 0.1-0.6; p=0.001) respectively as shown in table 4.19 below.

Table 4.19: Gender differences in perception of social support

MSPSS Scale	Level of perceived support	Gender		OR	95% CI	P Value
		Male	**Female**			
Significant other	Low perceived support	44(64.7)	24(35.3)	1.4	0.8 - 2.6	0.149
	Moderate perceived support	59(55.1)	48(44.9)	0.7	0.4 - 1.3	0.156
	High perceived support	16(59.3)	11(40.7)	1	0.4 - 2.3	0.571
Family	Low perceived support	25(61)	16(39)	1.1	0.6 - 2.2	0.454
	Moderate perceived support	65(65.7)	34(34.3)	**1.7**	**1 - 3.1**	**0.038**
	High perceived support	29(46.8)	33(53.2)	**0.5**	**0.3 - 0.9**	**0.015**
Friends	Low perceived support	40(62.5)	24(37.5)	1.2	0.7 - 2.3	0.291
	Moderate perceived support	67(65)	36(35)	**1.7**	**1 - 3**	**0.048**
	High perceived support	12(34.3)	23(65.7)	**0.3**	**0.1 - 0.6**	**0.001**
Overall	Low perceived social support	32(57.1)	24(42.9)	0.9	0.5 - 1.7	0.436
	Moderate perceived social support	70(63.6)	40(36.4)	1.5	0.9 - 2.7	0.089
	High perceived social support	17(47.2)	19(52.8)	0.6	0.3 - 1.2	0.084

4.6.3.3 Perceived social support and GAD

Table 4.20 shows the bivariate analysis between the level of perceived support as per the MSPSS scale among respondents and GAD response to the COVID-19 pandemic. As much as none of the disaggregated levels of perceived social support and the levels of overall support demonstrated a significant difference in proportions of GAD, worth noting is the proportion of those with low perceived social support from significant others had a higher proportion (63.2%) of GAD as compared to their counterparts.

Table 4.20: Perceived social support and GAD

MSPSS Scale	Level of perceived support		GAD		OR	95% CI	P Value
			Yes	No			
Perceived social support from Significant others	Low	Yes	43(63.2)	25(36.8)	1.2	0.7 - 2.3	0.297
		No	78(58.2)	56(41.8)			
	Moderate	Yes	60(56.1)	47(43.9)	0.7	0.4 - 1.3	0.151
		No	61(64.2)	34(35.8)			
	High	Yes	18(66.7)	9(33.3)	1.4	0.6 - 3.3	0.291
		No	103(58.9)	72(41.1)			
Perceived support from Family	Low	Yes	23(56.1)	18(43.9)	0.8	0.4 - 1.6	0.351
		No	98(60.9)	63(39.1)			
	Moderate	Yes	58(58.6)	41(41.4)	0.9	0.5 - 1.6	0.409
		No	63(61.2)	40(38.8)			
	High	Yes	40(64.5)	22(35.5)	1.3	0.7 - 2.5	0.232
		No	81(57.9)	59(42.1)			
Perceived support from Friends	Low	Yes	35(54.7)	29(45.3)	0.7	0.4 - 1.3	0.190
		No	86(62.3)	52(37.7)			
	Moderate	Yes	64(62.1)	39(37.9)	1.2	0.7 - 2.1	0.302
		No	57(57.6)	42(42.4)			
	High	Yes	22(62.9)	13(37.1)	1.2	0.5 - 2.5	0.423
		No	99(59.3)	68(40.7)			
Overall perceived social support	Low	Yes	31(55.4)	25(44.6)	0.8	0.4 - 1.4	0.255
		No	90(61.6)	56(38.4)			
	Moderate	Yes	68(61.8)	42(38.2)	1.2	0.7 - 2.1	0.321
		No	53(57.6)	39(42.4)			
	High	Yes	22(61.1)	14(38.9)	1.1	0.5 - 2.2	0.513
		No	99(59.6)	67(40.4)			

4.6.3.4 Perceived social support and depression

Depression distribution across different levels of perceived social support by respondents is shown in table 21. Those with low perceived support from family had more than 2-fold risk of developing depressive response towards the pandemic as compared to their counterparts (OR:2.1; 95% CI:1-4.3; p=0.038). Those who had high perceived family support had a lower risk of depression compared to their counterparts (OR:0.6; 95% CI: 0.3-1.1; p=0.058).

