EFFECT OF COVID-19 ON HEALTH OF MEDICAL PERSONNEL AMONG HOSPITALS IN ELDORET TOWN (EVALUATING PSYCHOLOGICAL, PHYSICAL, VACCINATION AND MITIGATING STRATEGIES)

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DECLARATION

Declaration by Candidate

This thesis is my original work and has not been presented for degree in any University.

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DEDICATION

This thesis is dedicated to my family for their love, support and encouragement.

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I convey my heartfelt gratitude to the Masinde Muliro University of Science and Technology for granting me a chance to undertake my master's studies. I acknowledge all my lecturers for the knowledge and professional guidance they bestowed on me while at the University. Special thanks go to my supervisors, Dr. Maximilla Mwanzala and Dr. Everlyne Akoth Odero, for guiding me patiently throughout my studies. I sincerely thank my classmates, with whom we travelled this academic journey, offering moral support to each other as a group. More thanks to my colleagues at my workplace for their unwavering support. To my family, I am indebted to you.

ABSTRACT

Coronavirus disease (COVID-19) greatly affected medical personnel. Researchers have documented the detrimental effects of COVID-19 on the health of medical personnel, among them being high levels of infection and mortality, significant financial strains, anxiety related to both known and unknown information, and fear of ongoing impact and uncertainty. However, no such study has been done in hospitals in Eldoret. Therefore, the broader objective of the study was to investigate the effect of COVID-19 on health of medical personnel in hospitals in Eldoret town (evaluating psychological, physical, vaccination and mitigation strategies). The specific objectives were: to determine psychological effect of COVID-19 on the health of medical personnel; to examine the physical effect of COVID-19 on health of medical personnel; to interrogate the effect of COVID-19 vaccination on the health of medical personnel and to identify mitigating strategies for the effect of COVID-19 on health of medical personnel in hospitals in Eldoret Town. The study targeted all the 18 hospitals comprising 3 public and 15 private hospitals in Eldoret town. The target population included 34 doctors, 55 laboratory technicians, 71 clinical officers and 219 nurses, totalling to 379 as a population under study. A sample size representing 50% of the total population was selected for the study. In a proportionate way, doctors, laboratory technicians, clinical officers and nurses were selected in the ratio of 1:2:3:4, respectively. Stratified, proportionate and simple random sampling techniques were used. Data was gathered through a questionnaire that participants filled themselves. The study findings were analysed quantitatively. Multiple Linear regressions was applied to examine the effect of COVID-19 on the health of medical personnel. Findings indicated that psychological effect of COVID-19 had a positive and significant influence on health of medical personnel ($\beta 1 = .646$, $P < 0.05$) and physical effects of COVID-19 had a positive and significant influence on the health of medical personnel ($\beta 1 = .326$, $P < 0.05$). With a significance level of less than 0.05, it was deduced that the observed relationship was unlikely to have arisen purely by random chance. Highlighting the profound psychological effects (77.7%) experienced stress, physical effects (91.1%) had sleep disturbances when off duty, 95.5% agreed that vaccination significantly reduced their anxiety, while 90.0% agreed that there was constant supply of PPEs. The study results inform policy makers on the appropriate strategies to strengthen hospital capacity and prepare medical personnel to remain motivated and feel safe when responding to health crises.

OPERATIONAL DEFINITION

Anxiety	A state of apprehension.
Burn out	A state of complete psychological, physical, and emotional exhaustion.
COVID-19	An acute disease caused by a coronavirus that attacks human being characterized by fever, cough and is capable of advancing to severe symptoms leading to death.
Depression	A mental illness and mood disorder marked by a persistent feeling of melancholy and a lack of interest in life's worthwhile pursuits.
Effect	The negative impact of the COVID-19 pandemic on the physical and psychological well-being of healthcare workers.
Health	The overall physical, psychological, and emotional well-being of medical personnel.
Depression	A psychological illness in which a person is very unhappy and anxious
Insomnia	Inability to obtain sufficient sleep.
Medical Personnel	People with the requisite knowledge on health, training and licensed to a certain level to provide health care services. They comprise the staffs who handled COVID-19 patients. These were doctors, clinical officers, nurses and lab technicians.
Psychological Health	The general condition of one's psychological and emotional state.
Private Hospital	An entity that provides treatment and healthcare services independently of the national government and county backing. In such a hospital, treatment can be covered by medical insurance policy or by the patient paying directly.
Public Hospital	An entity that provides treatment and healthcare services with the backing of the national and county government. In a public hospital, treatment can be covered by a medical insurance policy or through direct payment by the patient.
Stress	A state of mental or emotional strain brought on by difficult or demanding circumstances.
Vaccination	A simple, safe, and effective way of protecting a person against a disease by introducing pathogens that trigger immunity before one comes into contact with the disease.

ACRONYMS AND ABBREVIATIONS

CEO	Chief Executive Officer
CDC	Centres for Disease Control and Prevention
COVID-19	Coronavirus Diseases of 2019
CSSE	Computer Science and Software Engineering
Dr	Doctor
ECDC	European Centre for Disease Prevention and Control
EU	European Union
FAO	Food and Agricultural Organization
GISAID	Global Initiative on Sharing All Influenza Data
HCWs	Healthcare Workers
IREC	Institutional Research Ethics Committee
MERS	Middle East Respiratory Syndrome
MTRH	Moi Teaching and Referral Hospital
NACOSTI	National Council for Science and Technology
NERC	National Emergency Response Committee
PPE	Personal Protective Equipment
PTSD	Post-traumatic Stress Disorder
SARS	Severe Acute Respiratory Syndrome
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
US	United States
VAERS	Vaccine Adverse Event Reporting System
WHO	World Health Organization

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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

By the end of 2019, Wuhan, in the Hubei Province, China, was the site of the first detection of the highly contagious coronavirus illness of 2019 (COVID-19) (Wang et al., 2020a). Because of how quickly it was spreading among nations, the World Health Organization (WHO) (2020b) declared it to be a pandemic in the month of March 2020. Significant health issues were brought on by the pandemic in all demographics, including elevated stress, anxiety, and depressive symptoms (Ornell et al., 2020).

In Europe, Italy bore the heaviest brand of COVID-19 pandemic and remained the most affected country. The approximate number of persons in Italy infected with COVID-19 by the start of the year 2020 was 223,000 and about 31,000 deaths had been recorded (World Health Organization, 2020a). The Northern part of Italy turned became the disease epicentre as there was a high prevalence of the pandemic that required urgent interventions. Hospitals and health personnel were needed to deal with the disease's prevalence. Gathering of network and abrupt shift in health care approaches and personnel also became urgent. Infections of this magnitude brought about serious outcome on the medical personnel. There have been conflicting reports regarding the severity of psychiatric symptoms encountered by medical personnel during the 2003 SARS outbreak (Tam et al., 2004). Therefore, it was anticipated that COVID-19 would present comparable difficulties for medical staff. Yet, despite this expectation, many countries seemed unprepared to handle the magnitude of the effect the virus wrought on both the populations and medical staff.

A recent psychological survey conducted in Spain revealed that 18.7% of the population exhibited depressive symptoms, while 21.6% experienced anxiety and 15.8% developed PTSD symptoms during the COVID-19 pandemic (Gonzalez-Sanguino *et al.*, 2020). This indicates a significant psychological impact on individuals. Medical played a crucial role in combating the epidemic, but they faced unique challenges, particularly those on the front lines (Heymann & Shindo, 2020). The demanding nature of their work, combined with lack of sleep and staffing shortages, created a highly stressful work environment (Chen *et al*., 2020). These factors

undoubtedly contributed to increased psychological strain, depression, and fatigue among medical workers. The care and treatment of COVID-19 patients can trigger negative psychological reactions such as fear, depression and social psychological issues.

A research by Lee et al. (2018) states that during the Middle East Respiratory Syndrome (MERS) outbreak of the disease in 2015, cases that burdened medical professionals were also recorded. According to Lee et al. (2018), medical staff members showed a vulnerability to developing post-traumatic stress disorder (PTSD), which led to a rise in absenteeism in the workplace. Because medical staff was afraid of what they could encounter on the job, they were unable to provide the best care possible for patients with severe acute respiratory syndrome (SARS). Due to their frequent patient contact, Ran et al. (2020) discovered that frontline healthcare providers were the group most susceptible to COVID-19. Medical professionals thus became the means by which COVID-19 was transmitted and infected to their families and communities. Because there was little information available about COVID-19, medical professionals were even more uncertain (Ran et al. 2020).

By April 2020, in Italy, medical personnel totalling 12,000 doctors and nurses had contracted COVID-19 and 228 doctors and 26 nurses had succumbed to the disease respectively (Fusarolii *et al.,* 2020; Manzoni & Milillo, 2020). According to Tan *et al.* (2020), ordinary healthcare workers were likely to experience stress related phenomena because they had minimal in-depth instruction on using personal protective equipment (PPEs) and observing infection control procedures, seeking formal psychological support and less direct access to medical information concerning the outbreak (Tan *et al.*, 2020).

To protect the general population from new infections during a pandemic, there was urgent need to explore measures of prevention and intervention like social distancing, reducing contacts between people, wearing face masks, having adequate aeration within the house and washing of hands (Tan *et al.,* 2020b; Wang *et al.*, 2020b; Freedman & Wilder, 2020). For instance, in order to control the rising demand for health care, healthcare professionals needed to work longer shifts to meet the demand (Huang *et al.,* 2020; Ornell *et al.*, 2020). The need to wear personal protective equipment, which was cumbersome and uncomfortable, was

inevitable thereby creating difficulties in breathing among the health personnel who were had to wear them for long hours due to rising number of patients they had to admit and treat.

Personal protective equipment was scarce in the early phases of the disease's development, and there were no recognised protocols for managing the illness (Xiang et al., 2020). Consequently, several experts were ill-equipped to react appropriately and manage patients afflicted with the novel virus (Huangg et al., 2020). The medical personnel demonstrated a range of emotional and psychological symptoms, such as powerlessness, anger, worry, insomnia, tension, and uncertainty, in addition to feelings of loneliness, stigmatization, and difficulties managing their job. (Ran et al., 2020; Zhang et al., 2020). Ornell et al. (2020) state that each of the risk variables listed above has the potential to increase the likelihood that burnout would develop.

Burn-out is a condition that occurs when an individual experiences ongoing stress at work that is not properly addressed. It involves feelings of exhaustion, distancing oneself from their job, and a decrease in job performance due to negative attitudes and emotions (WHO, 2019). According to Woo and Tam, (2020), burnout is a psychological disorder in which an individual exhibits ineffectiveness to function fully characterized by persistent exhaustion, cynicism due to a stressful phenomenon within the workplace, and which affect both the physical and psychological wellbeing of health personnel.

Pandemics can cause enormous emotional exhaustion according to (Kim & Choi, 2016). In respect to this, when health professionals have the know-how on how to deal with a pandemic or the alternating factors, then chances of exhaustion are minimised and sense of comfort is adduced or retained. This can be achieved through adequate training, precautions, social, religious information and familiar support group. These are important factors to put into consideration when preparing medical personnel to respond to an unknown outbreak. Such preparation gives them a sense of relief and confidence which mediate their ability to respond to and handle the fall-back effects of the disease (Maunderr *et al.*, 2019).

Personality characters also moderate the way a person may react to a pandemic or any other stressful situation. Optimism and resilience are likely to lessen psychological discomfort in medical personnel during an unidentified disease outbreak (Yıldırım *et al.,* 2020). The presence of cohesive teamwork, positive workplace attitude and the hospital ability to recognize the

output of the workers to cope with the situation is equally paramount in how medical personnel deal with the effects of an outbreak (Khakis *et al.*, 2016). In actuality, the COVID-19 epidemic is still a disgrace to health and happiness. It significantly strained the ability of numerous hospitals to provide services. Healthcare professionals treating COVID-19 patients had to overcome many obstacles. Aside from lack of knowledge on the nature, treatment and control of the pandemic, there was also a general unpreparedness among hospitals to handle the disease burden.

Initiatives towards the physical and psychological wellbeing of Medical Services Labourers (HCWs) are aimed at improving their ability to handle cases that require dire care (Khakis *et al.*, 2016). During the peak of infections of COVID-19, healthcare workers (HCWs) were still expected to continue fulfilling their responsibilities of treating other non-pandemic patients. They also had to deal with the negative effects of the pandemic on the general population, including the high rates of infection, deaths, financial crunches, stress-related outcomes, social anxiety from fear of unknown, misinformation regarding the disease, emotional instabilities, family discords, among others. Medical staffs who exhibited signs of emotional exhaustion suffered from a lack of empathy, low productivity, higher turnover rates and medical errors (Maunder *et al.*, 2022).

Before COVID-19, extensive research had established that doctors' stressors were multifaceted, including the complex duties of managing electronic health records; problems with insurance and billing; dealing with dissatisfaction from patients, and maintaining a healthy work-life balance (Gupta *et al.*, 2021). While dealing with the unique challenges of a pandemic, the medical personnel must maintain their personal and social wellness. Even though things were hard, the health care workers realized that taking care of the sick patients was part of their job; so, most of them showed a lot of dedication to their work (Gupta *et al.*, 2021). According to the authors, accessibility to PPE and workplace safety were top priorities. People living in high-risk areas and women may experience more adverse psychological health outcomes. Furthermore, there was a higher likelihood of stress and health issues, including feelings of loneliness, anxiety, and occasionally insomnia, among physicians and other healthcare professionals who are responsible for the treatment of COVID-19 patients. In reality, findings suggest that front-line healthcare workers in several parts of the world experienced improved

psychological health outcomes throughout the pandemic as a result of adequate training and support (Gupta *et al.*, 2021).

In Africa, COVID-19 impacted greatly on the health sector. African economies were brought to their knees. As of December 31, 2021, 47 countries in the African region of the WHO had recorded 7.1 million COVID-19 cases and 155,000 deaths, representing 2.5% and 2.9% of the global totals, respectively (WHO, 2021). The burden on the health systems across these countries was enormous as they were overstretched beyond limit. WHO observed that most countries in Africa had low capacity to handle the infection cases. Nevertheless, there were marked variations of cases in different countries brought about by the varying social, ecological and physiological factors (Kong *et al.*, 2021). Under socio-ecological factors, population growth or density, age, cleanliness were antecedent in the disease transmission. South Africa remained the country that was hard hit by Coronavirus pandemic, whereby different variant was discovered. From 3rd January 2020 to 6th February 2023, there have been 4,055,656 confirmed cases of COVID-19 in South Africa with 102,595 deaths, as reported to WHO (2023). As of 24 December 2022, a total of 38,050,611 vaccine doses had been administered across Africa (WHO, 2022). Infections with the coronavirus (COVID-19) made up about 12% of all the cases in Africa. Even though vaccination campaign took root in most of the African countries, a low process was realized in which response to vaccines was low. In Ethiopia, 25 out of every 100 people had received a vaccine by mid-2023 (Mantovani *et al.*, 2023).

In March 2020, Kenya announced the first case of COVID-19. By April 2020, there had been 363 confirmed cases, 114 recoveries, and 14 deaths. Of the cases, 42% were imported and 58% were the result of local transmission. With Nairobi and Mombasa having the largest number of cases, the virus quickly spread to 12 other areas from Nairobi. Males were infected at a higher rate than females, and 71% of patients had no symptoms (Ackah et al., 2022).

In April 10th 2020, Uasin Gishu County in Eldoret confirmed the first case of COVID-19 at Moi Teaching and Referral Hospital (MTRH). The patient was reported to be stable under the care of the Hospital. The contact tracing was being undertaken by Medical Surveillance officers. By the date, April, 10th, 2020, more over 105,000 individual tests had been done at

Moi Teaching and Referral Hospital (MTRH), according to Dr. Wilson Aruasa, the hospital's then-CEO. The overall harmonization of the COVID-19 response remained the duty of a multi-sectoral taskforce known as the National Emergency Response Committee (NERC), which includes representatives from the health, education, security, transportation, finance, and trade sectors (Kwobah *et al.*, 2021). Rules and regulations for handling the cases were properly executed, disease anticipation and control reconnaissance were created by NERC from which recognition of well-being offices, public and confidential labs where tests and investigations were undertaken to determine the disease among those who were infected within the population. The Coronavirus pandemic nonetheless stretched resources to the limit. The situation was made worse by the uncertainty about the disease's cause, spread and treatment. Stigma, anxiety and marginalization associated with the disease, as well as an infrastructure that was ill-prepared to handle the situation contributed to work overload for most medical practitioners, hence the disease burden thrived (Kwobah *et al.*, 2021).

Several global studies have been conducted to assess the impact of COVID-19 on the health of medical professionals. The psychological impacts of the COVID-19 pandemic on healthcare personnel worldwide were studied by Maben et al. in a 2020 publication. They discovered that medical staff members had greater levels of stress, anxiety, and burnout. Another study by Olaya et al. (2021) focused on the experiences of healthcare workers in Africa during the epidemic and emphasized the need of giving frontline workers enough resources and support. A study by Smith et al. (2021) evaluated the effectiveness of vaccination in reducing the spread of COVID-19 among medical personnel, emphasizing the importance of immunization in protecting them. These research have shed insight on the increased risk of infection, mental health problems, burnout, and stress that healthcare personnel encountered during the COVID-19 pandemic. They have also emphasized the importance of vaccination in protecting healthcare workers and reducing the burden on healthcare systems (Olaya et al., 2021).

Research has been conducted on the experiences of healthcare professionals across the globe, particularly in Africa. The aforementioned research have illuminated the distinct obstacles encountered by healthcare practitioners in resource-poor environments, like Eldoret Town, and have highlighted the necessity of customised treatments to bolster their overall health and welfare. For instance, a Kenyan study by Mutai et al. (2021) assessed the COVID-19

pandemic's effects on healthcare professionals' psychological health and discovered that medical staff members had greater levels of stress, anxiety, and burnout. The experiences of frontline healthcare workers in Kenya during the pandemic were studied in Mwangi et al.'s (2020) study, which highlighted on the importance of giving healthcare personnel enough resources and support. Additionally, a study by Kipkoech et al. (2021) looked at healthcare workers' knowledge, attitudes, and behaviours regarding COVID-19 immunisation in Kenya, illuminating medical professionals' attitudes towards vaccination as well as their hurdles.

Many national, international, and local studies have examined how COVID-19 affects healthcare workers; nevertheless, there is still a significant lack of research that focuses on the particular challenges that medical staff in Eldoret Town confront. This disparity underscores the necessity of conducting a more targeted inquiry into the obstacles, encounters, and viewpoints of healthcare practitioners in this specific context. Future studies might delve into the complex realities of medical staff in Eldoret by examining elements including working circumstances, psychological well-being, resource accessibility, and community support. Gaining an understanding of these dynamics is essential to creating focused, efficient therapies that can improve their health and well-being in the face of persistent difficulties. In the end, more resilient healthcare workers in the area and better patient care could result from such customized support networks. The implementation of immunization campaigns and the disparities in medical professionals' acceptance of vaccines also contribute to the complexity of their experiences during the epidemic.

