The effects of COVID-19 on the mental health of intensivists and critical care nurses affected by PTSD

by

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Plagiarism Declaration

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Abstract

The purpose of the research project was to investigate the effects of PTSD on intensivists and critical care nurses during the Coronavirus pandemic. The project aims to explore any themes that emerged from the participants' experiences and provide a platform for their perspectives to be expressed during this global crisis. Additionally, the objectives of the research project were to assess the biopsychosocial impact of the coronavirus. The research data collected from this project would also contribute to the development of new policies post-COVID-19 and shed light on the specific experiences of healthcare workers in a South African government hospital located in KwaZulu Natal (KZN). The individual experiences of each subject served as the foundation for identifying the resulting themes, utilizing an interpretive hermeneutic phenomenology as the research design. The research methodology employed semi-structured questionnaires and the PCL-5 checklist to gather qualitative and quantitative data, respectively, adopting a mixed methods approach. The collected data was then analysed using content analysis to identify the prevalent themes.

The main findings of this study came across from the seven participants who were a combination of critical care doctor and nurses. According to the results of the PCL-5 test, three individuals out of seven had a higher possibility of being diagnosed with PTSD. However, the quantitative information from the PCL-5 checklist was combined with the qualitative information from the semi-structured questionnaire which further identified those individuals who would strongly benefit from therapy, after the COVID-19 pandemic. Using a mixed methods approach, themes emerged that helped to identify the different aspects of the COVID-19 pandemic on intensivists and critical care nurses. These themes ranged from different aspects using the biopsychosocial theoretical approach. Even though these findings were specifically derived from the hospital in KZN, the significance of this study is that policies and treatment plans should be modified post-COVID-19 pandemic, to work through the traumatic experiences that these individuals have experienced in all hospitals. These experiences and the participant's views that were expressed could help not only the specific participants in the future but can also enhance policy implementation/change for other healthcare workers.

Key concepts

COVID-19, intensivists, critical care nurses, biopsychosocial approach, interpretive hermeneutic phenomenology, semi-structured questionnaires, PCL-5 Checklist, PTSD, KZN

Chapter 1: Introduction

1.1. Contextual Background

The objective of this chapter was to create a chronological sequence for the Coronavirus outbreak in South Africa (SA) and to offer a concise overview of the epidemic's consequences. Firstly, COVID-19 was discussed and thereafter, the April 2022 floods had also been brought up to maintain focus on the adversity faced by healthcare workers in SA. Next, operational concepts were discussed to establish a consistent meaning of the terms used in this study. After that, the research design was put forward to outline what research methodology, sample size, research aims, objectives of the study and ethics can be expected for the study. Finally, the inclusion of limitations was introduced.

The global pandemic caused by the novel Coronavirus, which emerged in Wuhan, China, in December 2019 (World Health Organisation, 2021), had far-reaching impacts on individuals across various dimensions. The world had pooled together its resources by working toward reducing the spread of the infection to citizens. By completing this task, countries could reduce their death toll significantly and decrease the transmission of the virus.

The topic of the Coronavirus is related to many different dimensions, such as its impact on individuals, health institutions, and society. In 2022, SA experienced four 'waves' of the COVID-19 virus with multiple variants emerging. These waves involved an increase in the number of transmissions in the country after a steady plateau (National Institute for Communicable Diseases, 2021). These waves showed the increased volumes of infections to search for predictive patterns of the virus and how countries could shorten it. Around late- May 2022, South African Health officials saw a quick surge in infections.

Upon closer examination and verification of the case count, it became evident that SA had entered the fifth wave of COVID-19. The transmission of the virus had undergone mutations, as evidenced by the emergence of different variants including Omicron,

Delta, and Beta (Katella, 2023). There was an increase in hospital admissions, coinciding with destructive floods in the Durban area. On April 11th, 2022, floods affected the Durban area as there was the highest recorded rainfall in the city. About 300mm of rain poured down during these 24 hours and, consequentially, caused much damage to the city's citizens and the infrastructure (International Federation of Red Cross And Red Crescent Societies, 2022). This infrastructure included access to running water, electricity, healthcare, and food, which were necessary for survival.