Table 4.21: Perceived social support and depression

MSPSS Scale	Level of perceived support		Depression		OR	95% CI	P Value
			Yes	No			
Perceived social support from Significant other	Low	Yes	41(60.3)	27(39.7)	1.2	0.7 - 2.2	0.332
		No	75(56)	59(44)			
	Moderate	Yes	57(53.3)	50(46.7)	0.7	0.4 - 1.2	0.13
		No	59(62.1)	36(37.9)			
	High	Yes	18(66.7)	9(33.3)	1.6	0.7 - 3.7	0.203
		No	98(56)	77(44)			
Perceived support from Family	Low	Yes	29(70.7)	12(29.3)	**2.1**	**1 - 4.3**	**0.038**
		No	87(54)	74(46)			
	Moderate	Yes	57(57.6)	42(42.4)	1	0.6 - 1.8	0.54
		No	59(57.3)	44(42.7)			
	High	Yes	30(48.4)	32(51.6)	**0.6**	**0.3 - 1.1**	**0.058**
		No	86(61.4)	54(38.6)			
Perceived support from Friends	Low	Yes	39(60.9)	25(39.1)	1.2	0.7 - 2.3	0.297
		No	77(55.8)	61(44.2)			
	Moderate	Yes	55(53.4)	48(46.6)	0.7	0.4 - 1.3	0.149
		No	61(61.6)	38(38.4)			
	High	Yes	22(62.9)	13(37.1)	1.3	0.6 - 2.8	0.301
		No	94(56.3)	73(43.7)			
Overall perceived social support	Low	Yes	37(66.1)	19(33.9)	1.7	0.9 - 3.1	0.083
		No	79(54.1)	67(45.9)			
	Moderate	Yes	60(54.5)	50(45.5)	0.8	0.4 - 1.4	0.223
		No	56(60.9)	36(39.1)			
	High	Yes	19(52.8)	17(47.2)	0.8	0.4 - 1.6	0.33
		No	97(58.4)	69(41.6)			

4.7 Summary

The respondents who had COVID – 19 related GAD were 59.9%. Some sociodemographic characteristics reduced risk of GAD. These were; being aged below 30 years, being male and respondents. Being married, having higher income levels, having a permanent job and living with others increased the risk of GAD. Occupational factors like direct care, fewer years of experience, adequate precaution, having a lower level of education and sufficient PPE reduced the risk of GAD while direct contact with COVID-19 clients, and having a colleague who contracted COVID - 19 increased the risk.

The prevalence of depression related to COVID - 19 among the respondents was 57.4%. Those aged below 30 years, and those who live alone had reduced risk for depression related to COVID-19. Other aspects that reduced the risk of depression were, having fewer years of experience, having regular duties, and the hospital providing psychological support for the frontline staff. Having worked in a previous pandemic and having attended COVID-19 training increased the risk of developing depression related to COVID - 19.

CHAPTER FIVE

DISCUSSION

5.1 Overview

The current study which was conducted in cross-sectional manner was carried out during the COVID - 19 pandemic. The KOBO based tool was chosen because it was quick, reliable, self-administered, and validated standard questions for GAD, depression and social support were used.