1.2 Statement of the Problem

The COVID-19 pandemic posed significant health risks to medical personnel worldwide, and Eldoret Town, Kenya, was no exception. Medical personnel in the region faced heightened exposure to the virus, leading to increased rates of infection, severe illness, and even fatalities among them. The physical toll of the virus compounded by the psychological health challenges posed by prolonged stress, anxiety and burnout, stemming from high patient loads, inadequate protective equipment, and the emotional burden of witnessing patients suffering and dying.

Despite the roll-out of COVID-19 vaccines, which had been proven to reduce the risk of infection and severity of the disease, there remained substantial gaps in vaccination coverage among healthcare workers in Eldoret Town. Factors such as vaccine hesitancy, misinformation, logistical challenges, and limited access to vaccines contributed to these gaps, leaving many healthcare workers vulnerable.

Past studies have examined the effect of COVID-19 on patients (Asmundson & Taylor, 2020), families of patients (Kang *et al*., 2020), and medical officers (Mwangi *et al*., 2023). None of these studies were conducted in Eldoret. Few of the studies have undertaken an in-depth interview of the medical officers to provide a contextual understanding of their experiences with the pandemic. The study aimed to fill this gap by investigating the effect of COVID-19 on health of medical personnel in Eldoret Town (evaluating psychological, physical, vaccination and mitigation strategies in hospitals). Understanding these factors is crucial for formulating effective strategies to support healthcare workers, improve vaccination uptake, and enhance the overall response to the pandemic and future public health crises.

1.3 Broad Objective

To investigate the effect of COVID-19 on the health of medical personnel in hospitals in Eldoret town (Evaluating psychological, physical, vaccination and mitigation strategies).

1.3.1 Specific Objectives of the Study

i. To determine psychological effect of COVID-19 on the health of medical personnel in hospitals in Eldoret Town
ii. To examine the physical effect of COVID-19 on health of medical personnel in hospitals in Eldoret Town

iii. To interrogate the effect of COVID-19 vaccination on the health of medical personnel in hospitals in Eldoret Town

iv. To identify mitigating strategies for the effect of COVID-19 on health of medical personnel in hospitals in Eldoret Town

1.3.2 Research Questions of the Study

i. Is there a significant psychological effect of COVID-19 on health of medical personnel in hospitals in Eldoret Town?

ii. Is there a significant physical effect of COVID-19 on health of medical personnel in hospitals in Eldoret Town?

iii. How does COVID-19 vaccination affect the health of medical personnel in hospitals in Eldoret Town?

iv. What are the mitigation strategies for the effect of COVID-19 on health of medical personnel in hospitals in Eldoret Town?

1.4 Justification of the Study

While there has been widespread recognition of the impact of the COVID-19 pandemic on medical professionals' psychological well-being, there is a conspicuous dearth of targeted study about the mental health consequences for medical staff in Eldoret, Kenya. While a number of studies have examined the frequency of stress, anxiety, and burnout among healthcare professionals in other contexts, there hasn't been enough focused research done locally on the unique difficulties these people encountered. The psychological effects of the pandemic on medical staff may vary depending on variables like local healthcare legislation, cultural perspectives on healthcare, and variations in the availability of resources. The material currently in publication usually ignores the importance of social support networks and the coping mechanisms used by healthcare professionals, both of which are vital to their mental well-being. In order to better understand the particular pressures faced by these medical professionals in Eldoret, more focused research is necessary. This will help to develop psychological health support plans and, in the end, make healthcare systems more resilient in similar circumstances during future public health emergencies. The study aimed to determine the effect of COVID-19 on the health of medical personnel in Eldoret town (evaluating psychological, physical, vaccination and strategies for mitigating those effects). This was due to the high infection rates and extended working hours that the medical personnel in Eldoret town were subjected to.

1.5 Significance of the Study

In 2020, the World Health Organization (WHO) officially designated COVID-19 as a major global public health threat that quickly spread worldwide (WHO, 2020). No country was able to mitigate it at the first point. A lot of resources were directed towards its management. Currently, no clear medication has been found to treat COVID-19. As such, vaccination remains the only means of limiting infection and severity of illness for those who contract the virus. It is therefore paramount that research be done to inform policy and practices for enhancing health workers' capacity and readiness to respond to similar and other health emergencies in future. This study will first shed light on the experiences of medical personnel in their response to COVID-19 within hospitals in Eldoret town. In so doing, the study will give voice to these personnel to articulate their needs to ensure their physical and

psychological readiness to handle future outbreaks. Second, the study will help the hospitals to identify their areas of strength and weaknesses in policies and practices aimed at responding to health crises. As such, from the findings of this study, the hospitals may initiate interventions to strengthen their capacities and support for the wellbeing of medical personnel in times of public health emergencies. From this stud, the government of Kenya (both national and county) will also derive insight from the study findings on the need to define strategies to strengthen hospitals' capacities to support medical personnel in undertaking their frontline response to pandemics. Future researchers will equally draw insight from the study findings as they conduct similar studies to enrich existing knowledge on the effect of health crises, such as COVID-19, on the wellbeing of medical personnel.

1.6 Scope of the Study

The main objective of this study was to investigate the effects of COVID-19 on the health of medical personnel in private and public hospital in Eldoret town (evaluating psychological, physical, vaccination and mitigating strategies). The scope of the study was limited to 18 hospitals comprising 3 public and 15 private hospitals in Eldoret. The study participants included doctors, clinical officers, nurses and laboratory technicians who were involved in COVID-19 confirmed/suspected patients.

1.6.1 Limitations of the Study

The study was limited to medical personnel in hospitals in Eldoret town who provided services to the COVID-19 patients and were willing to participate in the study. Some respondents were hesitant to provide information on the challenges they faced in responding to COVID-19 for fear of victimization. Some thought the study was intended to cast aspersions on the capacities of their hospital management, processes, personnel and their infrastructure. To allay these fears, the respondents were, first, assured that their identities would remain private and the data they would provide would be kept confidential and used for academic purposes only. Secondly, they were assured that the study was purely academic and it was not intended as a review of their hospital's systems, processes, management and personnel's performance of duties during the peak of the pandemic.

1.7 Rationale of the Study

Regarding the Scourge, several studies have been done in Nairobi and Nakuru, but Eldoret has received relatively little attention. It was appropriate to undertake this study to increase literature on the experiences of medical personnel in their response to COVID-19 in Eldoret. This is made more necessary by the fact many cases of COVID-19 were being referred to Eldoret hospitals for further management. Eldoret is also host to the second level-6 hospital in the country, namely MTRH, and complicated cases of COVID-19 were being referred to this facility. Therefore, there was a surge of COVID-19 patients within Eldoret facilities. It was thus prudent that this study explore how medical personnel were affected by their response to COVID-19. Eldoret lies along corridor of Nairobi-Kampala highway and increased cases of COVID-19 were reported along this route. Health personnel in Eldoret hospitals bore the brunt of COVID-19 effect. Carrying out this study in this particular region helped to unearth information on how medical personnel reacted to the pandemic and the effect it exposed to them. Other researchers will find the study a useful framework from which to formulate future investigations. This will ensure continuity in research and generation of new knowledge for future reference.

1.8 Theoretical Framework

1.8.1 Stress and Coping Theory

The theoretical framework for the study integrated several theories and models to explain the effect of COVID-19 on the health of medical personnel in Eldoret town and the role of vaccination.

Psychological Health (Objective i): The Stress and Coping Theory helped to analyse how medical personnel perceived the psychological stress associated with dealing with COVID-19. It explored cognitive appraisal, coping mechanisms, and the impact of stress on psychological health.

Physical Health (Objective ii): The theory applied was vital to understanding how the stressors related to COVID-19 affected the physical health of medical personnel. This included examining how stress responses led to physical health issues and the coping mechanisms individuals employed.

Role of Vaccination (Objective iii): Research suggests that medical personnel experienced increased levels of stress, anxiety, and burnout during the pandemic due to high workloads, fear of infection, and witnessing patient suffering (Pappa *et al*., 2020; Maben & Bridges, 2020). Moreover, the physical toll of COVID-19 on medical staff could not be understated, with reports of fatigue, respiratory issues, and other health complications (Greenberg *et al*., 2020). Integrating vaccination into hospital protocols in Eldoret town was essential for protecting healthcare workers from the virus and its adverse effects (Chou *et al*., 2021). By examining both the psychological and physical effects of COVID-19 on medical personnel in Eldoret town, this theoretical framework aims to provide insights for developing comprehensive support systems and strategies to safeguard the well-being of healthcare workers in the face of future challenges.

Mitigation Strategies (Objective iv): The theory provided a framework for assessing the effectiveness of various coping strategies and interventions implemented to mitigating the impact of stress on health. It considered both problem-focused and emotion-focused coping strategies.

Theoretical frameworks are usually required to understand phenomena of interest in healthcare systems, according to Brewer et al. (2008). Theory-based systems research offers a fuller understanding of how COVID-19 affected medical workers in their place of employment by examining structures and procedures in greater detail than problem-solving and results-oriented research.

In addition to endangering life, the severe effects and quick spread of COVID-19 such as the possibility of dying and the dearth of effective treatment options also pose a hazard to mental health. People's psychological well-being has been significantly impacted by the pandemic, with different people reporting differing degrees of emotional anguish. In addition to more serious illnesses including acute stress disorder, post-traumatic stress disorder, depression, and suicidal thoughts, it is anticipated that the incidence of COVID-19 may increase common mental health problems like anxiety, depression, and hopelessness. While infectious diseases can trigger a range of emotional reactions, not everyone will react in the same way and individuals will have different coping mechanisms during times of crisis, as evidenced during previous outbreaks like MERS-CoV (WHO, 2020).

Stress is a natural response of the body to change, threats, and pressures, which can lead to psychological imbalances. During emergencies like the COVID-19 epidemic, stressors can be heightened, leading to increased feelings of fear, frustration, and uncertainty. These stressors can include factors like prolonged quarantine, fear of infection, financial difficulties, and a lack of information (Fiorillo & Gorwood, 2020). During such times, it is important to address both the fear of illness and the challenges of adapting to new circumstances. Interventions should focus on providing support and resources to help individuals cope with stress and prevent harmful behaviours like violence or suicidal thoughts. By understanding how people are affected by stressors and how they are adapting, we can better tailor interventions to meet their needs (World Health Organization, 2020). It is crucial to be aware of the psychological impact of stress on individuals during a crisis like the COVID-19 pandemic, as this can help determine the level of risk and the urgency of psychological interventions. By addressing these issues proactively and providing appropriate support, we can better help individuals manage stress and maintain their mental well-being during challenging times (Smith, 2019).

Johnson (2020) discusses the structures of the Folkman transactional model, which include primary evaluation, secondary evaluation, stress, and adaptability. Determining whether a scenario is viewed as hazardous or harmless is the first step in the assessment process. The data from the environment, life events, and individual traits all have an impact on this evaluation. A reevaluation of the circumstances may result from new information. Using Lazarus and Folkman's transactional theory and the notion of self-determination, Trougakos et al. (2020) investigated the tension and anxiety caused by COVID-19. They found that the detrimental effects of COVID-19 anxiety on one's health, work, and personal life can be mitigated by problem-focused coping. Stress and worry brought on by COVID-19 have been demonstrated to negatively impact one's physical well-being, personal relationships, and productivity at work. Emotional repression and unmet psychological needs may arise from this.

1.9 Conceptual Framework

The conceptual framework for the study provides a visual representation of the relationships between the key variables and concepts being investigated. The framework integrates the theoretical perspectives discussed earlier and outlines how the study variables interact to influence the health outcomes of medical personnel in Eldoret town and the role of vaccination.

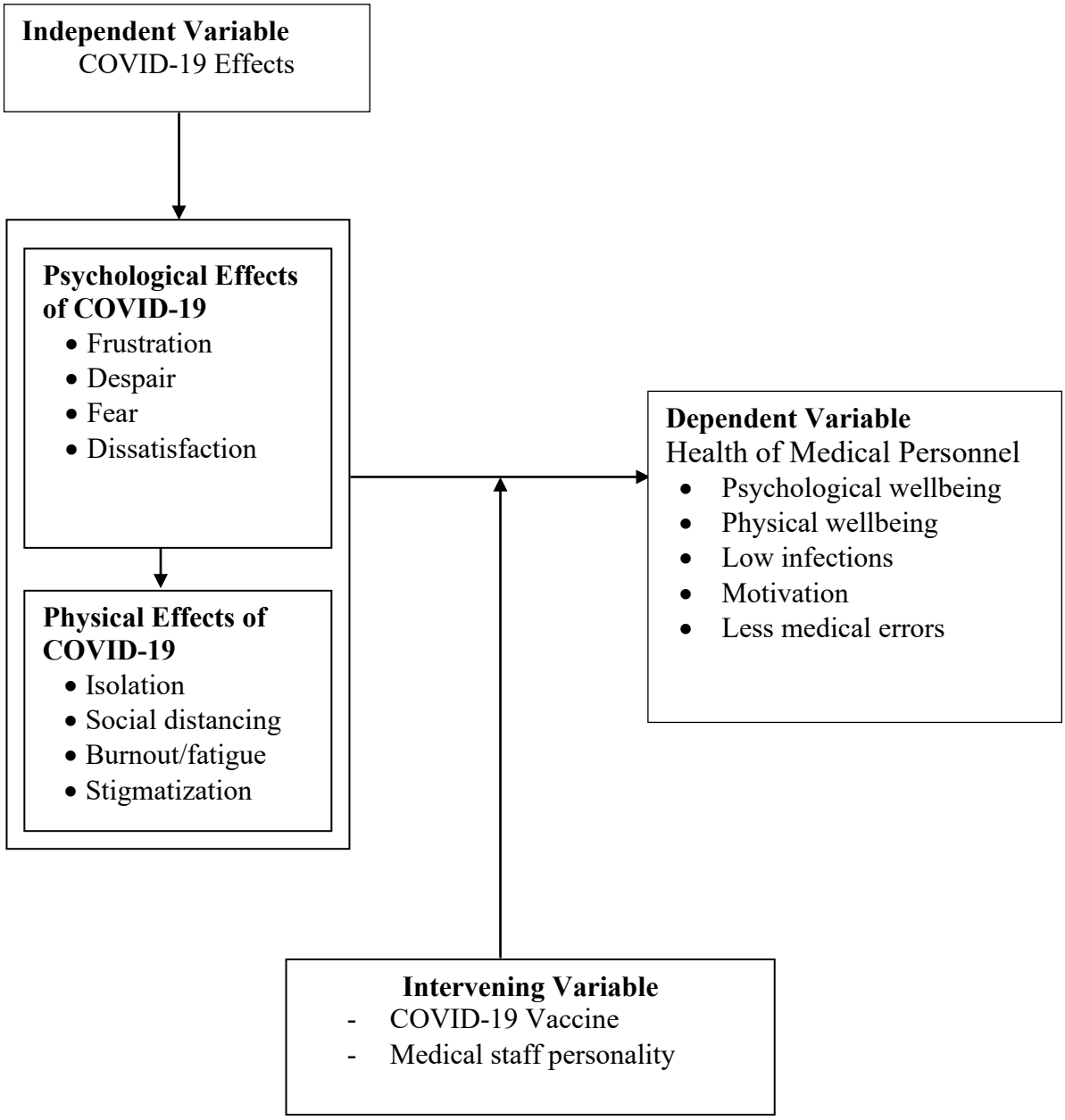


Figure 1.1: Conceptual Framework

CHAPTER TWO
LITERATURE REVIEW

2.1 Overview

This chapter summarizes the important study-related issues and evaluates the literature that is relevant to the research question. The following themes guide the study: The COVID-19 pandemic and conspiracy theory; empirical literature; observational studies on the psychological impact of the virus on medical personnel's health; observational studies on the impact of the virus on the physical health of medical personnel affected by the virus; Assessing the Impact of the COVID-19 Vaccine on the Health of Medical Professionals; Improving Mitigation Techniques During the COVID-19 Pandemic; and Literature Gaps.

2.2 Theoretical Literature

2.2.1 Conspiracy Theory and the COVID-19 Pandemic

Times of turmoil were ushered in by the COVID-19 epidemic (Van Prooijen & Douglas, 2017). Conspiracies are explanations or attempts to explain events that cannot be quantified or authenticated. Conspiracy theories emerge when the root cause and manifestation of an event cannot be proven beyond reasonable doubt. An event that cannot be explained through reference to existing knowledge may also be regarded as a conspiracy theory.

According to Leman and Cinnirella (2013), events necessitate explanations of comparable magnitude. There are several psychological advantages to providing explanations, one of which is giving those affected the feeling of control. This means that a lack of control at the conspiracy's origin must be one of the primary drivers of conspiracy ideas. People compensate for their lack of control in the real world by seeing things in specific ways, even if patterns are an illusion (Douglas et al., 2017). During the coronavirus crisis, conspiracy ideas were very popular (Sternisko et al., 2020). The sickness had worldwide implications and was a widespread phenomenon without a simple, mechanical explanation.

Conspiracy theories help people to maintain a state of equilibrium hence control over an event. They serve psychological functions. However, conspiracy theory poses a threat the understanding of a phenomenon because they shape individual behaviour during the crisis.

As a result, several scientists especially epidemiologists and doctors articulated different facts and strategies to flatten the COVID-19 infection and mortality curve during the pandemic. These modalities discussed, among other things, COVID-19 pandemic behavior and conspiracy theories. In contrast, conspiracy theory psychologically fosters the idea that strong forces secretly control the world (Imhoff & Bruder, 2014). Widespread mistrust in science in general and the biomedical system in particular has been connected to it (Imhoff & Lamberty, 2018). (Lamberty & Imhoff, 2017; Galliford & Furnham, 2022; Oliver & Wood, 2014). Conspiracy theorists are therefore especially reluctant to accept expert advice to reduce infection rates.

Majority of people are more likely to conform and adhere to social norms because they use information about how others act as a guide for their own behaviour. Imhoff and Erb (2009) posit that individuals with a strong need for uniqueness and a strong desire to stand out from the crowd deliberately try to avoid doing or saying what the larger groups of people do. Both correlational and experi-psychological studies reveal how Conspiracy theories have been linked to an increased need for individuality. (Imhoff & Lamberty, 2020; Lantian *et al*., 2017).

Many people were ignorant about the COVID-19 pandemic in its early phases. As a result, speculation rather than hard data was the source of much of the information that was known about the illness. Many theories were created in an attempt to explain the condition, focussing on its cause, progression, and management. Many dismissed the risks associated with COVID-19, believing it to be nothing more than the flu or a little ailment that would go away quickly. Others thought it to be a common condition that had just undergone a mutation (Andersenn et al., 2020). The most well recognized theory, on the other hand, suggested that the virus was allegedly produced in a laboratory and spread as a bioweapon for global political or economic purposes. A research conducted in the United States at the beginning of March 2020 identified two distinct COVID-19 conspiracy theories. The results showed that 49% of participants believed the coronavirus to be a virus that was generated by humans. Conversely, 13% of respondents thought the coronavirus was a hoax, and 44% thought the harm it posed was being exaggerated for political reasons (Frankovic, 2020).