An estimated 435 deaths were confirmed by government officials, while there were still many unaccounted-for individuals. Over 40,000 individuals have been affected and displaced from their homes (Mahlakoana, 2022). Due to the impact of this flood, houses were lost, and individuals were placed in temporary shelters, which directly increased the amount of COVID-19 infections due to insufficient medical and sanitary materials (International Federation of Red Cross And Red Crescent Societies, 2022). The shelters further increased the number of hospital admissions and individuals hurt by the flood who required urgent medical assistance. No country was immune to struggling from various lengths of lockdowns imposed to stop the spread of infections as there was no advanced and definite cure. A wide array of medical resources were severely lacking in these medical fields, worsening the impact on medical workers and patients.

There have been many challenges in the South African healthcare system pre-dating apartheid (1948-1993)(Maphumulo and Bhengu, 2019). The post-apartheid government had tried to make great leaps for South African citizens, but it failed to realize basic service delivery as a constitutional right (National Department of Health, 2012). The lack of improved service delivery was exacerbated during the COVID-19 pandemic. The absence of adequate human resources and insufficiency of medical equipment are indicative of instances where poor service delivery is evident. (Maphumulo and Bhengu, 2019).

During COVID-19, healthcare workers had to perform their jobs, even with the risk that came with it. For these workers to perform at their best, they needed to be physically healthy to avoid contracting COVID-19 and be mentally healthy. Dawood et al., (2022) described healthcare workers as a vulnerable group due to a study done

in KZN showing an increase in psychological distress. This need to care for these healthcare workers would benefit both the healthcare workers and the patients (Babiker et al., 2014) that they cared for. According to the same study (Dawood et al., 2022), healthcare workers did not feel cared for. The combined sense of not feeling cared for, along with the increase in psychological distress indicated that these healthcare workers' need for support must be addressed during and after the coronavirus. Research conducted on previous pandemics like SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome) has revealed that the mental well-being of healthcare workers significantly influenced their overall wellness in a detrimental manner (Gold, 2020).. This, in turn, created trauma for these workers and added to the stressors from their work and personal lives during the coronavirus (Thom, 2020). Thom (2020) indicated that having taken care of healthcare workers during this time could also have reduced the risk of burnout and helped healthcare workers build resilience. Burnouts reduced the amount of human resources in medical facilities, and by extension, overwhelmed the healthcare system. If resilience was enhanced, and sustained by healthcare workers, it would increase the number of human resources in medical facilities who could diagnose and help to treat patients (Carmassi et al, 2020).

Regarding other ways to help healthcare workers, governmental and hospital plans have been propagated amongst healthcare workers to ensure that they encompassed all dimensions of wellness, such as physical, mental, and emotional health. An example of one of these is the Healthcare Worker Care Network which provides training to improve healthcare workers' overall well-being and to provide counselling for these workers (Thom, 2020). More initiatives should have found ways to better approach healthcare officials with concerns about their working conditions, such as understaffing or lack of policies advocating for mental health treatment. Defective equipment and space to deal with patients should have also been included. Workers' mental health should be inspected and treated as a priority due to the impact of traumatic situations. It was common for healthcare workers to be constantly surrounded by patients with life-threatening illnesses requiring much attention, especially in the ICU. The short-term effects, in addition to the long-term effects, were detrimental to their health and the corresponding impact on patients.

Given the aforementioned limitations that have already presented an added danger to healthcare professionals in SA, along with the presence of COVID-19, it became necessary to prioritize measures aimed at assisting these individuals both throughout and following the pandemic. The population of this research study was chosen from intensivists and critical care nurses in a government hospital based in KZN. This study aimed to discover what effects had impacted them when they were provisionally diagnosed with PTSD using a Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5). The effects the individual had undergone would be understood in the context of their response which then led to understanding and creating accurate treatments for these individuals. This data could also be used to create policies and plans for other healthcare workers whom the same symptoms may influence. Nxumalo and Mchunu (2021) have found that interventions that take into account the healthcare workers' mental health could help to reduce the risk that comes with COVID-19. Healthcare workers refer to medical professionals who are dealing with COVID-19 patients directly to diagnose and treat them. Even though much research has been done locally, specific research must be conducted to learn about what can be done to promote mental wellness in the workplace, both physically and mentally in KZN, SA. In Nxumalo and Mchunu (2021), the perceptions of healthcare workers in KZN were explored and mental health was discussed but the study did not give rise to how the perceptions of these workers could be used to make informed decisions on improving their mental health, using counselling and other similar treatments. These informed decisions need to consider pre-existing governmental policies and individual treatments specifically designed for these healthcare workers.