5.2 Levels of health care providers' psychological responses during the COVID - 19

Past research has shown that outbreaks, epidemics and pandemics can bring about heightened and myriad psychological problems in the populous. Among individuals in the population, this can exacerbate the already existing ailments or even bring about the development of new mental and psychiatric symptoms. The symptoms can vary from mild to severe psychological responses that might need medical care and even hospitalization (Müller, 2015). The current study was able to demonstrate the levels of health care providers' psychological responses towards COVID - 19 pandemic. The study results indicated the prevalence of depression (57.4%) and anxiety (59.9%). Our study findings are comparable to a global study across 31 countries which showed an overall prevalence of 60% GAD and 53% depression. Similarly at 58.4% GAD prevalence in a Nigerian study, the findings were comparable to the current study (59.9%) (Agberotimi et al., 2020).

Other reviewed studies demonstrated lower prevalence of GAD and depression among health workers as compared to the current study findings. Most of these studies were from different settings especially East Asia and USA (Adibi et al., 2021). Current evidence

which has been published demonstrates an increase in the trend of anxiety and depression compared to the initial period of the pandemic (Choe et al., 2021; Huang et al., 2020). A published systematic review elucidated that the prevalence of major depressive disorder and anxiety disorders during COVID-19 pandemic among health care providers was associated with increasing infection rates, uncertainty and attendant control measures (Santomauro et al., 2021).

5.3 Sociodemographic characteristics and health care providers' psychological responses during the COVID - 19

The current study established that younger health care providers (those aged below 30 years) had less occurrence of GAD and depression. Though age had mixed findings in relation to their effect on GAD and depression our study findings are similar to an Iranian study (Khanal et al., 2020). On the contrast, some studies demonstrated that younger respondents had higher GAD (Moghanibashi-Mansourieh, 2020). Most of the younger respondents have more access to information and worry over future economic status more than their older counterparts (Qiu et al., 2020). Equally, this population was largely not married and were living alone. Studies have established that older staff worried more of the consequences of COVID-19 while those who were married and or living with other members in the same household had fears of transmitting COVID -19 to loved ones (Cai et al., 2020 ; Spoorthy et al., 2020). The current study demonstrates that female health care providers had more cases of GAD as compared to their male counterparts. This corroborated by the findings of the other studies (Lai et al., 2020b; Liang et al., 2020). This lobe sided gendered risk can be associated with the caring roles and household responsibilities occasioned by school closures or family members becoming unwell that are more likely to fall on women. This in turn increases female health care providers risk

of psychological responses during the COVID - 19 as compared to male colleagues (Santomauro et al., 2021). This study revealed that being married significantly increased the risk of GAD. This is verified by other studies which demonstrated that living with significant others and being married increased the risk of GAD (Moghanibashi-Mansourieh, 2020). Some explanatory studies established that personal fears regarding being a source of disease to family members and fear of household problems due to lockdown contributed to psychological responses of married health care providers. Same studies proposed that assuring safety of family members and instituting measures to reduce stigma could reduce psychological burden that COVID - 19 had on married health care providers (Cai et al., 2020; J. Lai et al., 2020b; Mohindra et al., 2020).

5.4 Occupational factors and health care providers' psychological responses during the COVID - 19

According to Adibi et al., 2021 workplace environment has effects on the health care providers' psychological responses towards COVID - 19. The current study showed that health care providers who had contact with COVID - 19 cases or suspected cases, those who knew a colleague who had contracted COVID – 19, those with previous pandemic experience and those who attended COVID - 19 training had higher preponderance for depression. Those with fewer years of work experience and had regular duties during the pandemic had a significantly lower risk of depression.

These findings are similar to a study which demonstrated the degree of contact with confirmed or suspected cases of COVID - 19 was directly proportional to stress levels among health care providers (Kang et al., 2020). Several studies have shown that having less years of experience and regular duties reduced the occurrence of mental health related

problems among health care providers. In another study, most of the staff mentioned that they did not need a psychologist, but more rest, regular duties and adequate personal protective equipment. They suggested training on psychological skills to deal with patients' psychological responses to COVID - 19 infection and requested for a mental health staff to be incorporated in direct care (Chen et al., 2020).