In a risk assessment of individuals directly impacted by how they view disease in Rosenstock, conspiracy theories related to the risks of illness was found to directly influences health-promoting self-care behaviour (Ferrer & Klein, 2015). For instance, a larger perceived risk was linked to a stronger propensity to engage in protective behavior. Therefore, if people thought the COVID-19 epidemic was a hoax or had been overstated by the government, they would follow official suggestions, such as hand washing and social distancing (Stanley et al., 2020).

A number of people had a notion that a laboratory had produced the virus, either by accident or deliberately, with the aim of " decreasing the number of people " as part of a covert plan for a so-called "new world order" (Stanley *et al*., 2020). Because they saw the coronavirus outbreak as an attack by governments or secret entities on "the people," those who held these beliefs were less likely to underrate its severity. As a consequence, these individuals might not act in accordance with the recommendations of the organizations that they have reason to believe are complicit in a conspiracy, for instance governments, the World Health Organization and health care providers. They would instead consider implementing their own strategies for safeguarding themselves from the pandemic (for instance, alternative medicine, weapons and hoarding) (Stanley *et al*., 2020).

The refusal to engage in modalities for combating disease-related behaviours, such as like hygiene or physical distance, was the primary factor behind conspiracy theories that the coronavirus pandemic is a hoax. Conspiracy theories linking SARS-CoV-2 to intentional virus creation were linked to more selfish actions. (such as hoarding and alternative remedies). A positive correlation was predicted between conspiracy psychologically and conspiracy beliefs; dueto deviating associations and the logical discrepancy on the information no authentic reasoning has been clearly documented.

2.3 Empirical Literature

The spread of COVID-19 affected persons from all walks of life leading to deaths of most of those infected with the disease. The illness had an adverse effect on people's and communities' physical, mental, social, and economic well-being. There was global economic shutdown. Countries experienced economic meltdown as they allocated huge finances in ensuring

essential services were being met. This was a serious determent in economic growth of the affected countries globally (Stawicki *et al.*, 2020).

According to Bao *et al*. (2020), the spread of COVID-19 worldwide brought about anxiety, loneliness, boredom, anger, denial, depression, insomnia, despair, self-harm, and suicides, harmful substance use, psychological distress, burnout and symptoms of psychological illness were experienced. Persons dealing with psychological health should be aware of these phenomena as they occur (Yang *et al*., 2020). Ideals regarding combating the COVID-19 needs to be put in place to stop the spread.

There is a dearth of existing research on psychological health issues associated with the COVID-19 pandemic, which highlights the necessity for additional study. This review aims to provide an overview of the literature on the impact of the pandemic on mental health. An overview of COVID-19's impacts on psychological health is what this review attempts to present (Liu et al., 2020a).

Coronaviruses are classified as members of a family of various viruses. Some of them can give people the common cold. Others taint creatures, including bats, camels, and steers. At the end of 2019, the virus was first found in Wuhan, China. Since it turned out to be a global pandemic, states and the government had to think big about how to fight it. Monetary turn of events and travel reached a stop. In order to combat the pandemic, every nation on the planet was on high alert. At certain the virus was often referred to as "Wuhan coronavirus" denoting the origin of the virus. Other illnesses that have been given names based on their geographical origin include the Zika virus, the Middle East respiratory sickness, and the Spanish flu. In accordance with international human rights standards and the guidelines of the World Health Organization, it is forbidden to stigmatize individuals based on the location or origin of an illness. As an example, the virus and condition were given temporary names, 2019-nCoV and 2019-nCoV acute respiratory sickness, by the World Health Organization (WHO) in January 2020. On February 11, 2020, the World Health Organization (WHO) officially named COVID-19 and SARS-CoV-2. COVID-19 is an acronym for "coronavirus disease 2019." In public communications, the WHO also uses the terms "the COVID-19 virus" and "the virus responsible for COVID-19" (WHO, 2019).

There have been investigations of SARS-CoV-2s, but none of them have resulted in a conclusion. Coronaviruses, which are disseminated by bats, are the cause of both severe acute respiratory syndrome (SARS) and Middle East respiratory disease (MERS). The first notable cluster of the virus was found in Wuhan, China, in December 2019, after it originally appeared in a tiny cluster in November 2019. Initially, it was thought that individuals became infected with SARS-CoV-2 in a "wet market" in Wuhan, China. Subsequent speculations suggested that it might have been created in a Chinese laboratory as a biological weapon.

Infection of SARS-CoV-2 was found to be occurring on individuals who had contact with animals. It then translated that one animal would harbour the disease then spread it to another person (Zoonotic) (Hasöksüz *et al.*, 2020). The disease was spreading at an alarming rate globally. Then it was declared as a pandemic. No country was spared either. As at the moment, the exact origin of the disease has not been established. The two hypotheses are that the virus originated either through contact with an infected animal or through human action in laboratory. In this respect there is no clear evidence to proof the argument. Recent information agrees that there was no human activity to create the virus as a biological weapon with the genetical engineering in place. It is therefore likely that exposure happened while the coronavirus was being studied in the laboratory with animals. Moreover, there is no evidence to proof this position further.

In 1965, experts made their first human coronavirus discovery. It brought into being the common cold. A number of viruses with similar to those that infect humans and animals were discovered, and the researchers gave them the name "crown viruses" after their appearance. Coronaviruses can infect humans in seven different ways. The SARS virus was originally identified in southern China in 2002, and it swiftly spread to 28 other countries. By July 2003, 774 people perished and over 8,000 had been infected. Coronavirus is able to show symptoms like Fever, headache, and respiratory issues similar to coughing and shortness of breath and coughing. MERS began in Saudi Arabia in 2012, about 2,500 cases were reported in the Middle East by residents or visitors. 858 people were feared death as a result of the coronavirus, which is found to be less infectious than its SARS cousin. It can lead to kidney failure as well as the same respiratory symptoms (Willman & Kindrachuk, (2019).

2.3.1 Observational Studies on Psychological Aspect on Health of Medical Personnel Related to COVID-19

According to Zandifar and Badrfam (2020), unpredictability, ambiguity, the severity of the illness, false information and social isolation are factors that bring about stress and psychological morbidity. In order to reduce the psychological impacts of COVID-19, Zandifar and Badrfam emphasize the need for both improved psychological health care for persons at risk of acquiring psychiatric problems, particularly in the susceptible population. Such persons require counselling and guidance to help them manage anxiety and loneliness. Where stress is poorly managed, a person's state of equilibrium may be disturbed leading in post-stress disorder characterized by anxiety.

According to Shigemuraa et al. (2020), COVID-19 has negative effects on well-being in addition to the economy. They observe that phobic behaviors, such hoarding and stockpiling, are more common in the general population. Aside from COVID-19 patients and their families, health professionals were the group most at risk of psychological distress, according to Shigemuraa et al.(2020). Dong and Bouey (2020) observe that the increase in COVID-19 cases in some countries resulted in significant psychological health crises. In places where this was not managed well at the initial stages of the disease development, people handling COVID-19 patients tended to develop burnout as well as psychological disorders. Therefore, the rise of COVID-19 cases required urgent response to alleviate stress among the health workers, such as allowing regular from work and periodic counselling.

Duan and Zhu (2020) categorically state that Western countries included psychological interventions in their management modalities of COVID-19 outbreak. However, in countries like China, the issue of stress-related illnesses has not been adequately addressed, leading to the ongoing development and persistence of such conditions among affected individuals. Therefore, urgent measures were needed to help vulnerable people with psychological care by providing rests and clarity of information regarding COVID-19 and not misinformation.

According to a study by Bao et al. (2020), China implemented systems and provided information on available services to help the general public manage stress related to outbreaks. These actions included: (1) determining whether the information was accurate; (2) encouraging

social support; (3) lessening the stigma attached to the illness; (4) leading a normal life while exercising caution; and (5), if necessary, utilizing readily available psychological therapies, particularly those available online. These controls were designed to provide society with a healthy means of responding to the COVID-19 pandemic. Similar strategies were used in Singapore (Ho et al., 2020), where they discussed the significance of enhanced psychological disorder screening and emphasised the need for local government agencies and hospitals to collaborate in providing the public with appropriate information to prevent negative outcomes like panic attacks and irrational fears about the illness's spread. Lima et al. (2020) draw attention to the importance of fear as the main emotional reaction to an outbreak, the necessity of properly training medical staff, and the best way to employ technology advancements to deliver psychological health care.

Asmundson and Taylor (2020) looked at how the COVID-19 pandemic affected mental health, taking into account health anxiety as a misperception or fear based on physical changes and experiences. In lieu of an outbreak of a communicable disease, particularly the case of COVID-19, overrated information emanating from the media and health workers themselves create an enormous anxiety if not handled well. Such information also weakens individual psychological understanding of issues and this is detrimental to health both physically and psychologically. At a local level within society, misinformation could lead to the undermining of specific knowledge inside a population or a group, as well as scepticism about public figures. At a personal level, this can manifest in harmful actions or responses in which individuals neglect certain activities that require urgent care, for instance non-adherence to treatment and withholding of medically useful information (Nowak *et al*., 2020). It is important to prioritize evidence-based research in the management of health anxiety.

Upon realizing that a health worker is at risk of developing psychological disorder, it is prudent for authorities concerned to relieve the individual affected from duties and provide guidance/counselling for a period of time (Kang *et al*., 2020). According to Kang *et al*., psychological disorders among medical personnel during the pandemic often resulted from long working hours, loneliness, infection of COVID-19 to the health worker, inadequate personal protective equipment, misinformation regarding the disease, death of a relative, a family member due to COVID-19.

Chen *et al.* (2020) aver that there is a misalignment between the services offered at a hospital and the needs of its medical staff. To support the psychological health of their workers, facilities need to implement a comprehensive approach, including the establishment of an intervention team for online resources, a psychiatric helpline, and group stress-reduction activities. Chen *et al*. also recommend the need for interaction or verbal exchange of ideas among the health workers. This may be enhanced by redesigning hospital infrastructure to include places where workers can rest and get their basic amenities for instance food and to discuss their feelings and experiences in caring for patients.

2.3.2 Observational Studies on Effect of COVID-19 on Physical Health of Medical Personnel Related to COVID-19

In China, studies have revealed that the sedentary life marked by inadequate or absolutely no physical activity during COVID-19 pandemic under home confinement created a lot of physical impairment to the quality of life (Qi *et al*., 2020; Margaritis *et al*., 2020). Individuals tried to remedy this situation by constantly moving within their place of stay, including taking walk and doing rigorous exercises. Lockdowns created great discomfort among individuals around the world. In China, lockdowns were associated with several psych-social issues among people (Leclerc *et al.*, 2020). Granted, the strategy worked swiftly in controlling the rates of infection because individuals could not mingle with one another; however, since humans are social by nature, isolating them impacted negatively on their psychological and physical wellbeing. During their confinement at home, most people in China were reported to experience frustration, boredom and loneliness, along with other psychological issues including melancholy, stress and anxiety (Duan & Zhu, 2020).

According to Chen *et al*. (2020), isolation at home had detrimental effect on individuals' physical and psychological well-being. Further extending isolation for a long period of time impaired with the cognitive wellbeing, the results of which were seen in bad emotions. Restricting people from movement from one place to the other or from outdoor recreational activities inevitably disrupted their social order thereby rendering life boring and unbearable. This was most seen in China and other severely affected countries. Subjected to a sedentary, most people became inactive and depressed, which posed them to risks of developing other diseases.

The known and most significant effect of lockdown-induced weariness appears to be a decline in physical, psychological, and behavioural health. Numerous maladaptive behaviours were witnessed, resulting in psychological and physical changes such as a loss of interest in once-pleasurable pursuits, lack of motivation, emotional instability, irritability, elevated levels of anxiety, sadness, or excessive apprehension (Labrague & Ballad, 2021). Most frequently stated in the literature as somatic consequences of lockdown-induced exhaustion are overall weakness, sleep issues, headaches, muscle discomfort and back pain (Branquinho *et al*., 2020). To curtail this, people engaged in different forms of group therapy, with some family members in their own vicinity engaging in dancing and music composition. It is therefore imperative that a regular activity that motivates emotions be encouraged within the family setting to reduce anxiety related disorder, e.g. cracking jokes that makes people laugh and forget their own predicaments.

In actuality, limitations during the COVID-19 served as an obvious signal for the actions required to stop its global expansion, leading to a paradigm shift from normal to abnormal. For instance, the usual face-to-face instruction transitioned to online formats, posing significant difficulties for the students. Situations where there were no online services, people suffered a lot. People found it challenging to stay in touch with loved ones as a result of these changes, which encouraged feelings of isolation, uncertainty, and loneliness. The lack of interaction with educators also jeopardized students' competencies (Sheroun *et al.*, 2020). Enhancing internet connection in underserved communities was important in order to tackle these issues. Improving communication was crucial to reducing the fear that students felt at this time.

2.3.3 Effect of COVID 19 Vaccination on the Health of Medical Personnel

The goal of the COVID-19 pandemic response was to create a vaccine that would offer protection against the coronavirus that causes the illness. In order to achieve this, beginning in early 2020, researchers developed a variety of vaccination platforms by utilising the knowledge already available regarding coronaviruses such as MERS and SARS (Smith et al., 2021). The primary aim of these immunizations was to prevent the severe illness caused by the COVID-19 virus, SARS-CoV-2. Scientists were able to better comprehend the virus and develop more targeted vaccinations with the publication of SARS-CoV-2 genetic sequence data through

GISAID in January 2020 (Forni et al., 2020). By devoting a large sum of money to the COVID-19 vaccine's development by March 2020, the pharmaceutical sector showed that it was firmly committed to combating the pandemic (Sallam et al., 2020).

The first COVID-19 vaccines were created quickly, and in 2020 they were approved for use in emergencies. With the exception of the Janssen vaccine, which was only given once, most of these vaccinations were given in two doses (CDC, 2021). Nonetheless, studies have indicated that vaccination-induced immunity declines with time, necessitating booster doses to maintain COVID-19 protection (CDC, 2021).

An estimated 14.44 to 19.8 million deaths in 185 countries and territories between December 8, 2020, and December 8, 2021 were prevented by COVID-19 vaccinations, according to a June 2022 study that examined the disease's severity and death toll (CDC 2022). In order to successfully vaccinate those most susceptible, many countries established staggered distribution strategies to prioritise the elderly, who were at the highest risk of problems, and healthcare personnel, who were at the largest risk of exposure and transmission (CDC, 2022).

Studies (Polack et al., 2020; Baden et al., 2021; Voysey et al., 2021) have shown the effectiveness of vaccines like Pfizer-BioNTech, Moderna, and AstraZeneca in avoiding hospital admissions and mortality as well as COVID-19 infection and severe illness. Moreover, recent studies suggest that vaccination might lessen the likelihood of transmission and stop the virus from propagating across the community (Dagan et al., 2021). Systems for thorough safety monitoring, such as the VAERS (Vaccine Adverse Event Reporting System), have been put in place to evaluate and handle any possible side effects connected to COVID-19 vaccinations. The overall safety profile of approved vaccinations is still positive, with benefits greatly exceeding risks, despite the infrequent reports of adverse events (Shimabukuro et al., 2021).

However, achieving widespread vaccination coverage remains a challenge, influenced by various factors such as vaccine supply, distribution logistics, and vaccine hesitancy. Vaccine hesitancy, fuelled by misinformation, mistrust, and historical inequities, poses a significant barrier to vaccination efforts (Larson *et al*., 2014). Addressing concerns about vaccines requires specific communication tactics, involvement of communities, and efforts to establish

confidence in vaccines and healthcare among marginalized groups. To guarantee that everyone has the chance to receive a vaccination, regardless of socioeconomic level or place of residence, equitable distribution and access to vaccines are essential. Disparities in vaccine distribution and access highlight underlying inequities in healthcare systems and underscore the importance of implementing equitable vaccination strategies to reach vulnerable populations (Chaudhary *et al*., 2021).

Beyond individual health benefits, widespread vaccination against COVID-19 holds profound implications for public health interventions and disease control strategies. Achieving herd immunity through vaccination is essential for suppressing transmission and preventing future outbreaks. However, the emergence of new variants underscores the importance of continued vigilance, adaptive vaccine strategies, and comprehensive public health measures to control the pandemic effectively (Fontanet & Cauchemez, 2021).

2.3.4 Risk Mitigation Strategies during the COVID-19 Pandemic

Risk mitigation is the process of making decisions based on data from risk and exposure assessments, taking into account a variety of aspects such socioeconomic, political, epidemiological, and engineering data (Brunen de Bruin et al. 2007). This procedure aids in identifying available regulatory options and choosing the best course of action to lessen the risks connected to COVID-19. In reaction to the pandemic, numerous nations have put risk mitigation strategies into place and are learning from those that have been coping with the virus for longer (Wu & McGoogan, 2020). The efficacy of each strategy can be ascertained by categorising the actions made by different nations through analysis.

In order to effectively stop the spread of COVID-19, it is important to consider all aspects of risk mitigation, including regulatory, societal, sectoral and company responses. It is important to learn from the strategies and measures implemented by other countries and adapt them to the specific circumstances and needs of each region (Gostic *et al.*, 2020). By taking a comprehensive and interdisciplinary approach to risk mitigation, scientists can better protect public health and safety during the ongoing pandemic. Mobility restrictions are put in place to limit the movement of individuals and thereby slow down the spread of the virus. These

restrictions help reduce the opportunities for both symptomatic and asymptomatic individuals to come into contact with others and potentially infect them (Hellewell *et al*., 2020).

According to WHO (2019), various measures can be implemented as part of mobility restrictions, including active zoning to control the movement of people in specific areas, closing or limiting public transportation to cut down on the population congregating in close proximity, and imposing air traffic restrictions to limit the spread of the virus across borders. Restrictions may also include the temporary shutdown of specific facilities or amenities, such private automobiles, bicycles, and outdoor activities like jogging or strolling. In some cases, restrictions may be specific to outdoor activities, with individuals only allowed to engage in activities like walking outside if accompanied by a dog or restricted to groups of two people. These measures aim to minimize the opportunities for the virus to spread through close contact between individuals and help contain the outbreak within a given community or region (WHO, 2019).

The COVID-19 epidemic has prompted a wide range of socio-economic limitations that target social and economic activities that take place in public spaces. In order to lower the risk of transmission among students and teachers, this involves closing or restricting child care facilities, nurseries, and schools (WHO, 2020). In a similar vein, limitations have been placed on senior citizen houses in order to shield this susceptible demographic from the virus. In an effort to stop big crowds and the possible transmission of the virus, museums, swimming pools, pubs, restaurants, and both indoor and outdoor sports facilities have also been singled out for closure or restriction.