1.2. Operational concepts

1.2.1. COVID-19

Severe acute respiratory syndrome coronavirus two (SARS-CoV-2) comes from a family of respiratory viruses which are highly infectious (Hu et al., 2021). The pathogen that causes severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) is also part of the coronavirus family. COVID-19 is the newest Coronavirus to have affected humans and has various symptoms ranging from

low to high severity. They could additionally lead to more serious respiratory infections such as pneumonia or bronchitis (Hewings-Martin, 2020), which can lead to hospitalization or death. There were also several variants of the Coronavirus that have progressed since its discovery in 2019. The World Health Organisation (2022) found variants in all parts of the world, with some being more infectious than others regarding their contagiousness.

1.2.2. Intensivists and critical care nurses

Metogo et al. (2020) state the difference in the term 'intensivist'. In developed countries, a designated role is assigned to doctors who work in the Intensive Care Unit (ICU). They are also likely to be called ICU physicians. In Africa, this term is similarly used but includes the word anaesthesiologist. Anaesthesiologist-intensivist physicians (known simply as intensivists from this point onwards) have the added responsibility of ensuring that COVID-19 patients receive the treatment they require for admission into the ICU ward (Yale Medicine, 2022; Metogo et al., 2020). The treatment included respiratory support and continually checking in on the patient to ensure that the patient was comfortable. Working directly with COVID-19 patients, they were the most susceptible and undoubtedly faced an increased risk of infection. Critical care nurses also followed a similar job description for working in the ICU. They were needed to check up on patients and notify intensivists of any change in the patient's health. They should have also been able to help patients when these changes occur to keep the patient alive. Most of their other tasks on the job were the same as that of a nurse in other hospital departments. These individuals also specialized in advocating for the patient should they have felt these patients were not treated fairly. They also provided comfort and support to patients who have terminal illnesses. These individuals who were alone during their hospital admission during the pandemic could not be comforted by their families. Nurses in the ICU could be a substitute during that time.

1.2.3. Mental Health

Mental health is a multi-dimensional term encompassing life's emotional, psychological, and social aspects (Mental Health.gov, 2022). It can affect all the different stages of a person's life and can be detrimental if left untreated. Several

types of treatment could be used for most mental health disorders to ensure that the individual can continue their daily tasks. The mental health of intensivists and critical care nurses was included in this study as it held great importance to what can occur in the future. If healthcare workers are not given outlets to treat their mental health disorders, they are at risk of being mentally distressed, which can affect their jobs (Di Giuseppe et al., 2021). Key aspects of this study focused on finding treatments that could help in their workplaces and personal lives similarly. It also included policies that affected the mental health of intensivists or critical care nurses and encouraged seeking counselling in times of distress.

1.3. Research design

1.3.1. Research aims

This study aimed to discover what effects have impacted intensivists and critical care nurses when they were provisionally diagnosed with PTSD via the PCL-5 checklist. The significance of the study pertained to focusing on the specific yet combined sample of intensivists and critical care nurses in the government hospital in KZN, SA. The perspectives of these individuals were articulated throughout the duration of this research, offering additional understanding into the impact of COVID-19 on these individuals. Specifically, the effects seen in these individuals from the perspective of a biopsychosocial framework had to be delved deeper to understand what could be done to help these healthcare workers. The significance of understanding psychological wellness in this research study could be vital to creating different paths of helping the individual themselves and creating a better institution for healthcare workers and patients alike.

1.3.2. Research objectives

The research study aimed to achieve the following research objectives:

-Determine the different effects from a biopsychosocial framework: These effects were categorised into biological, psychological, and social aspects. This research enabled the effects of COVID-19 to be seen in a more detailed, localised way that would be converted into specific treatments, and it could focus on effects that need more attention.

-Examine the encounters experienced by intensivists and critical care nurses throughout the duration of the COVID-19 pandemic: These work experiences gave insight into the hospital's inner workings. It allowed intensive healthcare workers to recognize what may be expected of them from future pandemics, should they arise. It could prepare and allow hospitals to tailor training courses specifically in preparation for a pandemic.