5.5 Psychological factors and health care providers' psychological responses during the COVID - 19

Receiving unreliable information and falsified reports about COVID - 19 leads to misinformation which exacerbates depressive symptoms while reports on people who improved and treatment breakthroughs can reduce anxiety. Thus it is imperative to update and get accurate information especially on number of recoveries as this is associated with lower psychological responses to COVID - 19 (Cuiyan et al., 2020; Salari et al., 2020). Likewise, several studies demonstrated that psychological shock from overwhelming information emerging about the disease made worse the feelings of pessimism and anxiety about the trajectory of the disease and caused post-traumatic stress like response among medical staff. Younger people tend to obtain large amounts of information from social media triggering stress and people with higher education tended to have more distress, probably because of high self- awareness of their health and increased risk perception (Chen et al., 2022; Qiu et al., 2020). On the contrary, Bai et al., (2004) showed providing accurate and timely information to health care providers about SARS reduced stigma related to care and contracting of the disease.

The current study showed reduced depression among those who thought that the hospital had better psychological support services for the health care providers during the COVID

- 19 pandemic. Salari et al., (2020) showed that psychological interventions preferably delivered over the telephone was shown to be helpful in reducing psychological responses. The perception that the hospital had adequate psychological support to assure psychological resilience of workers reduced the occurrence of mental health related problems among health care providers. One of the studies went ahead and detailed the telephone based psychological support for frontline workers in the initial COVID - 19 outbreak in Wuhan and how the calls and debriefing sessions went a long way in enhancing resilience of the workers when there was still high uncertainty about the trajectory, care, and treatment of the cases of the novel agent (Chen et al., 2020; Hazumi et al., 2022; Kang et al., 2020; Mediani et al., 2022).

Stigma towards those caring for COVID - 19 and those who contracted the disease was quite high across the globe but more specifically in the countries that had the severest of outcomes off the disease like Italy. Some studies demonstrated that risk perception at workplace led to more negative psychological effects of social stigma related fatality and high transmissibility of the disease and some health care providers feared role reversal from care provider to patient and the attendant stigma of COVID - 19 sick role (Wahed et al., 2020; Cuiyan et al., 2020; Spoorthy et al., 2020). Family and friends' support for health care providers during COVID 19 was rated as very important especially when facing stigma from the community. Job related consideration like sick leave and telephone psychological care encouraged resilience towards the effects of stigma (Chua et al., 2004; Mediani et al., 2022). Most of the health care providers had concerns over contracting the disease and transmitting to family members and the community stigmatizing them for that and due to providing COVID - 19 care. However, hero campaigns for health care workers

by the government and other agencies was shown to alleviate the effects of stigma and equally reduce the stigma towards them and their families (O'Neal et al., 2021).

The current study showed that workplace risk perception and rating of COVID - 19 related psychological effects among colleagues increased GAD and depression among health care providers. Italian studies showed that risk perception was directly proportional to stress level among health care workers and that the front line caregivers were the one at most risk (Puci et al., 2020; Simione & Gnagnarella, 2020), while Chua et al., (2004) showed that lower risk perception was associated with less SARS related stress among health care providers However, Arslanca et al., (2021) determined that appropriate and balanced risk perception is key in encouraging preventive measures like handwashing, use of PPE. Thus authorities should maximize on effective risk communication to optimize perception through helpful evolution of health care providers understanding of the disease and individual risk (Arslanca et al., 2021).

5.6 Socioeconomic factors and health care providers psychological responses

The current study established that social support from family members was associated with lower risk of depression among the health care providers. These findings are comparable to other studies which inferred that the levels of social support for medical staff were significantly associated with self-efficacy and sleep quality and negatively associated with the degree of anxiety and depression among frontline COVID – 19 health care (Bapolisi et al., 2022; Kock et al., 2021; Xiao et al., 2020).