Moreover, retail trade has been restricted to essential goods only, such as food and medicines, to ensure that people have access to necessary supplies while limiting unnecessary interactions. Additionally, banking, financial, and insurance services have been included in this cluster of essential services to support the functioning of the economy during this challenging time (CDC, 2019). To adapt to these restrictions, many businesses and organizations have been encouraged or required to implement teleworking practices to allow employees to work remotely and minimize in-person interactions. Production in factories has also been limited or cancelled in some cases to reduce the risk of transmission among workers (Forbes, 2020). The

goal of these socioeconomic limitations is to lessen the pandemic's negative effects on public health while simultaneously lessening the crisis's financial fallout. Governments may assist stop the virus's spread and safeguard the health of their citizens by putting certain precautions into place. Social distancing, another name for physical separation, is an important strategy for stopping the spread of infectious diseases like the COVID-19 pandemic. But it's critical to stress that, particularly for vulnerable groups like the elderly, physical distance does not equate to social isolation (Anderson et al., 2020). By maintaining a proper distance of 1.5 to 2 meters, it is still possible to engage in social interactions, whether in person or through virtual means. In addition to maintaining distance between individuals, other physical distancing measures may include restricting the size of gatherings, closing public outdoor spaces, and implementing regulations for crowded indoor spaces such as offices and commercial establishments. These measures help reduce the risk of transmission by limiting close contact between individuals and preventing overcrowding in shared spaces (Niud & Xu, 2020). One of the most important strategies for halting the spread of infectious diseases and safeguarding the health and welfare of communities is physical separation. People must follow these guidelines in order to lessen the effects of outbreaks and protect public health.

It is crucial to adhere to the hygiene precautions advised by health officials in order to stop the virus's spread and shield others from infection. This entails utilizing contactless payment to avoid handling cash, sneezing or coughing into your elbow, washing your hands thoroughly for at least 20 seconds, avoiding touching surfaces in public spaces, and donning personal protective equipment (PPE) such masks, gloves, and eye protection. It's also critical to dispose of household waste properly to stop the virus from spreading to waste collectors and processing workers (WHO, 2020). Workers in environments where physical distancing is not possible should be provided with protective measures, such as the installation of protective barriers like glass shields in supermarkets. Quarantine measures, both precautionary and for those who are sick, are crucial in preventing the spread of the virus within communities. Screening protocols, such as temperature checks or testing upon entrance to certain locations, can help identify and isolate individuals who may be infected (FAO, 2020).

Communication plays a crucial role in effectively implementing and ensuring compliance with risk mitigation measures during a crisis. In the absence of recent large-scale disasters, trust in

authorities may be lacking, making communication even more vital. In response to the COVID-19 pandemic, the World Health Organization established a WhatsApp group to disseminate information and instructions on risk mitigation measures. National communication strategies were also implemented to combat fake news and promote awareness, understanding, and adherence to restrictions. These efforts were aimed at fostering public trust, acceptance, and cooperation during the crisis (Mheidly & Fares, 2020).

Inzaule et al. (2021) underscore the pivotal function of global support networks in countering the pandemic's worldwide threat. A major response by nations, industries, and businesses to this crisis has been to boost worldwide output and trade of vital medical goods like ventilators, PPE, pharmaceutical formulations, raw materials for medicines, and basic medical medications. This cooperative effort has made it possible to guarantee that needy countries, irrespective of their own capabilities and resources, can access these vital resources. Additionally, in order to facilitate and coordinate the global response to the pandemic, already-existing risk mitigation networks have been swiftly activated (Inzaule et al., 2021). In addition, new international forums are being created to promote the sharing of knowledge on a range of crisis-related topics, such as publications, treatments, clinical trials, and lessons learnt. These platforms are important resources that help nations exchange best practices, learn from one another's mistakes, and coordinate their global pandemic response efforts. In the face of such a worldwide challenge, the significance of international cooperation and collaboration cannot be emphasised. Collaborating and utilising resources and knowledge across national boundaries can empower nations to enhance their ability to address the pandemic's obstacles and safeguard the health and welfare of their citizens.

2.3.4.1 Early Signs of Effectiveness

The effectiveness of various COVID-19 risk mitigation measures is increasingly being studied and documented in current literature. While it is challenging to determine the precise impact of each category of measures, the existing research has been thoroughly reviewed and verified as reliable (Chu *et al*., 2020). This statement reinforces the idea that the information on COVID-19 risk mitigation measures is constantly evolving, but the literature that is currently available has been rigorously examined to ensure its validity and accuracy (Chou *et al.*, 2020).

According to Chinazzi et al. (2020), the travel restrictions put in place in Wuhan only slightly slowed the COVID-19 outbreak's spread to neighbouring regions of China. In order to effectively control the spread of disease, the study emphasizes how important it is to combine travel restrictions with behavioral adjustments and public health activities. During the SARS pandemic, this was also observed in Singapore (Drake et al., 2006). Every COVID-19 patient is estimated to infect two to three additional individuals, underscoring the pressing need to take action to lower the number of new infections (Anderson et al., 2020). Evaluating their efficacy requires testing, keeping an eye on hospitalisations, and tracking mortality in the weeks after limitations. Applying a combination of mitigation strategies, even some without conclusive scientific proof like school closures, is advised to limit the rate of new infections, even though the precise efficacy of each action may not be quantitatively assessed (Hellewell et al., 2020). This strategy is in line with the precautionary principle and gives vital time to stop the virus from spreading.

The implementation of socio-economic limitations varies across nations, however Nicholson et al. (2019) emphasise their significance in slowing down the spread of COVID-19. An important consideration in the decision-making process was how these limitations would affect the way of life and the economy. Google's research of location data from smart phones showed a notable decline in the number of trips to public locations in European countries between February 16 and March 29, 2020, including stores, parks, and train stations. Retail and leisure travel fell by 94% in Italy and Spain, while workplace attendance fell by more than 60%. In an attempt to stop the virus's spread, these nations and France implemented near lockdowns, which flattened the curve of new illnesses (Nicholson et al., 2019). The best method for slowing the spread of COVID-19 is thought to be a combination of several risk mitigation strategies, such as socioeconomic constraints. The aim of these strategies is to rapidly decrease new infections; the effectiveness of these interventions depends on their geographic scope and severity.

According to Anderson et al. (2020), individual behaviour plays a critical role in containing the COVID-19 pandemic. This includes early self-isolation, distant medical advice seeking, and adherence to physical distancing measures. They stress that a mix of mitigating strategies, including as physical separation and prohibitions on large-scale meetings, might drastically

lower transmission rates. The authors did point out that a lack of public knowledge in many Western democracies resulted in non-compliance with these policies. Governments adopted communication techniques, such using social media and outdoor signage, as well as enforcement strategies, like fining violators of limits, in response to this lack of compliance. For instance, Germany fined people up to 25,000 euros for congregating in groups larger than three, and the Netherlands announced the arrest of a person who allegedly had COVID-19 after purposefully coughing in the face of a police officer. The results of Anderson et al. (2020) emphasise how crucial it is for each person to take personal responsibility for adhering to public health recommendations in order to successfully stop the spread of COVID-19. Governments can attempt to lower transmission rates and safeguard public health by putting in place a variety of mitigating measures and enforcing compliance.

Niud and Xu (2020) state that a major obstacle to the efficacy of isolation measures is the spread of COVID-19 by people who have minimal or no symptoms. This is due to the increasing difficulty in locating, isolating, and tracking down every instance and its contacts. Therefore, within the constraints of healthcare and diagnostic testing capabilities, it is imperative to carry out comprehensive identification and testing of such instances. The authors stress the significance of locating, evaluating, and segregating possible cases such as individuals with influenza-like illness that have minimal or no symptoms. This will increase the effectiveness of early control efforts, like as contact tracking and isolation, in stopping the virus's spread. The importance of contemporary technology in boosting the efficacy of control measures against COVID-19 is emphasized by Niud and Xu (2020). They contend that one of the most important tactics for containing the outbreak should still be the combination of detection and contact tracing. In the fight against COVID-19, identifying and evaluating possible cases even those with minimal or nonexistent symptoms is essential. We can better constrain the virus's spread and stop it from spreading inside communities by putting early control measures like contact tracing and isolation into place.

The World Health Organization (2020) states that the danger of human exposure to viruses contained in blood and other animal fluids was significantly increased by the unsanitary circumstances of the Wuhan market, where wild animals were murdered. There are "wet" markets outside of China as well, like the one in Wuhan, in South America, Asia, and Africa. It

might be difficult to alter cultural norms and behaviors with regard to these markets. The article's authors suggest that keeping domestic and wild animals apart in both indoor and outdoor environments is essential to stopping such outbreaks in the future. Additionally, they recommend outlawing the immediate killing of animals in marketplaces because of poor hygienic standards. Strict hygienic regulations have long been in place in Western nations' slaughterhouses to stop the spread of disease. As a precaution against the spread of diseases, Chinese authorities have just temporarily outlawed wild species trade, effective March 2020 (FAO, 2020). This is but one of several steps being done to lessen the dangers connected to these markets. Future pandemics might be avoided by outlawing wild animal markets and enforcing stringent hygienic regulations in all animal trade facilities.

The importance of hand hygiene has been emphasized by international organizations such as WHO, CDC, and ECDC for many years. The WHO started developing guidelines for hand hygiene in 2004 and has created specific guidelines for healthcare settings in 2009. This information is available in multiple languages on the WHO website and is also accessible in various official languages in most countries (WHO, 2020).

Both nationally and internationally, the messaging regarding the use of face masks during the COVID-19 pandemic has been unclear and inconsistent. The scarcity of masks that fulfill the requisite technical specifications such as FFP2 and FFP3 masks, which are governed by EU law has made the absence of clear guidelines worse. Surgical masks are not enough protection during aerosol-generating procedures, despite the fact that they have been demonstrated to be helpful in lowering the risk of infection in hospital settings (Long et al., 2020). Healthcare professionals, symptomatic or confirmed/suspected COVID-19 individuals, and anybody giving care for them are advised by the European Centre for Disease Prevention and Control (ECDC) to use face masks as soon as possible. However, the World Health Organization (WHO) and other health agencies do not recommend face mask use for the general public. This lack of agreement regarding face mask use emphasizes the need for more precise and uniform instructions to guarantee people's safety and protection throughout the ongoing epidemic (Smith et al., 2016).

There have been concerns expressed regarding whether the Western countries' recommendation which includes the US, UK, and most of the EU against the public wearing face masks is driven by the need to conserve scarce resources for medical facilities. Nonetheless, a rising number of European nations as well as certain Asian nations have promoted or made it mandatory for people to wear face masks in public (Feng et al., 2020). Face mask use appears to have halted the spread of the virus, according to tests done during the SARS pandemic. The use of face masks by the general public in addition to other mitigating measures may provide further benefits because research indicates that a significant portion of SARS-CoV-2 transmissions happen before symptoms appear (Jefferson et al., 2011). In the absence of specific pharmaceutical therapy, masks may assist stop the spread of the virus during a pandemic like the one caused by SARS-CoV-2, despite conflicting and inconsistent findings indicating the usefulness of mask wear for the general public. This may be the cause of reports (Feng et al., 2020; Leung et al., 2020) that the US CDC is revising its guidelines for the usage of face masks.

A recent communication from the European Commission (2020) states that government goods intended for healthcare professionals are not eligible to be received by vital service providers. If they are able to import their own supply, they are permitted to give their workers masks without the CE mark. This clarification helps allay worries about critical workers' access to protective gear during the COVID-19 pandemic. Furthermore, a strategic rescue stockpile of medical goods, including ventilators, reusable masks, vaccines, medications, and lab supplies, has been developed by the European Union (Commission Recommendation EU, 2020). The objective of this project is to facilitate the reaction of EU nations to the pandemic by guaranteeing the availability of essential healthcare resources when required. It will be fascinating to observe how effectively Member States may use and access this stockpile in order to deal with the issues that COVID-19 presents (European Commission, 2020).

Reliable and well-coordinated communication channels are critical during an epidemic situation to foster community confidence and compliance. A relatively short period of time was needed for countries like South Korea, Japan, Singapore, Hong Kong, and Singapore to stabilize the overall number of cases once they reached their 100th case. The timely

implementation of risk-reduction measures, including the shutdown of schools, strict isolation and quarantine regulations, and effective contact tracing, made this feasible.

Data evaluated as of March 16, 2020, indicated that the community's strong response to these risk mitigation measures, as notified by the authorities, was a major factor in containing the COVID-19 outbreak. This emphasizes how crucial it is for the public to be aware of the outbreak and to have social trust in the government, as well as well-planned risk mitigation communication initiatives. Governments can improve public awareness and cooperation in the battle against the epidemic by placing a high priority on clear and honest communication. (FT Analysis, CSSE, March 14, 2020; John Hopkins University).

To effectively prevent the spread of a global pandemic like COVID-19, it is essential to have a coordinated international support mechanism in place. This mechanism should be able to act swiftly and decisively in response to emerging threats. As noted by Niud and Xu (2020), the window for early response is short, and failure to act quickly can lead to a loss of control over the situation. Therefore, global coordination is crucial in directing aid and resources to the areas in most need.

One way in which countries and industries are coming together to combat the pandemic is by repurposing their resources and infrastructure. Pharmaceutical companies, factories, and retailers are collaborating to produce essential items such as masks, protective garments, and sanitizers. High-profile brands like Armani and Gucci are leveraging their production capabilities to manufacture protective gear for healthcare workers. Similarly, beverage companies are shifting their focus towards producing disinfectants to meet the growing demand (Hellewell *et al*., 2020).

State and international bodies are also working to ease the flow of necessary commodities and services in addition to corporate partnerships. To guarantee that supplies are available locally, the European Union, for instance, has temporarily banned the export of some medical equipment. This makes it quite evident that economic interests will not come before the health and safety of the general public (Commission Implementing Regulation 2020/402, 14 March, 2020). In general, the COVID-19 pandemic has brought attention to how critical international

cooperation and solidarity are in responding to medical emergencies. Countries can better address the issues posed by a fast spreading epidemic by cooperating and pooling resources.

2.4 Gaps in the Literature

Liu et al. (2020b) recommended that mental health professionals collaborate closely with patients in critical care units to minimize stress and prevent depression. However, Kang et al. (2020) also point out that in order for healthcare professionals to communicate with each other regarding psychological health issues, phone helplines are necessary. There has not been any literature on foreign healthcare workers documented information regarding one-on-one communication pertaining to psychological health challenges from one country to the other. With exchange of ideas from one country to the other among medical personnel, the chances of reducing depression would be curtailed as information will be shared among the people affected or among the people who are risk to develop psychological disorder.

The creation of teams of specialists trained to deal with emotional distress is one suggestions for a more specific therapeutic approach (Duannand Zhu, 2020); another is the instruction of community health workers on the fundamentals of psychological care and helping providers to increasingly utilize online platforms for delivery of psychological health services (Duan & Zhu, 2020). Online resources are being produced for psychological health education, and online surveys are being used to evaluate the severity of psychological health disorders (Liu et al., 2020b). It is important to ensure that online psychological health services are affordable for those from lower socioeconomic backgrounds, and that counselling and self-help services are readily accessible online (Liu *et al*., 2020b). Additionally, synchronous telemedicine services are being developed for diagnostic and counselling purposes (Zhou *et al*., 2020), with a focus on making these services available to all socioeconomic groups (Yao *et al*., 2020b).

Imhoff and Lamberty (2020) and Lantian *et al*. (2017) found that individuals with a strong need for uniqueness and a strong desire to stand out from the crowd deliberately try to avoid doing or saying what a number of people do. Both correlational and experi-psychological studies endorse conspiracy theories and have been associated to a greater need for uniqueness. Despite evidence suggesting a correlation between a strong desire for uniqueness and susceptibility to endorsing conspiracy theories, little attention has been directed towards

understanding how this psychological factor may intersect with healthcare professionals' attitudes and behaviours during a public health crisis such as the COVID-19 pandemic. Consequently, there is a need for further investigation to elucidate the role of the need for uniqueness in shaping medical personnel's responses to COVID-19 mitigation measures and vaccination strategies, thereby informing targeted interventions to enhance compliance and safeguard public health (Imhoff & Lamberty, 2020).

The implementation of telemedicine and online therapy options could greatly improve access to psychological health care services, particularly for individuals who may be unable to seek traditional in-person treatment due to various reasons such as social distancing measures or lack of transportation. However, the success of these methods is contingent upon the availability of skilled workers and adequate infrastructure for delivering services effectively (Bauer *et al.*, 2020).

Moreover, while these virtual platforms offer a potentially more approachable way to receive mental health treatment, their efficacy in reaching and benefiting the appropriate target populations has not yet been fully explored. There is a need for further research to determine the effectiveness of remote psychological health care services, especially in marginalized communities that may not have equal access to technology or internet connectivity (Ertelt *et al*., 2016).

In addition, there may be challenges in implementing telemedicine and online therapy in countries with lower social-economic support, as the lack of advanced technology and information infrastructure could hinder the dissemination of vital information to health care personnel. This knowledge gap may have an effect on the standard of care given and restrict the availability of these online mental health services (Naslund et al., 2016). The delivery of psychological health care could be revolutionized by telemedicine and online treatment, but it's vital to take into account the particular difficulties and constraints that might apply in certain contexts and groups. Continued research and investment in technology and infrastructure are essential to ensure that these virtual platforms can effectively reach and benefit individuals in need of mental health support (Bauer *et al.*, 2020).

CHAPTER THREE
METHODOLOGY

3.1 Overview

This chapter describes the methodology used in the study. Research design, study area, sampling and data collection methods, data analysis and presentation, inclusion criteria, and exclusion criteria are the sections that make up this chapter.

3.2 Study Area

The study area was various hospitals in Eldoret town, both public and private as outlined in Table 3.1. Specifically located on the Uasin Gishu Plateau, Eldoret is a major urban hub in Kenya's Rift Valley. It serves as the county seat of Uasin Gishu and enjoys a pleasant temperature due to its elevation of 2,090 meters (6,857 feet) above sea level. Eldoret's advantageous location at the crossroads of important transportation routes linking Nairobi with northern Kenya and Uganda increases the town's visibility and economic significance (Rift Valley Institute, 2018; Britannica, 2024).

With a population of around 475,716 as of the 2019 Kenya Population and Housing Census, Eldoret is the sixth most populated urban area in Kenya, behind Nairobi, Mombasa, Kisumu, and Nakuru (Afrikan Traveler, 2023). The town's population has grown quickly; in 2009, there were 289,380 residents. Its status as a thriving economic hub and a center for healthcare and education, which draws immigrants from all over the world, is mostly to blame for this increase (Rift Valley Institute, 2018).

Eldoret's economy, which is mostly driven by manufacturing, services and agriculture, is notable for its strength and diversity. The region's lush fields allow for a lot of agricultural, particularly for horticulture, dairy, and cereals. Eldoret is a major centre for agricultural trade; it is home to important establishments like the Doinyo Lessos cheese factory as well as a number of flour mills and food processing businesses. In addition, the town has become a hub for local industry, including establishments such as Rupa Textiles and Raiplywoods (Rift Valley Institute, 2018). Eldoret’s economy is greatly stimulated by Moi University and the Moi Teaching and Referral Hospital, which also improve the healthcare and education sectors. The town's industrial strengths are further demonstrated by the Kenya Ordnance Factories

Corporation, the only manufacturer of small arms and ammunition in the area, and a fertilizer blending factory (Chepsiror, 2016).