-Develop new plans and policies that could be used to help intensivists and critical care nurses in hospitals: Some hospitals should discuss past policies and question their usefulness during the COVID-19 pandemic. If these policies were not helpful, new policies could be created, or older policies could be updated. Examples such as work schedules and hours worked may have to be changed while maintaining the minimum number of intensivists and critical care nurses needed to work in the ICU.

1.3.3. Research questions

This qualitative study discovered how COVID-19 affects the mental health of intensivists and critical care nurses who have PTSD in KZN, SA.
The main research question asked: What were the impacts of temporary PTSD diagnosis on intensivist care staff during the COVID-19 pandemic?

The sub-questions used to achieve the results of this research were:
How had the COVID-19 pandemic impacted ICU staff:
A) professional life?
B) private life?
2. Which factors play a role in determining protective factors such as resiliency and work satisfaction during COVID-19?
3. What are some ways that the pandemic could have been handled differently-
A) By the participant?
B) In the workplace (including treatment plans or policies)?
4. What are ways that PTSD can be treated?
5. In which ways are intensive care workers affected by PTSD:
A) prior to the COVID-19 pandemic?

B) throughout the course of the COVID-19 pandemic?

1.3.4. Research Sampling, Study Population, and Settings

The data sources most appropriate for this study included individuals who had come into contact with patients infected with COVID-19 and presented with PTSD using the PCL-5 questionnaire. The rationale was to assess how PTSD has affected them in their professional lives as intensive-care healthcare workers. It also aimed to discover how hospitals could create treatment options for them to manage the symptoms of PTSD.

A type of non-probability sampling method was used called purposive sampling since this allowed for the inclusion of characteristics relevant to this research study. These characteristics included being an ICU doctor or nurse in SA and working in a government or public hospital in the province of KZN with a functioning ICU. Choosing specializations of intensivists and critical care nurses from the proposed hospital provided insight into what commonly occurred in a public hospital and provided more focus for the study. If this hospital's sample size is not met, another public hospital in the KZN area would be chosen. The initial hospital that was chosen by the researcher could not meet the sample size and time constraints and therefore, was not used.

Purposive sampling was better suited because of its descriptive qualities. The sample size was expected to range between 6-8 healthcare workers who would provide detailed descriptions of the impact of COVID-19 on healthcare workers. Since qualitative data was used to explain certain phenomena, data was aimed to produce similar results in different contexts for individuals of the same characteristics (Steyn, 2017; Hammarberg et al., 2016). The study was possible through semi-structured questionnaires and a PCL-5 checklist. Questionnaires were distributed to make it easier for these intensivists and critical care nurses. Some limitations in acquiring the sample size were that individuals could not speak about what they had experienced due to the fear of consequences in the workplace. It could be solved by ensuring that confidentiality was never violated. It could be done by changing names in research to help participants remain anonymous by coding each participant's response.

1.3.5. Research Ethics

The College of Human Sciences Research Ethics Review Committee granted approval for this research study (reference number: 64112349_CREC_CHS_2022) in UNISA (University of South Africa). In addition to this, The National Health Research Database (NHRD) of KZN, SA had to be consulted with and gained approval as it was a pre-requisite for beginning a research study in a medical facility. The NHRD Reference number is KZ_202210_018. Furthermore, the Medical manager at the chosen hospital had to issue a gatekeeper's letter to allow the researcher access to their staff.

Many relevant ethical matters were addressed during this research process as sensitive pieces of information from research participants could have had adverse consequences if not adequately anonymised. The right to confidentiality was at the forefront of ethics as this information which would possibly be reviewed by other researchers, years after the research has been completed. According to Curriculum Press (2020), all the information retrieved from participants should stay between the researcher and the participants. This could be done by ensuring that this data was securely saved while ensuring that only the researcher has access to it (at the behest of the supervisor). Confidentiality was ensured by using password-protected applications with a time-out function during inactivity. Paper records could be locked in a cupboard when they are not being used with access to only the researcher.