The current study shows higher levels of anxiety among the health care providers who were more highly educated. This finding is similar to other studies that showed a higher risk perception and likelihood of developing fear among the highly educated as compared

to those who were not. In a general population study higher level of education meant more access information thus more self-awareness and risk perception (Wahed et al., 2020; Arslanca et al., 2021; Enabulele & Esther, 2021; Qiu et al., 2020). Other studies are not unanimous in their findings. While some showed that education was protective towards the health care providers from SARS related stress others showed no difference in risk based on educational level or that the general population without formal education had higher risk of depression (Chua et al., 2004; Cuiyan et al., 2020; Kock et al., 2021).

Earlier SARS outbreaks in China that led to authorities banning cultural activities had led to higher levels of distress and higher perception of fear and anxiety for those who had not adhered to health authorities set regulations. However, in the COVID - 19 pandemic, same communities received health restrictions of communal and cultural activities positively (Cuiyan et al., 2020). The community in current study might not have had earlier strict restrictions thus the witnessed non-adherence to COVID – 19 related restriction of cultural activities and the attendant psychologic response.

Several studies have established that social support enhances sleep and rest patterns thus enhancing stress resilience and that supportive and proud family are key in ensuring psychological resilience of the health care provider. While studies during the COVID – 19 pandemic analyzed the problems facing healthcare providers during the pandemic in an integrative review and found out that various levels of social support were associated with varied degrees of psychological resilience or lack thereof (Mediani et al., 2022; Mohindra et al., 2020; Xiao et al., 2020). These findings are unanimous with those of the current study where varied degrees of social support especially family support was associated with reduced depression among health care providers. Reduced social networks

support is associated psychological distress while social networks support is a protective factor in stress resilience. During COVID – 19 pandemic, healthcare providers felt disjointed from social community, this was more witnessed in Italy where social stigma towards COVID – 19 was high (Simione & Gnagnarella, 2020). A study conducted recently in China has demonstrated clinicians and nurses in the frontline caring for COVID – 19 patients had an increased risk of developing anxiety and depression in the course of their work (Lai et al., 2020). The symptoms developed are likely relating to the health care providers witnessing death of colleagues, being overwhelmed, working for long hours without rest, being susceptible to infection, collapsing social network while being worried and fearful of their own safety and well-being during the pandemic (Jun et al., 2020; Lai et al., 2020b). More socially oriented activities enhance greater resilience especially in COVID – 19 lockdown period. Perceived social support from family friends and significant others is a psychological protective factor (Dezso et al., 2022).

Qiu et al., (2020) posited that loss of anticipated income could lead to higher stress levels. this is comparable to the current study finding where the health care provider with higher income were more at risk of anxiety. Most of these were consultant medical practitioners thus due to anticipated COVID – 19 restrictions and low clientele turnout, there could be anticipated loss of income.

Living arrangement has been demonstrated by the current study as a key determinant of psychological response to COVID - 19. This is similar to findings of O'Neal et al., (2021) who demonstrated higher proportion of health care providers who lived with someone at increased risk of developing COVID – 19 complications exhibited being more worried about spreading the virus than those who were not staying with someone at risk.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Overview

The study met all the objectives that were set at its commencement. The study determined the levels of health care providers' psychological responses at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) and was able to assess the factors associated with health care providers' psychological responses during the COVID - 19 pandemic.

6.2 Conclusions

6.2.1 Levels of the health care providers' psychological responses

In conclusion, the study findings revealed a prevalence of 59.9% for anxiety and 57.4% for depression symptoms among health providers during the ongoing pandemic at JOOTRH, young age, male gender, being single and less years of experience were protective of psychological resilience.

6.2.2 Health care providers' psychological responses and occupational factors

This study concluded that the occupational factors like direct patient care, sufficient Personal Protective Equipment and other supplies led to better psychological responses. Perception of better psychological support services increased psychological resilience, high individual risk perception led to anxiety, while stigma towards health care providers who contracted or cared for COVID - 19 patients increased the vulnerability of having anxiety and depression.