In Kenya, Eldoret has become a major center for healthcare, ranked second only to Nairobi in terms of services provided. The main healthcare institution in the area is the public Moi Teaching and Referral Hospital (MTRH), which provides a comprehensive variety of medical services to the local population as well as those in the neighboring districts. Eldoret also has more than 20 private healthcare institutions, such as Mediheal, Elgon View, Top Hill, and Eldoret Hospital, all of which compete to offer high-quality, reasonably priced healthcare. Patients from nearby nations can more easily receive medical care because to the existence of Eldoret International Airport. Eldoret's vast network of governmental and private healthcare institutions makes it an ideal location for meeting the medical demands of the area's expanding population (Chepsiror, 2016).

Table 3.1: Hospitals and Accredited Levels

Hospital	**Accredited Level**
Moi Teaching and Referral Hospital	(Level 6)
Mediheal Hospital	(Level 5)
St Luke’s Orthopaedic and Trauma Hospital	(Level 5)
Racecourse Hospital	(Level 5)
Uasin Gishu County Hospital	(Level 4)
Eldoret Hospital	(Level 4)
Reale Hospital	(Level 4)
Elgon View Hospital	(Level 4)
Living Room Hospital	(Level 4)
Tophill Hospital	(Level 4)
Eldoret Oncology Associates	(Level 4)
Glogoh Hospital	(Level 4)
Cedar Hospital	(Level 4)
Lighthouse Healthcare	(Level 3)
Huruma District Hospital	(Level 3)
Pioneer Hospital	(Level 3)
Rapha Hospital	(Level 2)
Alexandria Cancer Centre and Hospital	(Level 2)

Source: yourhealthcare.co.ke

3.3 Research Design

A cross-sectional descriptive research design was utilized to examine the effect of COVID-19 on the health of medical personnel. In a cross-sectional descriptive study, researchers collect data at a single point in time to provide a snapshot of a particular population. The design allowed for the examination of relationships between variables and the description of characteristics within a specific timeframe (Smith & Johnson, 2021).

3.4 Study Population

The study focused on doctors, clinical officers, nurses and laboratory technicians who were involved in COVID-19 confirmed and suspected cases within hospitals in Eldoret. From the information obtained from the hospitals, the distribution of the study population was as indicated in Table 3.2.

Table 3.2: Study Population

Type of Hospital	**No. of Hospitals**	**Respondents**	**Population**	**Stratum Population**
Public	3	Doctors	8	
		Clinical Officers	22	
		Nurses	80	
		Lab Technicians	12	122
Private	15	Doctors	26	
		Clinical Officers	49	
		Nurses	139	
		Laboratory Technicians	43	257
Target Population	**18**		**379**	**379**

Source: Pre-Field Survey (2023)

3.5 Sampling Design

3.5.1 Sampling Strategy

All hospitals in Eldoret town were represented in the study. The sample size was arrived at by considering Kothari (2004) assertion that the sample size should neither be too large or too small. It should be optimum sample. Kothari further notes that, an optimum sample is one that fulfils the requirement of efficiency, representativeness, reliability and flexibility. Thus, a sample of 18 hospitals was considered. However, Kothari (2004) recommends that the sample should be 50% or more of the whole population using stratified sampling techniques. Stratified sampling was chosen for the study because it ensures that the sample accurately represents the different subgroups. This method provides assurance that the numerical composition of the sample reflects the distribution of hospitals in the population (Cozby, 2018).

In this study, where subgroups included public and private, snowball technique was used to select personnel who attended to COVID-19 suspected or confirmed patients. Snowballing was used because the populations being targeted was difficult to access. Therefore, it was easy to identify medical personnel through those with whom they had worked in the management of COVID-19. To build a snowball, one individual medical personnel who had attended to a patient with confirmed case of COVID-19 was given a questionnaire to fill at their hospital setting. The personnel then referred the researcher to another health personnel who did attend to a patient with COVID-19. Thereafter, he/she linked the researcher to another person who had attended to a patient with suspected or confirmed case of COVID-19. This chain was continuously built as the researcher gathered information regarding the health personnel who had attended to patients suffering from COVID-19.

3.6 Sample Size Determination

The target population for the study included medical personnel in both public and private hospitals in Eldoret town. The population consisted of doctors, clinical officers, nurses and laboratory technicians working in these healthcare facilities. The total number of medical personnel in public hospitals was 122 (8 doctors + 22 clinical officers + 80 nurses + 12 laboratory technicians), and in private hospitals, the total number was 257 (26 doctors + 49 clinical officers + 139 nurses + 43 laboratory technicians). The sample size for the study was determined as shown in Table 3.3.

Table 3.3: Sample Size

Type of Hospital	No. of Hospitals	Respondents	Population	%	Sample size
Public	3	Doctors	8	50	4
		Clinical Officers	22	50	11
		Nurses	80	50	40
		Lab Technicians	12	50	6
Private	15	Doctors	26	50	13
		Clinical Officers	49	50	24
		Nurses	139	50	69
		Lab Technicians	43	50	21
Target Population	**18**		**379**		**188**

Source: Researcher (2024)

This study utilized questionnaires, which were self-administered to respondents and collecting them thereafter. The present study found it necessary to utilize the instrument in order to collect the most accurate and suitable information (DeVellis, 2016). The utilization of self-administered questionnaires in the present study is a sound method for collecting reliable and appropriate data. This approach offers advantages in terms of reliability, confidentiality, efficiency, standardization, and validity, ensuring the quality and credibility of the data collected (Fisher *et al.*, 2016).

By applying stratified sampling techniques and ensuring that the sample size met Kothari's (2004) recommendation of 50% or more of the whole population, the researcher was able to obtain a representative sample of medical personnel that captures the diversity within the population and provides valuable insights to which their experiences during the pandemic was captured and therefore a sample size of 188 was obtained by dividing each stratum by 50%.

In a proportionate way, doctors, laboratory technicians, clinical officers and nurses appeared in the ratio 1:2:3:4, respectively. This amounted to ten (10) is the total proportion. Therefore:

10 = 188

Doctors = $^{1}/_{10}$ x 188

= 18.8

Laboratory Technicians = $2/_{10}$ x 188

= 37.6

Clinical Officers = $^{3}/_{10}$ x 188

= 56.4

Nurses = $^{4}/_{10}$ x 188

= 75.2

This represented a simple sample. As shown in Table 3.2, hospitals were grouped either as public or private.

3.6.1 Inclusion Criteria

Specific criteria were established to study the effect COVID-19 on the health of medical personnel in hospitals within Eldoret Town and to assess the importance of vaccination in this context. These criteria primarily focused on medical personnel such as doctors, nurses, laboratory technicians, and clinical officers who have been in direct contact with COVID-19 patients. These medical professionals faced an increased risk of contracting the virus because they worked closely with infected individuals. The study also took into consideration the vaccination status of these medical personnel, including individuals who had been vaccinated against COVID-19. By evaluating the vaccination status of these individuals, the researcher aimed to understand the potential effect of vaccination on the health outcomes of medical personnel who direct exposure to COVID-19 patients. By including medical personnel who had had direct contact with COVID-19 patients and assessing their vaccination status, the research aimed to offer valuable information on how well vaccines protect them from getting and suffering negative health outcomes of COVID-19 (Centres for Disease Control and Prevention, 2021).

3.6.2 Exclusion Criteria

Exclusion criteria were applied to non-health personnel in hospitals in Eldoret Town. This decision was made in order to focus specifically on the effect of COVID-19 on medical personnel, who were at the frontline of the pandemic and faced a greater risk of exposure to the

virus. Research has indicated that they are more likely to become infected with the virus and to suffer from severe illness than the general population (Nguyen *et al*., 2021).

Given the critical role that medical personnel have played in the response to the pandemic, it was important to understand the specific challenges they have faced in the hospital setting. By focusing exclusively on health personnel in hospitals in Eldoret Town, the study aimed to provide a detailed assessment of the effect of COVID-19 on medical personnel. This targeted approach helped to identify the unique risks and health challenges experienced by healthcare workers, as well as the effectiveness of vaccination in protecting this vulnerable group.

Lai *et al*. (2020) discovered that individuals working in the medical field were at a substantially elevated likelihood of contracting COVID-19 when compared to those in non-healthcare professions. This highlights the importance of focusing on this high-risk group in order to develop targeted interventions to protect their health and well-being. By excluding non-health personnel from the study, the research aimed to provide valuable insights into the specific challenges faced by medical personnel in hospitals during the COVID-19 pandemic, with the ultimate goal of informing policy interventions to support and safeguard medical personnel in Eldoret Town.

3.7 Study Variables

3.7.1 Independent Variable

The independent variable in this study was COVID-19 and its effects. The research analysed different variables that had affected the psychological and physical health of medical personnel during the COVID-19 crisis. The dependent variable was measured through factors such as frustration, despair, fear, and dissatisfaction leading to increased anxiety and stress, as well as isolation due to long working hours and social distancing measures (Chirico *et al*., 2020). The stigmatization of frontline workers, misconceptions about the virus, and the challenges faced by medical staff were also key variables in the study (Wouters *et al*., 2021). Additionally, the role of vaccination, particularly prioritizing medical personnel for vaccination, was highlighted as a significant variable that brought relief and optimism, reducing anxiety and promoting resilience among medical personnel (Lai *et al*., 2020).

3.7.2 Dependent Variables

The dependent variable in this study was the health status of medical personnel in hospitals in Eldoret Town, specifically focusing on the effect of COVID-19 on their health. The outcome variable was measured through indicators such as infection rates, severity of symptoms, recovery time, and any long-term effects on their overall well-being (Nguyen *et al.*, 2020).

3.8 Data Collection and Procedure

The study employed questionnaires for data collection. A sample of medical personnel in various hospitals in Eldoret town was selected using a random sampling technique. The questionnaire included questions about the effect of Covid-19 on their health, their perceptions of vaccination, and their experiences working in hospitals during the pandemic. The questionnaires were distributed in person (Smith, 2021).

Questionnaires were distributed to medical personnel working in hospitals in Eldoret town to gather information on the effects of Covid-19 on their health. The questionnaires consisted of both open- and closed-ended questions regarding the effect of COVID-19 on the psychological health, physical health and mitigating strategies. The questionnaires also included questions on vaccination status and its mediating effectiveness on the stopping the infection and spread of COVID-19 among medical personnel.

The researcher obtained ethical approval from relevant authorities before collecting data from the medical personnel. He then developed a questionnaire that covers all relevant aspects of the effect of COVID-19 on the health of medical personnel. The researcher then distributed the questionnaires to medical personnel working in the sampled hospitals in Eldoret town in-person. After one week, the researcher collected the filled questionnaires and analyse the data to identify common themes and trends. The researcher then analysed the data obtained from the questionnaire to gain a deeper understanding on the effect of COVID-19 on the health of medical personnel and evaluate the role of vaccination in protecting them from the virus.

3.9 Data Analysis and Presentation

Quantitative data from questionnaires distributed to medical personnel were coded using IBM SPSS software (Smith *et al.*, 2020). The ultimate analysis of the data involved the use of

appropriate statistical tests such as Linear regression to determine relationships between variables. The study results were as presented as per the research objectives as outlined below.

Table 3.4: Summarizing Data Handling and Analysis Process

Objective	Variable analysed	Analysis Methods
Psychological	Psychological effect scores	Descriptive statistics, Linear Regression
Physical	COVID-19 symptoms	Descriptive statistics, Correlation analysis
Vaccination	Vaccination status	Descriptive statistics
Mitigating	Mitigating strategies	Descriptive statistics

Source: Researcher (2024)

3.10 Participants

A snowball sampling technique was used in this study, whereby participants were recruited based on the following characteristics: (1) any health personnel having attended to a confirmed or suspected COVID-19 case; (2) ability to write and communicate effectively, and (3) both genders to be represented proportionately in the study.

3.11 Validity and Reliability of Research Instruments

3.11.1 Content Validity

The researcher visited both public and private hospitals within Eldoret town seeking respondents who had attended to patients suspected or confirmed with COVID-19. This included doctors, clinicians, laboratory technicians and nurses who had attended to suspected or confirmed COVID-19 cases. Items were formulated to capture data on the assessment of the effect of COVID-19 on the wellbeing of medical personnel, evaluating the psychological, physical, vaccination and mitigating strategies. The researcher evaluated the relevance of COVID-19 on physical health and psychological aspect of medical personnel by measuring their efficacy in preventing, detecting symptoms and home management. In this aspect, respondents were asked to rate the items on a 4-Likert scale (4 = Strongly disagree, 3 = Disagree, 2 = Agree and 1 =Strongly agree). Therefore, calculating each item's content validity index was done by adding the number of respondents who rated "Strongly Agree" or "Agree" then dividing them by the total number of respondents.

3.11.2 Reliability

Kumar (2014) and Selvam (2017) define reliability as the ability of a research tool to consistently produce reliable results in similar conditions. In this study, the reliability of the research instruments was assessed using a test-retest technique. In this aspect, pilot testing was conducted in Kapsabet County Hospital in Nandi County to assess reliability of the tool. For this matter, 20 participants who happened to have attended to COVID-19 patients were the researcher's respondents. This technique involved administering the instruments once, and then administering them again under similar conditions. The results were correlated using Pearson's correlation coefficient to assess the reliability of the findings. According to Mohamad *et al.* (2015), a reliability coefficient ranging from 0.6 to 0.9 indicates a positive and strong association among the scores. Hence, this study utilized an alpha correlation greater than 0.7.

Table 3.5: Reliability Analysis

	Variable	**Reliability**
1	Psychological effects	0.789
2	Physical effects	0.814
3	Role of vaccination	0.864
4	Mitigation strategies	0.790
	Average	**0.812**

Source: Researcher (2024)

An in-depth evaluation of the reliability was conducted for both the independent and dependent variables to assess if they exceeded the minimum threshold of 0.7. The results of this assessment were as presented in the table above, which shows that all variables had a Cronbach's alpha value greater than 0.70. The average reliability index was 0.812, indicating that the items were consistently reliable across all the variables examined.

3.12 Ethical Considerations

Scientific researchers are required to seek ethical review and approval from relevant institutional review boards or ethics committees before conducting research involving human subjects. This helps ensure that research activities adhere to ethical standards and protect respondents' rights and welfare. Therefore, this study took into consideration the Masinde Muliro University of Science and Technology research ethics policy of seeking a research

clearance from the university before commencing data collection activities. The researcher complied with the National Council for Science and Technology (NACOSTI) guidelines and authority to conduct research.

This study took into consideration the principle of informed consent, which involves treating individuals with dignity and ensuring that they have the autonomy to make informed decisions about participating in the study (Smith *et al*., 2020). This principle was applied comprehensively in this study by obtaining informed consent from all participants, clearly explaining the objective of the research and allowing participants to opt out of the study at any point without facing any consequences. Additionally, confidentiality and anonymity were maintained to protect the privacy of participants and encourage honest responses.

Another important ethical principle is justice, which involves ensuring fairness in the distribution of the benefits and burdens of research. In this study, justice was upheld by treating all participants equally and ensuring that their rights and welfare were protected. The researcher also ensured that data collection practices were transparent and that participants had control over how their data was used (Smith *et al*., 2020).

Non-maleficence is the ethical principle that emphasizes the importance of not causing harm or doing no harm to others. In applying this principle, the researcher considered the potential risks and consequences of their actions and decisions on others, ensuring that he does not cause harm or create unnecessary suffering. This principle guides the researcher to prioritize the well-being and safety of individuals and promote a sense of responsibility towards others. By upholding the principle of non-maleficence, researchers can make ethical choices that prioritize the welfare of others and strive to do no harm in their actions and decisions (Smith *et al*., 2020).

CHAPTER FOUR
RESULTS

4.1 Introduction

This chapter presents the analysis of data collected to assess the effect of COVID-19 on the health of medical personnel in hospitals in Eldoret town (evaluating psychological, physical, vaccination and mitigation strategies). The study used descriptive statistics to analyse data and address the study's research objectives.

4.2 Questionnaire Response Rate

Out of the 188 questionnaires that were administered, 152 were filled and returned successfully. This represented a response rate of 80.9 percent, which was considered sufficient for data analysis to generate valid results. This response rate was well above the 50 percent recommended by Mugenda and Mugenda (2003).

Table 4.1: Response Rate

Response Rate	**Frequency**	**Percentage**
Responded	152	80.9
Not responded	36	19.1
Total	188	100

Source: Field data (2024)

Table 4.2 presents an analysis of the distribution of respondents based on their cadres and response rate.

Table 4.2: Distribution of Participants by Cadres and response rate

No.	**Participants**	**Expected**	**Returned**	**Response rate Percentage (%)**
1	Nurses	109	90	**82.6**
2	Doctors	17	17	**100**
3	Clinical officer	35	25	**71**
4	Laboratory Technicians	27	20	**74**
	Total	**188**	**152**	**80.9%**

Source: Field data (2024)

Table 4.2 shows various medical personnel's response rates. As indicated, 80.9% of the sample size participated in the study, which was good enough to provide sufficient representation of the sample size of 188 and the overall target population of 379. For each cadre, more than 50% of the sample size participated in the study.

Table 4.3 provides a summary of the distribution of the respondents across the various demographics.

Table 4.3: Summary of Participants by the Demographic Information (N=152)

Variable	Measure	Frequency	%
Gender	Male	53	34.9%
	Female	99	65.1%
Marital Status	Married	107	70.4%
	Single	35	23.0%
	Separated	7	4.6%
	Widow/Widower	3	2.0%
Age bracket	Below 30years	66	43.4%
	31-40years	63	41.4%
	41-50years	13	8.6%
	Above 51years	10	6.6%
Level of education	Diploma	82	53.9%
	Undergraduate	56	36.8%
	Postgraduate	14	9.2%
Experience	Below 5years	63	41.4%
	6-10years	79	52.0%
	Above 11years	10	6.6%

Source: Field data (2024)

From Table 4.3, analysis of the medical personnel's background characteristics, it is shown that females were 65.1% while males were 34.9%. These results implied that there were more female than male medical personnel. It also means that more female medical personnel were impacted with the COVID-19 than male their counterparts.

Further, the results show that 70.4% of the medical personnel were married and they were living with their families, 23.0% were single, 4.6% were separated while 2% were widows/widowers. These findings showed that majority of the medical personnel were balancing between work and family in the period when the COVID-19 was rampant, which could have been physically and psychologically draining for them.

In addition, the results showed that 43.4% of the medical personnel were aged below 30 years, 41.4% were aged between 31 years and 40 years, 8.6% were aged 41-50 years while 6.6% were above 51 years. The age distribution was an indication that the modal age for the medical personnel was below 40 years. As such, a good number of the personnel were in the age bracket of those susceptible to severe effects of COVID-19 illness.