Ensuring anonymity was necessary when doing a research study, especially if the results could negatively impact participants. Unless specifically stated that individuals want to be named, no names should be used in the research project (McLeod, 2015). participants' names were coded to provide anonymity while using direct quotations in obtained results. By assuring anonymity, research participants were less likely to have their details divulged to third parties or be identified. However, since the research sample size only consisted of a few people, the hospital name had to be changed to indicate the province of the hospital. This can increase the level of anonymity for research participants. The sample hospital will now be referred to as a 'government hospital in KwaZulu Natal' or a 'public hospital in KZN'. The different identifying demographics have to be considered carefully to not divulge too much about these

individuals. The participants in this study could be grouped by their tenure, gender, occupation or according to their PCL-5 scores.

The ethical consideration of informed consent was also complied with, even before the beginning of the research. The participants have willingly signed agreements affirming their commitment to honestly share their experiences and ensuring that they will be treated with the highest level of respect in relation to their viewpoints. The researcher is additionally allowed to use their answers in research. By doing this, the researcher avoided harming the participants. Some participants were not comfortable discussing their experiences thoroughly if it led to more trauma or re-experiencing events.

Unfortunately, confidentiality has certain limitations, which must be managed effectively. For example, in the case of ensuring that there is no harm to participants, any indications that a participant plans to harm themselves or others must have swift action taken to help the participant and avoid more harm. This risk of harm could be avoided by debriefing participants and explaining what was the purpose of the study. Other possible risks could also be mitigated by encouraging participants to seek support from loved ones and to pursue counselling. Resnik (2020) states that the reduction of harm and the maximization of benefits should be prioritized in order to attain the utmost advantage from the research study. If the participant desired to discontinue their involvement in the research at any point, they ought to have had the freedom to do so without facing any negative consequences. The researcher must then delete mention of them in the research and their informative data should be destroyed to leave no trail back to the participant. Voluntary participation was critical in ensuring that the data was relevant and that there were no legal altercations following this research. As far as the researcher is concerned, no conflicts of interest were noted during this study. All ethical considerations were considered. Each participant received handouts containing the step-by-step procedures outlined in the questionnaire and the research process. Both the research participant and the researcher then proceeded to sign the contract form.

Criminal activities such as intentionally causing harm or deceiving others should also be dealt with, as it would be unethical to merely disregard them. In the case of this

research study, if intensivists or critical care nurses admitted to hurting a patient, laws and policies in SA, medical boards and the institution should be informed (Resnik,2020). Before that, the researcher could notify the supervising professor or ethics board to make an informed decision. According to McLeod (2015), a decision has to be considered carefully as the researcher must decide whether their duty lies with the participant or the community that the participant is in. Both of these decisions have consequences and must be weighed against each other carefully.

1.4. Limitations of study

There were some limitations, such as having a small sample size because of the amount of data retrieved from participants. Limited data could lead to reliability and validity criticisms, according to McLeod (2019), as there is subjectivity involved in the research process. This subjectivity could also lead to the researchers' bias being incorporated into the responses given by the participants. Researchers should ensure they can communicate their research questions effectively, but without influencing how the participants respond. This research study's sample size consisted of 6-8 participants and ensured that credibility and dependability were achieved instead of validity or reliability, as found in quantitative research (Trochim, 2021).

1.5. Chapter Outlines

Chapter 1: Introduction to the intended topic to be studied and discussed throughout this dissertation. The background of the study was presented, as well as the operational concepts that were defined. The research design's condensed version was also described to understand the primary emphasis of the study.

Chapter 2: The chapter explored the various literature based on the topic and its related sub-headings. As expected from a literature review, it consisted of a breakdown of the terms operationalised in the previous chapter. These were further described to fully understand the context of the pandemic in and around KZN.

Chapter 3: The next chapter focused only on theoretical approaches that could be used to accommodate different approaches in the field of psychology. It enabled the reader to understand the different factors influencing these theories and making them

relevant to this study.

Chapter 4: The primary objective of this study was to address the previously posed inquiries. The purpose of this chapter was to provide answers that would indicate the significance of the research methodologies employed, encompassing sampling techniques, data gathering procedures, and analysis methods. Furthermore, a comprehensive examination of ethical considerations was undertaken, with specific guidelines tailored to the study's requirements.

Chapter 5: The chapter included the content analysis of the themes found in the research. It included the results found in the questionnaires with the participants. It produced the information needed to link the results to the topic's title, i.e., to find the effects of the COVID-19 pandemic—moreover, critical care staff who would have been provisionally diagnosed with PTSD using the PCL-5 checklist.