6.2.3 Health care providers' psychological responses and socioeconomic factors

This study concluded that socioeconomic factors such as living alone had higher psychological resilience than those who lived with others. Perception of high social support especially from family members was shown to confer psychological resilience towards COVID - 19. Health care providers with high family support were less likely to have depression.

6.3 Recommendations

Based on the findings of the study, this study hereby makes the following recommendations;

i.   National and county governments to put measures in place in order to address the high prevalence rates of psychological responses during pandemics. More specifically, the old, female and married who should be accorded greater psychological support.

ii.   Institutions and health authorities to create appropriate and conducive work environment through availing Personal Protective Equipment (PPE) and supplies to bolster health care providers resilience to psychological responses during pandemics. Debriefing services and stigma reduction measures should be prioritized.

iii. Consideration of family status so that those who feel they have relatives who are vulnerable can be provided with more psychological care and exposure time reduced during posting or deployment during pandemics, while enhancing social support from family members of those offering direct COVID 19 patient care.

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APPENDICES

APPENDIX I: CONSENT FORM

1.0 Identification details

Date …………………………………………………

Serial number………………………………………….

Participant number …………………………………….

1.1 Introduction and purpose of the study

I am a JARED MAKORI a student pursuing Masters in Advanced nursing practice (mental health and psychiatry nursing) at MMUST. My study aims to psychological responses of health care providers at JOOTRH.

1.2 Premise for participation

The participation in the research was entirely voluntary. It approximately takes half an hour to reply to the questionnaire and the validated tools. the responses will be purely anonymous. The objective and honest responses will contribute to the achievement of the aim of this research.

1.3 Potential Benefits

The findings from this study will be purely for learning purposes. The findings may also be of relevance to institutions and the governments to improve psychological wellbeing of health care providers during biological disasters and policy formulation on mental health. Participants will not be compensated for taking part in the research.

Statement of consent: I have gone through the above information and my questions have been sufficiently have been responded to.

Participant: Signature ………………

Person Obtaining consent: Signature: …………… Date ……………………

Incase of any questions or concerns: Contact Jared Makori:

makorijared.jm@gmail.com or 0707238668.

APPENDIX II: QUESTIONNAIRE FOR HEALTH CARE PROVIDERS

Your honest responses on the following questionnaire will assist in assessing the health care providers' psychological responses during the COVID – 19 pandemic at JOOTRH. All responses will be coded and remain confidential.

SECTION A: DEMOGRAPHICS

Indicate with a tick (√)

1. Gender?

   Male ( ), Female ( ) , Intersex ( )

2. Age bracket?

   18 – 30 ( ), 31 – 40 ( ), 41 – 50 ( ), Above 50

3. Religion?

   Christian () Muslim () Atheists (), Others ( )

4. Marital status

   Single (), Married (), Widowed (), Divorced (), Separated (), Others ()

SECTION B: OCCUPATIONAL FACTORS

5. What is your cadre?

    Doctor ( ) Nurse ( ) Clinical officer ( ) Dentist ( ), Laboratory officer ( ) Pharmacist

    ( ), Public health officer ( )

6. Do you deal with COVID – 19 patients directly?

    Yes (), No ()

7. What are your years of work experience?

    0 – 10 (), 11 – 20 (), 21 – 30 (), 31 – 40 (), 41 – 50 ()

8. Have you attended any training on COVID-19?

    Yes (), No ()

9. Precautionary measures in workplace

    Sufficient (), Insufficient ()

10. Personal protective equipment

    Sufficient (), Insufficient ()

11. Have you been vaccinated against COVID - 19?

    Yes (), No ()

12. Have you been exposed to similar pandemics and epidemics before?

    Yes (), No ()

13. Have you been subjected to any disciplinary measures during the pandemic?

    Yes (), No ()

14. How can hospital improve pandemic related resilience?

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………..