On education level, the results showed that 53.9% of the medical personnel had diploma level, 36.8% had undergraduate degrees while 9.2% had a postgraduate. From the finding, it was established that majority of the medical personnel had a diploma implying they were professionally trained to handle critical health-related cases.

Finally, the analysis by years of experience showed that 42.8% had had less than 5 years of work experience, 53.3% had had 6-10years of experience while 6.6% had had over 11 years. These findings suggested that there was a good blend of the experienced and less experienced staff in the hospitals, although COVID-19 was new case to all of the medical personnel.

4.3 Effects of COVID-19 (Independent Variable)

The independent variable of the study was the effects of COVID-19. They comprised the psychological and physical effects.

4.3.1 Psychological Effects of COVID-19

The medical personnel were asked to indicate the psychological effects of COVID-19 they had experienced during the corona pandemic. Their responses were rated on a 4-point Likert scale as indicated in Table 4.4.

Table 4.4: Psychological Effect of COVID-19 on Health of Medical Personnel

No	Item	Strongly agree (%) 1	Agree (%) 2	Disagree (%) 3	Strongly disagree (%) 4	Mean	Std. Dev
1	I generally had feelings of stress due to the advent of the COVID-19 virus	33.3	44.4	18.9	3.3	1.92	.810
2	There was anxiety centred on fear of my own health, my colleagues and families regarding COVID-19	25.6	21.1	45.6	7.8	2.36	.952
3	Contact with COVID-19 patients or suspected cases made me to feel depressed	30.0	14.4	34.4	21.1	2.47	1.134
4	I felt hopelessness whenever a patient succumbed to death as a result of COVID-19	35.6	34.4	26.7	3.3	1.98	.874
5	I felt irritable or mood swings during this time	28.9	66.7	1.1	3.3	1.79	.627
6	constant news and updates about COVID-19 affected you	57.8	30	7.8	4.4	1.59	.820
7	I had concerns about the long-term effects of the pandemic	48.9	41.1	6.7	3.3	1.64	.754

Source: Field data (2024)

Table 4.4 presents insights into the psychological effects of the COVID-19 pandemic on the health of medical personnel, based on responses gathered from the study. From the study results, 77.7% of respondents either strongly agreed (33.3%) or agreed (44.4%) that they generally experienced stress due to the onset of the COVID-19 virus. This indicated that a significant majority of medical personnel were profoundly affected by the pandemic, reflecting a prevalent emotional response among healthcare workers.

Additionally, a notable portion (25.6%) strongly agreed, and 21.1% agreed that they experienced anxiety centred on fear of their own health, colleagues, and families due to COVID-19. However, a substantial number (45.6%) disagreed to some extent, suggesting varying levels of concern and coping mechanisms among respondents.

Regarding depression resulting from contact with COVID-19 patients or suspected cases, 30.0% of respondents acknowledged feeling depressed (30.0% strongly agreed, 14.4% agreed). Conversely, 21.1% strongly disagreed, indicating diverse emotional responses among healthcare workers to patient interactions during the pandemic. Further, feelings of hopelessness were recognized by 35.6% (strongly agreed) and 34.4% (agreed), while 29.8% disagreed or strongly disagreed. This highlighted the emotional toll of losing patients to COVID-19 on medical personnel, showcasing varied responses to the challenges faced in healthcare settings.

A majority (66.7%) strongly agreed that they experienced irritability or mood swings during the pandemic, indicating significant emotional volatility among respondents in their day-to-day experiences. The respondents also revealed that the constant influx of COVID-19 news and updates affected 87.8% of them to some extent, with 57.8% strongly agreeing and 30% agreeing. This underscored the pervasive influence of media coverage on the emotional well-being of medical personnel, highlighting how external information sources contribute to their emotional state.

Concerning long-term effects, nearly 90% of respondents expressed worries about the enduring consequences of the pandemic, with 48.9% strongly agreeing and 41.1% agreeing. This suggested a high level of apprehension among healthcare workers regarding the lasting impact of COVID-19 on both personal and professional aspects of their lives.

A simple linear regression analysis was conducted to determine the relationship between psychological effects of COVID-19 and health of the medical personnel. The overall fit of the model was statistically significant at 95% confidence level, as indicated by an F-statistic of 62.92 with a p-value less than .001 ($F(1,88) = 62.92$, $p < .001$), with an R squared value of 0.417, which indicates that the model explained a 41.7% variance in the health status of the health of medical personnel. The adjusted R squared value of .41 further supported the variability accounted for by the predictor variables included in the model at 41% as shown in Table 4.5.

Table 4.5: Linear Regression Analysis Model Summary of Psychological Effects of COVID-19 on Health of Medical Personnel

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646[a]	.417	.410	2.85537

a. Predictors: (Constant), psychological effects
b. Dependent Variable: Health status medical personnel

Source: Field data (2024)

Table 4.5 displays the R value, which was 0.646. R is a metric that quantifies the degree of correlation between the dependent variable's observed and anticipated values. The correlation coefficient, then, between the respondents' stated health levels and the levels that the predictor variables would have predicted is 0.646. The association between the reported health levels of medical staff and the levels predicted by the predictor factors is relatively strong, as indicated by the score of 0.646. This suggests that the predictor variables included in the research had a major impact on the respondents' stated health statuses of medical staff. According to the model, the independent variables in the study accounted for 41.7% of the variance in the dependent variable (R^2 x 100 =.417 x 100% = 41.7%). According to the R-square value, this model was able to accurately predict up to 41.7% of the variables related to the Medical Personnel's health and well-being. The psychological effects of COVID-19 were shown to be responsible for up to 41.7% of the variation observed in the study area.

The equation of the fitted model was:

$$Y= 15.819+ 1.441_X$$

Where Y is the dependent variable (health of medical personnel), X psychological effects of COVID-19. According to the regression equation established, health status score increases by 1.441 for every unit increase in psychological effects. Table 4.6 shows results.

Table 4.6: Model Coefficients

Model		Unstandardized B	Unstandardized Std. Error	Standardized Beta	t	Sig.
1	(Constant)	15.819	1.504		10.515	.000
	Psychological effects	1.441	.182	.646	7.932	.000

Source: Field data (2024)

Table 4.7: Coefficients

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	15.819	1.504		10.515	.000
	independent_psychological_effects	1.441	.182	.646	7.932	.000
a. Dependent Variable: Dependent_health_medical_personnel						

Source: Field data (2024)

The simple linear regression analysis was conducted so as to determine the relationship between psychological effects of COVID-19 and health of the medical personnel. The equation $Y=\alpha+\beta_X$ generated before therefore become:

$$Y= 15.819+ 1.441_X$$

Where Y is the dependent variable (health of medical personnel), X psychological effects of COVID-19. According to the regression equation established, taking all other factors into account (psychological effects of COVID-19) constant at zero, the health of medical personnel 15.819.

4.3.2 Physical Effects of COVID-19

The medical personnel were asked to indicate the physical effects of COVID-19 that were experienced during the corona pandemic. The effects are presented in Table 4.8.

Table 4.8: Physical Effects of COVID-19 on Health of Medical Personnel

No	Item	Strongly agree (%) 1	Agree (%) 2	Disagree (%) 3	Strongly disagree (%) 4	Mean	Std. Dev
1	I lacked sleep (insomnia) whenever I was off duty	53.3	37.8	5.6	3.3	1.59	.748
2	There are days when I felt tired before I arrived at work	18.9	56.7	22.2	2.2	1.64	.641
3	After my work I tended to need more time than in the past in order to relax and feel better	12.2	43.3	37.8	6.7	2.18	.829
4	After my work I usually felt worn out and weary	12.2	61.1	23.3	3.3	2.68	.805
5	Over time I became disconnected from my type of work	4.4	40	38.9	16.7	1.82	.696
6	I became overweight as a result of confinement with no exercise	31.1	58.9	6.7	3.3	2.08	.707
7	I tended to think less at work and do my job at a slow pace (lethargic)	27.8	13.3	44.4	14.4	2.46	1.051
8	After working I had enough energy for my leisure activities	33.3	30	34.4	2.2	2.06	.879
9	Sometimes I felt headaches and sickened by my work tasks	24.4	73.3	2.2	0.0	1.80	.545

Source: Field data (2024)

Table 4.8 details the physical effects experienced by medical personnel regarding their health during the COVID-19 pandemic. Regarding sleep patterns, a significant majority (91.1%) of respondents indicated experiencing insomnia when off duty, with 53.3% strongly agreeing and 37.8% agreeing. This highlighted a prevalent issue among healthcare workers in maintaining regular sleep schedules amidst pandemic stressors.

In terms of pre-work fatigue, 75.6% of respondents reported days where they felt tired before starting their shifts, with 18.9% strongly agreeing and 56.7% agreeing. This suggested a common physical challenge affecting their readiness and performance at work.

Regarding post-work recovery, 55.5% of respondents felt they needed more time to relax and recuperate compared to before the pandemic. This sentiment was shared by 12.2% who strongly agreed and 43.3% who agreed, indicating increased post-shift recovery demands.

After completing their shifts, 73.3% of medical personnel felt worn out and weary, with 12.2% strongly agreeing and 61.1% agreeing. This underscores the physical strain and exhaustion experienced due to their frontline roles during the pandemic.

In terms of emotional engagement with work, 44.4% of respondents reported feeling disconnected from their job over time. This feeling was expressed by 4.4% who strongly agreed and 40% who agreed, suggesting potential psychological disengagement possibly linked to prolonged stress.

Regarding physical health changes, 90% of respondents reported becoming overweight due to confinement and reduced exercise opportunities during the pandemic. This issue affected 31.1% who strongly agreed and 58.9% who agreed, highlighting significant lifestyle impacts.

Regarding work performance, 42.2% of respondents felt lethargic and tended to work at a slower pace. This feeling was shared by 27.8% who strongly agreed and 13.3% who agreed, indicating reduced energy levels affecting job efficiency.

In terms of personal time management, 63.3% of respondents had enough energy for leisure activities after work. This included 33.3% who strongly agreed and 30% who agreed, reflecting varying levels of recovery and recreational capacity.

Regarding physical well-being, an overwhelming 97.7% of respondents reported sometimes experiencing headaches and feeling sickened by their work tasks. This issue affected 24.4% who strongly agreed and 73.3% who agreed, highlighting the significant health challenges faced in their professional roles.

Table 4.9: Linear Regression Analysis Model Summary of Physical Effects of COVID-19 on Health of Medical Personnel

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.326[a]	.106	.096	3.53559

a. Predictors: (Constant), Independent_physical_effects
b. Dependent Variable: Dependent_health_medical_personnel

Source: Field data (2024)

As shown in Table 4.9, the R value was 0.326. R is a measure of correlation between the observed value and the predicted value of the dependent variable. Thus, 0.326 is the correlation coefficient between the levels of medical health of the medical personnel in hospitals in Eldoret as reported by the respondents and the levels as would be predicted by the predictor variables. This indicated that there is some degree of association between the variables, although not extremely strong. The positive correlation implied that as the predictor variables change, there tends to be a corresponding change in the reported levels of medical health among the medical personnel.

In the model R^2 x 100 = .106 x 100% = 10.6 % indicating that 10.6 % of the variance in the dependent variable is explained by the independent variables in the study. The R-square value indicated that this model succeeds in predicting up to 10.6 % of the variables in health wellbeing of the nurses. Up to 10.6 % of the variation seen in the area under study was accounted for by physical effects of COVID-19.

Table 4.11: Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	23.401	1.326		17.651	.000
	independent_physical_effects	.520	.161	.326	3.230	.002

a. Dependent Variable: Dependent_health_medical_personnel

Source: Field data (2024)

The simple linear regression analysis was conducted so as to determine the relationship between physical effects of COVID-19 health well-being of medical personnel. The equation $Y=\alpha+\beta_X$ generated before therefore become:

$$Y= 23.401+ .520\,X$$

Where Y is the dependent variable (health of medical personnel), X physical effects of COVID-19. According to the regression equation established, taking all other factors into account (physical effects of COVID-19) constant at zero, the health wellbeing of nurses was 23.401. The data findings analysed also show that taking all other independent variables at zero, a unit increase in physical effects of COVID-19 would lead to .520 increase in health wellbeing.

4.3.3 Effect of COVID-19 Vaccination

The medical personnel were asked to indicate the role of COVID-19 vaccination that were experienced during the corona pandemic. The effects are presented in Table 4.12.

Table 4.12: Role of COVID-19 Vaccination on the Health of Medical Personnel

No	Item	Strongly agree (%) 1	Agree (%) 2	Disagree (%) 3	Strongly disagree (%) 4	Mean	Std. Dev
1	COVID-19 vaccination reduced my anxiety about contracting the virus	45.6	40.0	10.0	4.4	1.73	.812
2	I experienced fewer COVID-19 related symptoms after vaccination	50.0	35.6	10.0	4.4	1.68	.817
3	The vaccination allowed me to perform my duties more effectively	40.0	42.2	14.4	3.3	1.81	.793
4	I had fewer sick days related to COVID-19 after vaccination	55.6	33.3	8.9	2.2	1.58	.746
5	The vaccine's side effects were manageable and temporary	37.8	44.4	13.3	4.4	1.84	.809
6	I felt more confident interacting with patients after vaccination	48.9	38.9	8.9	3.3	1.67	.788
7	I observed an improvement in colleagues' health post-	44.4	40.0	11.1	4.4	1.76	.812

vaccination

Source: Field data (2024)

Table 4.12 provides a detailed exploration of how COVID-19 vaccination influenced the health and professional experiences of medical personnel. It shows that a significant proportion of respondents expressed a sigh of relief. Specifically, 45.6% strongly agreed and 40.0% agreed that vaccination substantially reduced their anxiety. For those who disagreed or strongly disagreed, 10.0% expressed ongoing concerns despite being vaccinated, with an additional 4.4% strongly disagreeing.

In terms of experiencing fever related symptoms after vaccination, half of the respondents (50.0% strongly agreed, 35.6% agreed) reported experiencing fever after COVID-19 vaccination. In terms of those who disagreed or strongly disagreed (10.0% disagreed, 4.4% strongly disagreed.

When asked about job performance, a combined 82.2% (40.0% strongly agreed, 42.2% agreed) felt that vaccination had improved their ability to perform their duties effectively. In terms of those who disagreed or strongly disagreed (14.4% disagreed, 3.3% strongly disagreed), a minority did not perceive such improvements.

In terms of sick leave, a significant majority (55.6% strongly agreed, 33.3% agreed) reported having fever sick days related to COVID-19 post-vaccination. In terms of those who disagreed or strongly disagreed (8.9% disagreed, 2.2% strongly disagreed).

Regarding the side effects, responses varied. While a considerable portion (37.8% strongly agreed, 44.4% agreed) found the vaccine's side effects manageable and temporary, some (13.3% disagreed, 4.4% strongly disagreed) expressed concerns about the side effects.

Regarding confidence in patient interactions, nearly half of the respondents (48.9% strongly agreed, 38.9% agreed) reported feeling more confident post-vaccination. In terms of those who disagreed or strongly disagreed (8.9% disagreed, 3.3% strongly disagreed), a minority did not experience such confidence improvements.

On the last statement on the health of colleagues, a significant majority (44.4% strongly agreed, 40.0% agreed) observed improvements after vaccination. For those who disagreed or strongly disagreed (11.1% disagreed, 4.4% strongly disagreed), a minority did not observe such health improvements among their colleagues.

4.3.4 Mitigating Strategies for the Effect of COVID-19

This section presents results of the independent variable which was mitigating strategies for the effect of COVID-19. The medical personnel were asked to indicate mitigating strategies for the effect of COVID-19 that were rolled out during the corona pandemic. The results were as presented in Table 4.13.

Table 4.13: Mitigating Strategies of COVID-19 on Health of Medical Personnel

No	Item	Strongly agree (%)	Agree (%)	Disagree (%)	Strongly disagree (%)	Mean	Std. Dev
1	Adequate supply of PPE was maintained throughout the pandemic	60.0	30.0	6.7	3.3	1.53	.756
2	Mental health support services were available and accessible	45.6	40.0	10.0	4.4	1.73	.812
3	The work environment was adjusted to reduce stress and workload	50.0	35.6	10.0	4.4	1.68	.817
4	COVID-19 vaccination programs were effectively implemented	55.6	33.3	8.9	2.2	1.58	.746
5	Infection control measures were strictly followed	37.8	44.4	13.3	4.4	1.84	.809
6	Peer support groups helped in coping with the pandemic stress	48.9	38.9	8.9	3.3	1.67	.788
7	Regular health check-ups and wellness programs were beneficial	44.4	40.0	11.1	4.4	1.76	.812

Source: Field data (2024)

Table 4.13 provides a detailed exploration of how various mitigating strategies had influenced the health and professional experiences of medical personnel during the COVID-19 pandemic. Regarding statement one on the adequate supply of PPE, 60.0% of respondents strongly agreed

that there was a consistent supply of Personal Protective Equipment (PPE) throughout the pandemic. In terms of agreement, an additional 30.0% agreed with this statement. Disagreement levels were relatively low, with 6.7% expressing disagreement and 3.3% strongly disagreeing.

In terms of mental health support services, 45.6% of respondents strongly agreed that these services were available and accessible. Another 40.0% agreed with this statement. Regarding disagreement, 10.0% disagreed, and 4.4% strongly disagreed.

Concerning the adjustment of the work environment to reduce stress and workload, 50.0% of respondents strongly agreed that these adjustments were effective. An additional 35.6% agreed with this statement. Regarding disagreement, 10.0% disagreed, and 4.4% strongly disagreed.

Regarding COVID-19 vaccination programs**,** 55.6% of respondents strongly agreed that these programs were effectively implemented. Another 33.3% agreed with this statement. Disagreement levels were low, with 8.9% expressing disagreement and 2.2% strongly disagreeing.

On infection control measures, 37.8% of respondents strongly agreed that strict adherence to these measures was beneficial. An additional 44.4% agreed with this statement. Disagreement levels were moderate, with 13.3% expressing disagreement and 4.4% strongly disagreeing.

In relation to peer support groups in coping with pandemic-related stress, 48.9% of respondents strongly agreed that these groups were helpful. Another 38.9% agreed with this statement. Regarding disagreement, 8.9% disagreed, and 3.3% strongly disagreed.

Regarding regular health check-ups and wellness programs, 44.4% of respondents strongly agreed that these initiatives were beneficial. An additional 40.0% agreed with this statement. Disagreement levels were relatively low, with 11.1% expressing disagreement and 4.4% strongly disagreeing.

CHAPTER FIVE

DISCUSSIONS

5.1 Introduction

The findings in chapter four are further discussed in relation to the reviewed literature and the research objectives. The conclusions are drawn based on the findings in order to answer the objectives of the study and thereafter provide recommendations of effect of COVID-19 on health of medical personnel and evaluating the role of vaccination in hospitals in Eldoret town.