Chapter 6: The final chapter ended with the conclusion of the study. It summarised what had occurred during this study with evidence from the questionnaires. It was essential to include the study's limitations and difficulties experienced during the study. It also detailed the changes made during the study and why they occurred.

Chapter 2: Literature Review

2.1. Coronavirus (COVID- 19)

2.1.1. Introduction

In this chapter, there were five main headings which would be covered. These main headings included the Coronavirus, healthcare workers, critical care health workers and the ICU, mental health in SA and Post-traumatic Stress Disorder (PTSD). These headings will subsequently be elaborated upon within the framework of this research investigation.

The world was taken aback due to this virus, which would ultimately lead to a staggering global death toll which claimed 533,561,424 lives on 2nd June 2022 (Worldometer, 2022). In SA, the number of fatalities during this time was 101219 deaths (Worldometer, 2022). These fatalities occurred two and a half years subsequent to the identification in December 2019, when the initial cases of viral pneumonia, unbeknownst at the time, were observed in Wuhan, China (World Health Organization, 2021). In the wake of this revelation, the government of the People's Republic of China (PRC), the Chinese Centre for Disease Control and Prevention (CDC), and the World Health Organization (WHO) exerted relentless efforts to delve deeper into the characteristics of the newly emerged Coronavirus. The symptoms of the COVID-19 pandemic needed to be clearly defined to distribute this information to the world. Primarily, many health officials and the public seemed to mistake this new virus for the influenza virus or even pneumonia, as the symptoms were so closely related. However, this strain of the virus was different from the influenza virus that was based not only on how rapidly the cases were contaminating the world but also on how the impact could be seen immediately (World Health Organization, 2021). Apart from this newer virus being transmitted via respiratory pathways like the influenza virus it also ranges in severity depending on the strain of the virus. The distinctions between the COVID-19 virus and the influenza virus should also be noted, as they were both contagious viruses whose symptoms seemed to overlap.

According to the CDC (2021), the COVID-19 virus spread faster than the flu. The

majority of COVID-19 symptoms typically manifest within a projected time frame of 24 to 48 hours after initial exposure, and individuals may remain contagious for a period ranging from 2 to 14 days following contact with the virus. The Influenza virus takes 3-5 days and could be contagious for 3-4 days, with the longest time being 5-7 days (CDC, 2021; World Health Organisation, 2021; Bell, 2020). Children and young teens (0-19 years old) also seemed to be more affected by the influenza virus and less by the COVID-19 virus. The most vulnerable to the current virus were the elderly (65 years old and above) and those with underlying medical conditions which suppress their immune system.

Some of the symptoms included having a fever, cough, body pains, and severe headaches. Benfante et al. (2020) reported that individuals experiencing the onset of this condition may exhibit severe manifestations such as pneumonia, acute respiratory syndrome, renal dysfunction, and ultimately, mortality. However, these symptoms varied per person. Most people infected with the disease have had the common symptoms of coughing, fever and tiredness. These were mild symptoms, whereas most infected persons were unaware of being infected with this deadly virus. Undetected symptoms make the transmission of this virus highly transmittable. Some did not display any symptoms after infection and were described as asymptomatic (World Health Organisation, 2020). The asymptomatic individuals needed to quarantine as they could pass the virus on to other individuals. It was much worse for the non-infected as it was difficult to distinguish whether someone in passing, a close relative or a friend had contracted this virus. It was only when a COVID-19 test result could be confirmed as positive or when there were more severe symptoms, such as difficulty in breathing, chest pains, and loss of speech or movement, did it became increasingly evident that the person had the virus. When these symptoms were displayed, infected persons who required immediate assistance had to be sent to hospitals.

The question arose as to what was supposed to happen when there were more infected persons than the availability of hospital beds. It was nearly impossible to cater for everyone. During the pandemic, numerous deficiencies were observed, encompassing medical equipment, hospital beds, personal protective equipment (PPE), medical personnel, and sanitation products required for disinfecting hospitals. Focusing on the

medical staff was of the utmost importance since they were constantly bombarded with treating more patients, even with the lack of equipment. Healthcare workers (HCWs) had been divided during this pandemic, faced with the constant struggle of saving patients' lives, fighting to keep up with their workload, and social distancing from others in hopes of not spreading the virus. They had to also ensure that they or their colleagues were not infected and cope with losing patients, colleagues and family members. In reality, the impact of this pandemic affected all aspects of healthcare workers' lives. During the pandemic, more than ever, healthcare workers needed to be physically and mentally well to complete their jobs adequately. The evaluation and transformation of the healthcare system in nations ill-prepared to effectively manage the pandemic was imperative in order to meet the medical requirements of the country.