SECTION C: PSYCHOLOGICAL FACTORS

15. Have you faced stigma due to COVID-19 as a health care provider or family?

    Yes (), No (), Do not want to answer ()

16. Do you receive excessive amount of information about COVID – 19 that is typically unreliable?

    Yes (), No ()

17. What is your perception of the risk level at the work place during the pandemic?

    No risk (), Low risk (), High risk (), Very high risk ()

18. Have you experienced any fear or become worried working during the pandemic?

    Yes (), No ()

19. Does the hospital have any psychological support for health care providers taking care of COVID – 19 patients.

    Yes (), No ()

20. Do you have knowledge of any health care provider who has contracted COVID – 19?

    Yes (), No ()

21. How can you rate psychological effects among workmates.

    Low (), moderately (), neither high nor low (), moderately high (), high (), very high ().

22. What is the main factor influencing the occurrence health care providers' psychological responses during the COVID – 19 pandemic?

………

………

………

………

SOCIO - ECONOMIC FACTORS

23. What is your family status?

   …………………………………………………………

24. Life habits

   Tobacco (), Alcohol (), Tobacco and alcohol (), Nothing ()

25. Do you have any underlying chronic illness?

   Yes ( ), No ( )

   If yes specify

   ………………………………………………………….

26. What are your terms of employment?

   Permanent ( ), Temporary ( )

27. What is your income level?

   Below 50k, 51k – 100k, 101k – 150k, 151k – 200, above 200k

28. What is your highest educational level attained?

   Certificate (), Diploma ( ), Undergraduate ( ), Masters ( ), PhD (), Any other ( )

29. Who provides for your family?

   Self (), other ()

30. Have you engaged in any of the cultural practices below which go against the

   ministry of health guidelines COVID – prevention and control.

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Worship and religious practices					
Funeral rites					

Initiation rites					
Wedding functions					

SECTION D: GENERALIZED ANXIETY DISORDER SCALE (GAD - 7)

How frequent have the following items bothered you in the past two weeks with 0 - none, 1 - several days, 2 – greater than half the days, 3 – almost everyday	0	1	2	3
On edge, anxious, nervous feeling				
Inability to control worrying or stop it				
Too much worrying on different things				
Relaxing problems				
Inability to sit still due to restlessness				
Easy to get annoyed or irritable				
Being afraid as if something might happen				

SECTION E: PATIENT HEALTH QUESTIONNAIRE (PHQ – 9)

In the past 2 week how frequent has the following aspects affected you, o – none, 1- several days, 2 – greater than half the days, 3 – almost everyday	0	1	2	3
Doing things with little interest or pleasure				
Hopelessness, depressed and feeling down				
Problems with sleep (falling, staying or too much)				
Tired feelings or anergia				
Appetite issues (poor or overeating)				
Having bad feelings about yourself either as having let down your family or you are a failure				
Problems concentrating in activities				
Motion being either slowly or moving a little more rapid				
Thoughts of killing oneself or injuring self				

SECTION G: MULTI-DIMENSIONAL SCALEOF PERCEIVED SOCIAL SUPPORT (MSPSS)

ITEM	1	2	3	4	5	6	7
A person who is special is readily available in case of need							
I share joys and sorrows with a special person.							
My family tries to help							
I get help (emotional) I need from my family							
I got a person who comes as a source of help							
Friends try to aid me							
I can depend on my friends when things go wrong							
I can share my problems with family							
I got friends I can share my sorrows and joy							
I got a special person in my life caring about how I feel							
Family is readily available to help make decisions							
I can discuss about my friends with my friends							

APPENDIX III: LETTER FROM DIRECTORATE OF POSTGRADUATE STUDIES

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099   **19th May 2022**

Jared Makori Bundi,
HNR/G/01-54933/2020,
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Makori,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters Proposal entitled: *"Psychological Responses of Health workers to Covid 19 Pandemic At Jaramogi Oginga Odinga Teaching and Referral Hospital"* and appointed the following as supervisors:

1. Prof. Moses Poipoi   -   MMUST
2. Dr. Evelyne Morema   -   MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Nursing & Midwifery Graduate Studies Committee and Chairman, Department of Nursing Research, Education and Management and Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your Masters thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

Dr. Consolata Ngala
DEPUTY DIRECTOR DIRECTORATE OF POSTGRADUATE STUDIES

APPENDIX IV: LETTER FROM ISERC

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190,
50100.
Kakamega,
KENYA

Institutional Scientific and Ethics Review Committee (ISERC)

REF: MMU/COR: 403012 Vol 6 (01)   Date: May 26th, 2022

To: Jared Makori Bundi
Masinde Muliro University of Science and Technology.