5.2 Discussions

5.2.1 Psychological Effects of COVID-19

The study of the psychological effect of COVID-19 on medical personnel in hospitals in Eldoret town provides valuable insights into the significant emotional burden experienced by medical personnel during the pandemic. The data presented strongly indicated that there was a significant psychological effect of COVID-19 on the health of medical personnel in hospitals in Eldoret town. The inferential statistics revealed a range of emotional responses that underline the profound impact of the pandemic on healthcare workers. The overwhelming majority reported experiencing stress as a result of COVID-19, which reflects a significant emotional burden. The fact that a majority either strongly agreed or agreed highlights the widespread nature of the stress experienced among medical personnel. The study also found that while a notable portion of respondents expressed anxiety about their own health and that of colleagues and family, a large percentage also reported disagreement regarding their level of anxiety. This suggests variability in responses and coping mechanisms. It also still indicates that a substantial number of healthcare workers grapple with anxiety. The acknowledgement of feelings of depression among a high number of respondents demonstrated a significant psychological impact, particularly associated with the stress of patient interactions related to COVID-19.

The high percentage of respondents feeling hopeless due to patient deaths underscored the emotional toll that loss takes on healthcare workers. The prevalence of irritability and mood swings in a significantly high number of respondents suggested high levels of emotional volatility and possibly burnout among medical personnel. The overwhelming influence of continuous COVID-19 news indicated that external factors, such as media coverage, also

contributed to the psychological strain experienced by healthcare workers. Nearly 90% of respondents concerned about the long-term effects of the pandemic signalled high levels of apprehension regarding their mental health and job security after the crisis, which was indicative of sustained psychological stress.

The findings were in line with the study conducted by Zandifar and Badrfam (2020), which found that unpredictability, ambiguity, the severity of the illness, false information, and social isolation are factors that bring about stress and mental morbidity. In order to reduce the psychological effect of COVID-19, Zandifar and Badrfam emphasize the need for improved mental health care for persons who are vulnerable to acquiring psychiatric problems, particularly in the susceptible population. This can only happen when people who are identified as vulnerable receive counselling and guidance to better manage anxiety and loneliness. Such measures will help alleviate psychological stress and enable medical personnel to cope with the demands of their work.

The prevalence of stress among medical personnel, with a majority reporting experiencing stress due to the onset of the COVID-19 virus, underscores the overwhelming nature of the pandemic and its impact on the psychological well-being of medical personnel. This finding is consistent with previous research highlighting the increased stress levels among medical personnel during public health crises (Maunder *et al*., 2003).

Similarly, the high levels of anxiety reported by respondents, with a notable portion expressing fear about their own health, colleagues, and families, reflect the constant apprehension and worry faced by medical personnel in high-risk environments. This finding aligned with studies that have documented elevated levels of anxiety and fear among healthcare workers during outbreaks of infectious diseases, such as COVID-19 (Kang *et al*., 2020). The findings on depression resulting from contact with COVID-19 patients or suspected cases highlight the emotional toll of caring for infected individuals and the challenges of coping with patient interactions during the pandemic. This was in line with research demonstrating the increased risk of depression and emotional distress among healthcare workers exposed to high levels of stress and trauma (Pfefferbaum & North, 2020).

The study also revealed the impact of patient deaths on medical personnel, with a significant proportion of respondents acknowledging feelings of hopelessness. This underscored the emotional strain of losing patients to COVID-19 and the need for adequate support and coping mechanisms to address the grief and distress experienced by medical personnel (Lai *et al*., 2020). The findings on irritability and mood swings among respondents further highlighted the emotional volatility and strain experienced by medical personnel in their day-to-day interactions and responsibilities. This aligned with previous research showing that prolonged exposure to stressful situations can lead to mood disturbances and emotional dysregulation among medical professionals (Shanafelt *et al*., 2020).

The study findings also emphasized the impact of media coverage on the emotional well-being of medical personnel, with a significant majority of respondents having been affected by constant news updates about COVID-19. This underscored the need for healthcare organizations to provide accurate information and support to help medical personnel navigate the influx of media coverage and mitigate its impact on their mental health (Kang *et al*., 2020). Furthermore, the concerns about the long-term effects of the pandemic expressed by nearly all of the respondents highlighted the ongoing apprehension and uncertainty faced by healthcare workers regarding the lasting consequences of COVID-19. This underscored the importance of addressing the psychological well-being of medical personnel and implementing strategies to support their psychological health in the face of prolonged stress and uncertainty (Greenberg *et al*., 2020).

5.2.2 Physical Effects of COVID-19

Various aspects of the physical health and performance of medical personnel were impeded, shedding light on the significant burden experienced by frontline workers in healthcare settings. The findings suggested a significant physical effect on medical personnel. A staggering 90% of respondents reported weight gain due to confinement and decreased exercise opportunities, indicating a significant lifestyle change. Additionally, 97.7% frequently experienced headaches and feelings of sickness related to their work tasks, underscoring the health challenges faced in their roles. Furthermore, a majority of healthcare workers reported experiencing insomnia, with 91.1% indicating sleep disturbances during off-duty hours. Pre-work fatigue was prevalent, with 75.6% feeling tired before starting shifts, and the majority

(73.3%) felt worn out and weary after work, pointing to the physical strain of their responsibilities. Emotional disengagement was also noted, as 44.4% felt disconnected from their jobs over time, potentially due to prolonged stress.

The findings were in line with those of a study conducted by Chen *et al*. (2020), which revealed that isolation at home had detrimental socio-psychological ramification on one's physical and mental well-being. Further extending isolation for a period of time negates cognitive and therefore results in bad emotions. Restricting people from movement from one place to the other or outdoor recreational activities would inevitably disrupt individuals' order of activities therefore rendering life boring and unbearable. This did not only affect China but a couple of countries were exclusively affected. People tended to live a sedentary life where they were inactive and depressed of which this was posing health of individual to be at risk to develop other diseases if not COVID-19.

The high prevalence of insomnia among respondents, with 91.1% indicating experiencing sleep disturbances when off duty, underscores the impact of pandemic stressors on the sleep quality of healthcare workers. This finding is consistent with research showing that medical personnel are at increased risk of sleep disturbances and insomnia during public health emergencies due to heightened stress levels and disrupted routines (Brooks *et al*., 2020). The majority of respondents reporting feeling tired before starting their shifts (75.6%) reflects the physical strain and fatigue experienced by medical personnel in their demanding roles. This suggests that healthcare workers may be starting their shifts already exhausted, which can impact their performance and ability to provide quality care to patients (Jackson *et al*., 2020).

The need for increased time to relax and recuperate after shifts, as reported by 55.5% of respondents, indicates the heightened post-shift recovery demands faced by healthcare workers during the pandemic. This highlights the importance of adequate rest and recovery to prevent burnout and maintain overall well-being (Magnavita & Garbarino, 2017). The high percentage of medical personnel feeling worn out and weary after completing their shifts (73.3%) underscores the physical strain and exhaustion experienced by frontline workers. Prolonged exposure to stressful and demanding work environments can lead to physical fatigue and impact the health and performance of healthcare workers (Shanafelt *et al.*, 2015).

The reported feelings of disconnection from their job over time by 44.4% of respondents suggest potential psychological disengagement among healthcare workers. Prolonged stress and burnout can lead to emotional exhaustion and decreased engagement with work, affecting job satisfaction and performance (West *et a*l., 2014). The significant percentage of respondents reporting becoming overweight due to confinement and reduced exercise opportunities (90%) highlights the lifestyle impacts of the pandemic on the physical health of medical personnel. Changes in physical activity and dietary habits can contribute to weight gain and other health issues among healthcare workers (Sallis *et al*., 2020).

The feelings of lethargy and working at a slower pace reported by 42.2% of respondents indicate reduced energy levels and potential impact on job efficiency. Physical fatigue and low energy levels can affect the ability of healthcare workers to perform their duties effectively and may lead to decreased productivity (Dewa *et al*., 2014). The varying levels of energy for leisure activities after work reported by 63.3% of respondents suggest differences in recovery and recreational capacity among healthcare workers. Balancing work demands with personal time for relaxation and self-care is essential for maintaining overall well-being and preventing burnout (Rudman *et al*., 2013).

The high percentage of respondents reporting experiencing headaches and feeling sickened by their work tasks (97.7%) highlights the significant health challenges faced by medical personnel in their professional roles. Physical symptoms such as headaches can be manifestations of stress and burnout among healthcare workers and may indicate the need for interventions to support their health and well-being (Rothenberger, 2016).

5.2.3 Effect of COVID-19 Vaccination

The results show that immunization significantly improved symptom management, decreased anxiety, increased confidence in patient contacts among medical staff, improved job performance, and decreased sick leave. The health and happiness of medical staff in Eldoret town hospitals was significantly improved by the COVID-19 vaccination. There was a significant psychological advantage from getting the immunization, as evidenced by the majority of respondents (85.6%) who felt that it significantly reduced their anxiety. Over half (50.0%) experienced fever-related symptoms post-vaccination, suggesting a common reaction

but with manageable side effects, as 82.2% felt their job performance improved due to vaccination. A majority (88.9%) also reported that post-vaccination, they had fewer sick days attributed to fever, demonstrating a positive effect on their overall health. There was also an increase in confidence during patient interactions, with 87.8% feeling more assured following vaccination. Observing improvements in the health of colleagues, 84.4% reported positive changes, which further reflects the collective benefit of the vaccination campaign.

The findings were in line with the study conducted by Fontanet and Cauchemez (2021), which pointed out that beyond individual health benefits, widespread vaccination against COVID-19 holds profound implications for public health interventions and disease control strategies. Achieving herd immunity through vaccination is essential for suppressing transmission and preventing future outbreaks. However, the emergence of new variants underscores the importance of continued vigilance, adaptive vaccine strategies, and comprehensive public health measures to control the pandemic effectively (Fontanet & Cauchemez, 2021).

The data revealed that a substantial proportion of respondents reported feeling relief from anxiety after being vaccinated against COVID-19. Specifically, 45.6% strongly agreed and 40.0% agreed that vaccination substantially reduced their anxiety. This finding is consistent with previous research showing that vaccination can alleviate anxiety and stress related to the risk of contracting the virus (Simione & Gnagnarella, 2020).

Half of the respondents reported experiencing fever related symptoms post-vaccination, with 50.0% strongly agreeing and 35.6% agreeing. This suggests that vaccination has been effective in reducing the severity of symptoms among healthcare workers, potentially lowering the risk of severe illness and hospitalization (Polack *et al*., 2020). The majority of respondents felt that vaccination had improved their ability to perform their duties effectively, with 82.2% (40.0% strongly agreed, 42.2% agreed) reporting positive impacts on job performance. This indicates that vaccination has enhanced the overall well-being and productivity of medical personnel, potentially reducing absenteeism and improving patient care (Baker *et al.*, 2021).

A significant majority of respondents reported having fewer sick days related to COVID-19 post-vaccination, with 55.6% strongly agreeing and 33.3% agreeing. This suggests that vaccination has contributed to a decrease in COVID-19-related sick leave among healthcare

workers, leading to improved workforce availability and continuity of care (Baden *et al*., 2021). While some respondents expressed concerns about the side effects of the vaccine, a considerable portion found them manageable and temporary. This highlights the importance of education and support in addressing vaccine hesitancy and ensuring that healthcare workers are informed about the potential side effects and benefits of vaccination (Polack *et al*., 2020).

Nearly half of the respondents reported feeling more confident in patient interactions post-vaccination, with 48.9% strongly agreeing and 38.9% agreeing. This suggests that vaccination has boosted the confidence of healthcare workers in providing care to patients, potentially improving communication and quality of care (Baker *et al*., 2021). A significant majority of respondents observed improvements in the health of their colleagues after vaccination, with 44.4% strongly agreeing and 40.0% agreeing. This indicates that vaccination has had a positive impact not only on individual healthcare workers but also on the overall health and well-being of the healthcare workforce in hospitals in Eldoret Town.

5.2.4 Mitigating Strategies for the Effect of COVID-19

The findings related to mitigating strategies provide valuable insights into the effectiveness of various interventions aimed at supporting medical personnel during the pandemic. They mitigating strategies reflect a comprehensive approach to supporting the health and well-being of medical personnel amidst the challenges posed by COVID-19. The consistent supply of Personal Protective Equipment (PPE) has been a critical element, with a significant majority of respondents (90%) agreeing on its availability throughout the pandemic. Mental health support services have also been a focus, with 85.6% of personnel acknowledging their accessibility. Efforts to adjust work environments to alleviate stress and workload have gained approval from 85.6% of respondents, indicating a proactive approach to enhance staff well-being. Vaccination programs have been perceived as effectively implemented by 88.9% reflecting a commitment to safeguarding health workers against the COVID-19. Infection control measures have been recognized for their effectiveness, with 82.2% of respondents affirming their benefits.

According to Bao et al. (2020), the results were consistent with a list of strategies for the general public to lessen the stress caused by outbreaks that was published. The list also included information on the services that were already available in China. These strategies included: (1) assessing the accuracy of information; (2) promoting social support; (3) reducing the stigma associated with the illness; (4) leading a normal life while taking safety precautions; and (5) using readily available psychological therapies, especially online ones, when needed. They thought that these methods would allow society to react to the COVID-19 epidemic in a more adaptable manner. Similar strategies were reinforced in a Singaporean manuscript (Ho et al., 2020), which also addressed the significance of enhanced mental disorder screening and placed special emphasis on collaboration between community and hospital services in providing the general public with pertinent information to minimize unfavorable outcomes, such as "panic" and fear and paranoia about the illness and its spread. Not to mention, Lima et al. (2020) stress the significance of anxiety as the primary emotional reaction to an outbreak, the need of adequately training healthcare personnel, and the optimal application of technological improvements in the provision of mental health treatment.

The results indicate that several key strategies, including the supply of Personal Protective Equipment (PPE), mental health support services, adjustment of the work environment, COVID-19 vaccination programs, infection control measures, peer support groups, and health check-ups and wellness programs, have played a significant role in mitigating the impact of the pandemic on the well-being of medical personnel.

The study revealed that a majority of respondents (90.0%) either strongly agreed or agreed that there was a consistent supply of PPE throughout the pandemic. This finding underscores the importance of ensuring adequate access to PPE to protect medical personnel from exposure to COVID-19 and lessen the likelihood of infection (Livingston *et al*., 2020). The availability and accessibility of mental health support services were positively acknowledged by a significant proportion of respondents (85.6%). Access to mental health resources is essential for addressing the psychological effect of the pandemic on medical personnel and promoting their emotional well-being (Kang *et al*., 2020).

The effectiveness of adjustments in the work environment to reduce stress and workload was recognized by a majority of respondents (85.6%). Creating a supportive work environment and implementing strategies to alleviate stress can help medical personnel cope with the challenges of the pandemic and maintain their mental and physical health (Shanafelt *et al*., 2020). The successful implementation of COVID-19 vaccination programs was strongly endorsed by a significant percentage of respondents (88.9%). Vaccination plays a critical role in protecting medical personnel from infection, reducing the severity of illness, and promoting overall health and safety in healthcare settings (Polack *et al*., 2020).

Most responders (82.2%) acknowledged the advantages of rigorous adherence to infection control measures. Following appropriate infection control procedures is crucial to stopping the COVID-19 virus from spreading in healthcare environments and safeguarding the patients' and medical staff's health (Centers for Disease Control and Prevention, 2020). Many respondents (87.8%) agreed that peer support groups were helpful in helping them deal with the stress brought on by the pandemic. Medical professionals can manage the difficulties of the pandemic and preserve their wellbeing with the use of peer support, which can offer them coping mechanisms, emotional support, and validation (Kang et al., 2020). The majority of

respondents (84.4%) acknowledged the perceived advantages of routine health check-ups and wellness programs. Supporting the physical and mental well-being of medical professionals throughout the pandemic requires keeping an eye on their health, offering preventative treatment, and encouraging wellness initiatives (Greenberg et al., 2020).

CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

COVID-19 had profound psychological effects on health of medical personnel in hospitals in Eldoret Town. The pandemic led to widespread stress, anxiety, depression, and feelings of hopelessness among medical personnel. Emotional volatility, exacerbated by media updates and concerns about long-term effects, underscored the complex challenges faced by medical personnel during the crisis. The study underlines the need to address these psychological impacts through targeted mental health support programmes, resilience-building initiatives and effective communication strategies to support the well-being and resilience of healthcare teams during and after the pandemic. The findings show that efforts to provide comprehensive support aimed at mitigating stress, fostering emotional resilience, and promoting a supportive work environment are essential in helping healthcare workers cope with the demands of their roles and preparing for future health emergencies.

The study concluded that COVID-19 had profound physical effects on health personnel in hospitals in Eldoret Town. The pandemic disrupted sleep patterns, increased fatigue, and heightened post-shift recovery demands among healthcare workers. Physical health changes, including weight gain and reduced exercise opportunities, further exacerbated these challenges. These factors collectively impacted job performance, emotional well-being, and overall physical health of medical personnel during the pandemic. Strategies aimed at promoting adequate rest, managing workload, supporting healthy lifestyle choices, and providing opportunities for recovery were identified as crucial in safeguarding the health and resilience of healthcare teams. Addressing these physical effects was essential to mitigate the immediate and long-term impacts on healthcare workers and prepare them for future health crises.

The study concluded that COVID-19 vaccination played a significant role in enhancing the health and well-being of medical personnel in Eldoret Town. Vaccination significantly reduced anxiety, symptoms of COVID-19, and sick leave among healthcare workers. It also improved job performance, boosted confidence in patient interactions, and contributed to overall health improvements observed among colleagues. Efforts to address concerns about side effects and promote vaccination uptake were identified as essential for sustaining these benefits and

ensuring the resilience of healthcare systems in future health crises. The results emphasized the value of vaccination as a preventative step for people's health as well as for preserving the capability and efficacy of the medical staff in pandemic scenarios.

The study came to the conclusion that considerable attempts were made to lessen the impact of COVID-19 on the health of Eldoret Town's medical staff. It was found that there were areas for improvement, particularly in ensuring sustained availability of PPE, enhancing mental health support services, maintaining effective infection control measures, and promoting holistic wellness programs. Strengthening these areas was crucial not only for supporting the health and safety of healthcare workers but also for enhancing the resilience of healthcare systems in preparing for future health crises. Throughout the study, it was evident that continuous evaluation and adaptation of strategies based on feedback from frontline workers were essential in sustaining a supportive and safe working environment in hospital settings. By addressing these challenges proactively, healthcare institutions can better protect their personnel and optimize their response to future health emergencies.

6.2 Recommendations

Based on the findings and conclusions drawn, the study makes a number of recommendations, including:

- Implement and expand psychological support programs tailored to the needs of medical personnel. Provide access to counselling services, stress management workshops, and peer support groups to address psychological challenges identified in the study.
- Develop and implement workplace wellness initiatives that prioritize physical health, including promoting regular exercise, healthy eating habits, and access to healthcare resources. These programmes can mitigate the physical impacts of pandemic-related stress and lifestyle changes.
- Maintain and enhance efforts to promote COVID-19 vaccination uptake among medical personnel. Address concerns about side effects through comprehensive education and transparent communication strategies.
- Provide ongoing training and skills development opportunities to enhance job performance and confidence among healthcare workers. Focus on continuous

professional development in areas such as infection control, patient care strategies, and crisis management.