Dear Sir.,

RE: PSYCHOLOGICAL RESPONSES OF HEALTH WORKERS TO COVID-19 PANDEMIC AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL.

This is to inform you that the *Masinde Muliro University of Science and Technology Institutional Scientific and Ethics Review Committee (MMUST-ISERC)* has reviewed and approved your above research proposal. Your application approval number is **MMUST/IERC/062/2022**. The approval covers for the period between *May 26th, 2022* to *May 26th, 2023*.

This approval is subject to compliance with the following requirements;

  i.   Only approved documents including informed consents, study instruments, MTA will be used.
  ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *MMUST-ISERC*.
  iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *MMUST-ISERC* within 72 hours of notification
  iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *MMUST-ISERC* within 72 hours
  v.   Clearance for export of biological specimens must be obtained from relevant institutions.
  vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
  vii. Submission of an executive summary report within 90 days upon completion of the study to *MMUST-ISERC*.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours Sincerely,

Prof. Gordon Nguka (PhD)
Chairperson, Institutional Scientific and Ethics Review Committee

Copy to:
  - The Secretary, National Bio-Ethics Committee
  - Vice Chancellor
  - DVC (PR&I)

APPEDIX V: APPROVAL LETTER FROM NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 733474

Date of Issue: 16/June/2022

RESEARCH LICENSE

This is to Certify that Mr.. JARED MAKORI BUNDI of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Kisumu on the topic: PSYCHOLOGICAL RESPONSES OF HEALTH WORKERS TO COVID 19 PANDEMIC AT JARAMOGI ODINGA TEACHING AND REFERRAL HOSPITAL for the period ending : 16/June/2023.

License No: **NACOSTI/P/22/18058**

733474

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document,
Scan the QR Code using QR scanner application.

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APPENDIX VI: APPROVAL LETTER FROM JOOTRH

COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF HEALTH

Telephone: 057-2020801/2020803/2020321
Fax: 057-2024337
E-mail: medsuptnpgh@yahoo.com
ceo@jaramogireferral.go.ke
Website: www.jaramogireferral.go.ke
When replying please quote

JARAMOGI OGINGA ODINGA TEACHING &
REFERRAL HOSPITAL
P.O. BOX 849
KISUMU
6th July, 2022

Ref. No. IERC/JOOTRH/619/22

Date.......................................

RE: APPROVAL: STUDY TITLE
PSYCHOLOGICAL RESPONSES OF HEALTH WORKERS TO COVID 19 PANDEMIC AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL.

REF: IERC/JOOTRH/619/22

To: Jared Makori Bundi

Dear Jared,

Supervisors: Prof. Moses Poipoi & Dr. Everlyne Morema

RE: STUDY TITLE

This is to inform you that JOOTRH IERC has reviewed and approved your above research proposal. Your application approval number is **IERC/JOOTRH/619/22**. The approval period is **6th July, 2022 to 6th July, 2023.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by JOOTRH ISERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to JOOTRH ISERC within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to JOOTRH ISERC within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.

1

vii.   Submission of an executive summary report within 90 days upon completion of the study to JOOTRH ISERC.

viii.   In case the study site is JOOTRH, kindly report to Chief Executive Officer before commencement of data collection.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.keand also obtain other clearances needed.

Yours sincerely,

ANTONY AYORA
SECRETARY – ISERC
JOOTRH - KISUMU

APPENDIX VII: MAP OF KISUMU COUNTY