- Establish effective communication channels for healthcare workers to voice concerns, provide feedback, and receive timely updates. Foster a supportive work environment where staff contributions are valued and their well-being is prioritized.
- Enhance facilities and policies to support adequate sleep and recovery for medical personnel. Address issues related to disrupted sleep patterns and post-shift fatigue by providing quiet rest areas, flexible scheduling options, and fatigue management guidelines.
- Continue monitoring the effect of COVID-19 on medical personnel health and well-being through ongoing research and data collection. Use findings to inform evidence-based policies and interventions that support resilience and preparedness for future health crises.

6.3 Implications for Policy Makers

The study's conclusions have significant policy implications for Eldoret Town legislators, as they necessitate focused legislative initiatives to enhance healthcare professionals' resilience and well-being in the face of COVID-19's obstacles. The analysis makes clear that comprehensive healthcare worker support programs are desperately needed. There is need for this program to include wellness activities, mental health services and efficient tiredness management techniques. In order to guarantee support program is available, well-funded and incorporated into healthcare system, policymakers need to allocated resources that are geared towards managing emergencies in health care system. Policymakers can lessen the effects of pandemic-related stressors and encourage a sustainable workforce by placing a high priority on the well-being of medical personnel.

Adequate immunization programmes are crucial for both safeguarding medical personnel and ensuring the availability of healthcare services in the event of future medical emergencies. Improving resources and safety at work also stands out as an urgent policy recommendation.

Policy makers need to put on the ground as a matter of priority in enhancing personal development of medical personnel in terms of knowledge building for instance patient care,

mental health and crisis management. Legislators can enable healthcare professionals to provide high-quality care and adjust to changing healthcare requirements by promoting a culture of lifelong learning and professional development.

It is equally important to establish strong channels of communication and feedback mechanisms. Transparent communication of health information, prompt updates on policy changes, and forums for healthcare professionals to express concerns and participate in decision-making processes should all be provided by policymakers. This increases teamwork, builds trust, and creates a positive work atmosphere that is beneficial to the wellbeing of healthcare workers and the efficient provision of healthcare.

It is the responsibility of policymakers to promote research and evidence-based policymaking. Supporting research projects that investigate the health outcomes of healthcare workers allows policymakers to obtain practical information that will guide the development of policies and the distribution of resources. In order to keep Eldoret Town's healthcare sector resilient and prepared, it is essential to continuously evaluate the well-being of healthcare workers and change policies in response to research findings.

The sustainability of Eldoret Town's healthcare system depends on resolving these policy consequences by proactive and focused actions, which will also help healthcare staff and increase their resilience to future health crises. The role of policymakers is crucial in promoting policies that give priority to the well-being of healthcare workers, fortify the healthcare infrastructure, and cultivate a resilient workforce that can provide high-quality treatment even under difficult circumstances.

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APPENDICES

APPENDIX I: MAP OF THE STUDY AREA

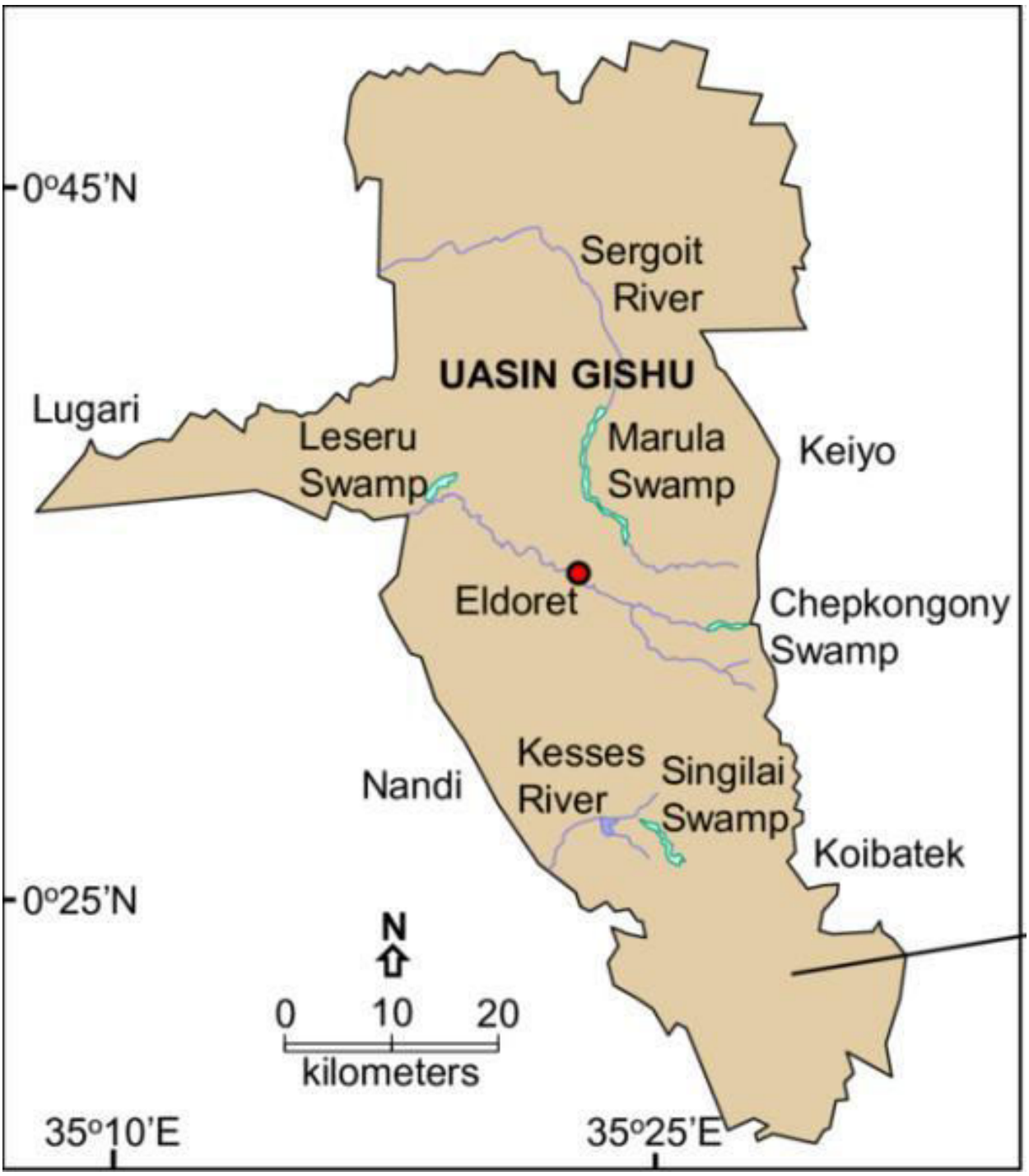


Figure 3.1: Map of the study area

APPENDIX II: QUESTIONNAIRE

Introduction

Dear sir/madam,

The purpose of this questionnaire is to investigate the effect of COVID-19 on Medical Personnel with incorporation of vaccination intervention in hospitals in Eldoret town. Kindly tick (√) where appropriate. You are free to give comments should you deem fit to do so. All responses will be kept confidential.

A. Demographic Data

1. Gender Male ☐ Female ☐
2. Marital Status Married ☐ Single ☐
   Divorce ☐ Separated ☐
   Widow/Widower ☐
3. Age bracket Below 30 years ☐ 31-40 years ☐
   41-50 years ☐ Above 51 years ☐
4. Level of Education Diploma ☐ Undergraduate ☐
   Postgraduate ☐ PhD ☐
5. Working Experience in years Below 5 years ☐ 6-10 years ☐
   11 years and above ☐

B. Effects of COVID-19

Rate the following effects of COVID-19 that occurred as you were handling your work

Effects of COVID-19	**Strongly agree (%) 1**	**Agree (%) 2**	**Disagree (%) 3**	**Strongly disagree (%) 4**	**Mean**	**Std. Dev**
Frustration						
Despair						
Fear						
Dissatisfaction						
Isolation						
Social distancing						
Burnout / Fatigue						
Stigmatization						

B Effect of COVID-19 on Psychological Health

6. Rate the effect of COVID-19 on your psychological health

No	Item	Strongly agree(%) 1	Agree (%) 2	Disagree (%) 3	Strongly disagree (%) 4	Mean	Std. Dev
1	I generally expressed feelings of stress due to the advent of the COVID-19 virus						
2	There was anxiety centered on fear of my own health, my colleagues and families regarding COVID-19						
3	Contact with COVID-19 patients or suspected cases made me to be depressed						
4	I felt hopelessness whenever a patient succumbed to death as a result of COVID-19						
5	I felt irritable or mood swings during this time						
6	constant news and updates about COVID-19 affected you						
7	I had concerns about the long-term effects of the pandemic						

7. In your own words, how did COVID-19 negatively affected you psychologically?

…….
…….
…….
…….

C. Physical Health as a Result of COVID -19

8. At certain point, do you feel tired before arriving at your work station?

No	Item	Strongly agree(%) 1	Agree (%) 2	Disagree (%) 3	Strongly disagree (%) 4	Mean	Std. Dev

1	I lacked sleep (insomnia) whenever I was off duty
2	There are days when I felt tired before I arrived at work
3	After my work I tended to need more time than in the past in order to relax and feel better
4	After my work I usually felt worn out and weary
5	Over time I became disconnected from my type of work
6	I became overweight as a result of confinement with no exercise
7	I tended to think less at work and do my job at a slow pace (lethargic)
8	After working I had enough energy for my leisure activities
9	Sometimes I felt headaches and sickened by my work tasks

8. Which physical activity were you able to perform during restrictions time of COVID-19 Pandemic.

……
……

9. Can you elaborate how restrictions affected you?

……
……
……

D. Effect of COVID-19 Vaccination

10. How confident are you in the efficacy of the COVID-19 vaccine received?
    a. Very confident
    b. Somewhat confident
    c. Not confident

11. How would you rate the overall effectiveness of the vaccine in preventing COVID-19 infection?
    a. Highly effective
    b. Moderately effective
    c. Not effective
12. Did you ever experience any side effects after receiving the COVID-19 vaccine? (e.g., sore arm, fever, fatigue)
    a. Yes, please specify:……..
    b. No
    c. Prefer not to say
13. Did you face any challenges in accessing the COVID-19 vaccine? (e.g., availability, location, cost)
    a. Yes, please specify:
    b. No
14. What effect did COVID-19 vaccination had in your life?

No	Item	SA 1	A 2	D 3	SD 4
1	Providing immunity				
2	One way of protecting the body against infection				
3	Stop the spread of the disease COVID-19				
4	One aspect of mitigating COVID-19				

15. What factors influenced your decision to receive or not receive the COVID-19 vaccine? In a Likert Scale; 1. SA-Strongly Agree, 2. A-Agree, 3. D-Disagree, 4. Strongly Disagree

No	Item	SA 1	A 2	D 3	SD 4
1	Safety Concerns				
2	Misinformation				
3	Trust in Healthcare Authorities				
4	Peer Influence				
5	Personal Experience with COVID-19				
6	Access to Information and Healthcare				
7	Religious or Cultural Beliefs				
8	Political Ideology				

E. Mitigating Strategies

16. In your own words, describe the mitigating strategies that were appropriate to contain the spread of COVID-19 in your setting.

……
……
……

19. What was the best strategy to minimize the spread of COVI-19?

……
……

20. How did you manage to stop the spread of COVID-19 in your setting?

……
……

APPENDIX II: BUDGET

The table below shows the estimated research budget for the whole study.

Activity	**Total (KShs)**
Proposal Preparation	10,000
Literature Review	20,000
Field Collection of Data	40,000
Data Analysis, Thesis Preparation and Binding	30,000
TOTAL	
Contingencies (10% of totals)	10,000
GRAND TOTAL	**110,000**

APPENDIX III: RESEARCH WORK PLAN

Research development from proposal to final project will tentatively rely on the timetable below:

	2022	2023											
Research Task	**Nov**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Proposal Concept Development													
Literature review and proposal write-up													
Proposal defence													
Proposal corrections													
School defence corrections													
Submission to the Board of Post-graduate studies													
Piloting of research instruments													
Data collection & analysis													
Thesis presentation to supervisors and construction													
Thesis corrections from supervisors													
Thesis submission for examination and defence													
Thesis binding & final submission													
Graduation													

APPENDIX IV: LETTER FROM INSTITUTION

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: August 11th, 2023

To: Mr. Henry Ambrose Ojwang

Dear Mr.

RE: EFFECTS OF COVID-19 ON HEALTH OF MEDICAL PERSONNELS IN HOSPITALS IN ELDORET TOWN: A RETROSPECTIVE STUDY

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/178/2023.** The approval covers for the period ***August 11th, 2023 to August 11th, 2024.***

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)

APPENDIX V: APPROVAL OF RESEARCH /DATA COLLECTION REFERENCE

REPUBLIC OF KENYA
COUNTY GOVERNMENT OF UASIN GISHU
DEPARTMENT OF HEALTH SERVICES

Email:info@uasingishu.go.ke
Website: www.uasingishu.go.ke

When Replying, Please Address to:
DIRECTOR Preventive & Promotive
Uasin-Gishu County
P.O. Box 40 – 30100
ELDORET, KENYA.

REF: UGC/CDH/EXTN./9/23 **Date**: 18th September, 2023

To: Health Facilities In charges and Staff

RE: APPROVAL OF RESEARCH / DATA COLLECTION REFERENCE NO. 105393

The above subject matter refers.

The office hereby has given approval Mr Henry Ambrose Ojwang of Masinde Muliro University of Science & technology to conduct research and data from the Uasin Gishu county health workers on effects of Covid -19 on Health Professionals and as per the approval by NACOSTI of the Kenya dated 06/09/2023.

Kindly accord him necessary cooperation

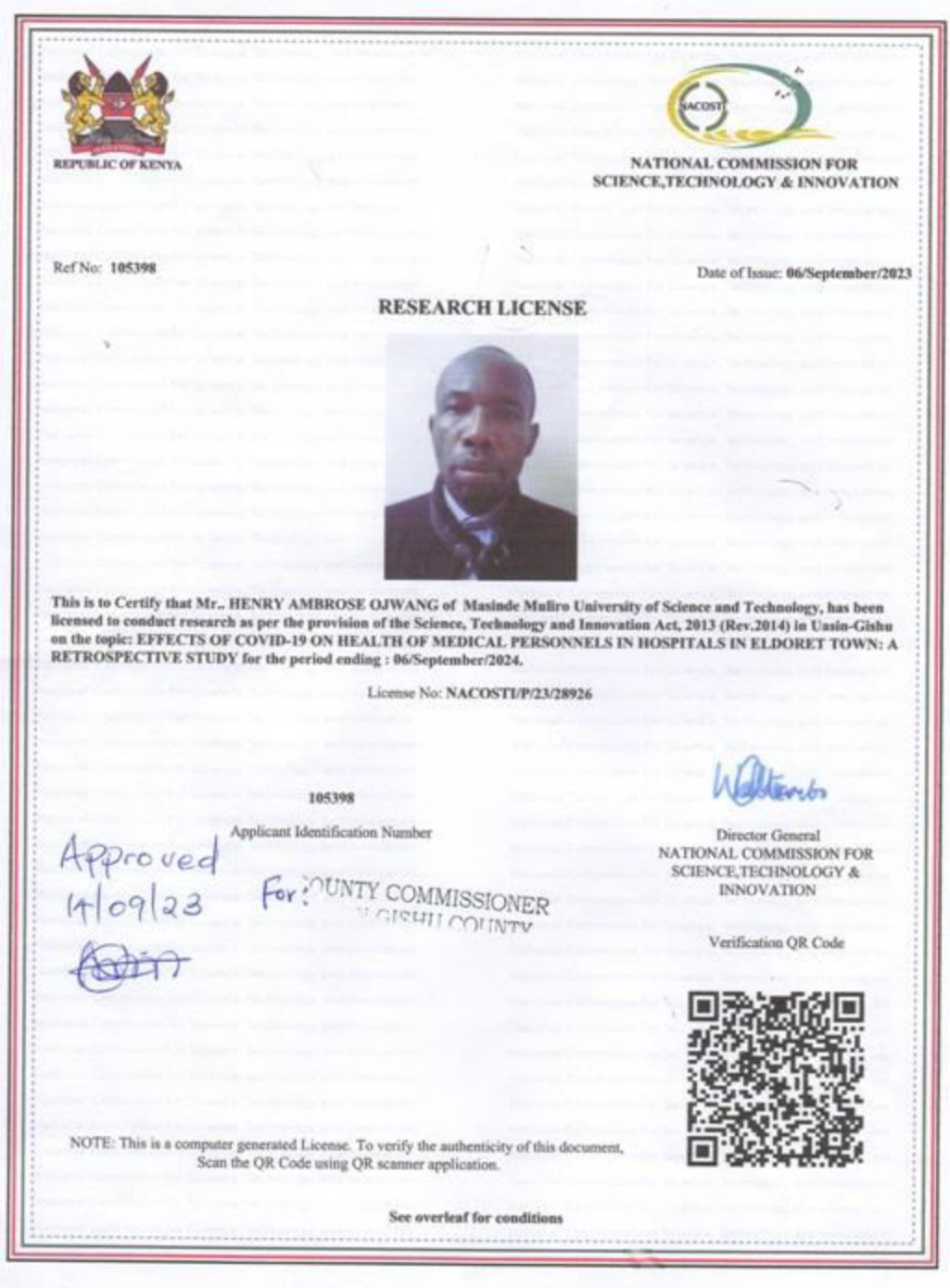
UASIN GISHU COUNTY HQTRS
21 SEP 2023
P.O. BOX 40 - 30100 ELDORET

DR EVANS KIPROTICH
COUNTY DIRECTOR, PREVENTIVE & PROMOTIVE SERVICES

Copy to:
CECM, Health Services
Chief Officer – Promotive & Preventive
Chief Officer – Clinical Services

17/10/2023.
MO's
CO's
Lab Tech.
Please Proceed and accord the bearer the necessary support
G.M.

APPENDIX VI: RESEARCH LICENSE



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **105398**

Date of Issue: **06/September/2023**

RESEARCH LICENSE

This is to Certify that Mr.. HENRY AMBROSE OJWANG of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Uasin-Gishu on the topic: EFFECTS OF COVID-19 ON HEALTH OF MEDICAL PERSONNELS IN HOSPITALS IN ELDORET TOWN: A RETROSPECTIVE STUDY for the period ending : 06/September/2024.

License No: **NACOSTI/P/23/28926**

105398

Applicant Identification Number

Approved
14/09/23

For: COUNTY COMMISSIONER
UASIN GISHU COUNTY

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.

See overleaf for conditions