The infection rate has been increasing since July 2021, since the Delta variant was discovered in SA (eNCA, 2021; Karim, 2021). When dealing with the oncoming third wave of coronavirus, hospitals were overflowing, and patients were being transferred to other hospitals with available beds. Hospitals all over the country were at their breaking point, and there were few spaces left for the infected once the third wave was at its peak. The increase in infections caused much pressure on healthcare workers as they were expected to perform daily tasks for patients without beds, medical equipment or sufficient PPE. When discussing healthcare workers, it was selfish to exclude the 'human factor'. As they are human beings, they are also susceptible to being overworked and stressed out. Not all healthcare workers can focus on their work, regardless of protective factors such as resilience or environment.

2.1.2. International versus National Perspective

The COVID-19 pandemic has had diverse impacts on healthcare professionals, individuals seeking medical care, and the global community as a whole. These disparities could be due to pre-existing conditions in the health sector or the limitations reached during this period. Teufel et al. (2020) state that industrialised countries (also known as newly industrialised countries) are seeing the extent to which their healthcare sector cannot sustain them during this pandemic. These industrialised countries were in the middle of highly developed and developing

countries and had a high emphasis on the ongoing process of industrialisation (Majaski, 2020). The importance of healthcare in these countries and the resources dedicated to healthcare could increase the probability of a working healthcare system. It was necessary to look at the difference between developed and industrialised countries as they could impact the outcome of treatment plans for helping healthcare workers.

The criteria used to ensure a standard that was seen across all developed countries include factors such as "education, health, and life expectancy" (World Population Review, 2022). These factors make up the Human Development Index (HDI). The norm for developed countries is to obtain a score over 0.80 with a range of 0 to 1. World Population Review (2022) stated that the top 3 developed countries comprise very high scores on the HDI scale. These were Norway with a 0.957 HDI score, and Ireland and Switzerland drawing a 0.955 HDI score.

In Norway, the lockdown occurred in mid-March 2020 (Miljeteig et al., 2021), and correlated with SA's lockdown period. In March 2020, healthcare systems had to prioritise their resources to accommodate the influx of individuals diagnosed with the new virus and those needing urgent medical care. Norway also saw the need to prioritise its medical and human resources during this time. Miljeteig et al. (2021) inspected different hospital departments in hospitals regarding triage or levels of urgency/need for treatment. Surgeries that were not emergencies were cancelled or moved to a later date. The health professionals from these departments then attended COVID-19 training to help them specifically prepare for the rise of infections from May 2020 to July 2020 (Magnusson et al. 2021). Healthcare professionals who are relocated to an intensive care unit (ICU) department have been found to encounter elevated levels of stress as a result of feeling ill-equipped and inundated. Redeployed employees experienced this distress as they were still determining if their training was sufficient and if they could handle the number of cases with increased responsibility being thrust upon them.

Lie et al. (2021) also delved into the effects that ICU healthcare workers experience from PPE use throughout the workday. Several adverse consequences were observed, encompassing dehydration, elevated body temperature, discomfort caused by

prolonged pressure on specific body areas, headaches, and the inconvenience of being unable to access restroom facilities when required. Government-mandated face masks were too tight and caused wounds and marks due to their constant usage (Lie et al., 2021). These present other difficulties that require further studies to find better alternatives. Alternatively, the lack of PPE also presented a problem during this time. Norway did experience a high number of cases (226) in July 2020 and had fewer beds in the ICU, but still felt prepared for the pandemic due to their training and years of experience. The level of trust in the healthcare system experienced a moderate increase, contingent upon individuals' affiliation with 'vulnerable groups.' These groups encompass economically or socially vulnerable individuals, those with underlying health conditions, and healthcare professionals exposed to occupational risks (Harris and Sandal, 2021).

In Ireland, despite having the same HDI score of 0.955 as Switzerland, a major concern arose at the onset of the pandemic regarding the availability of ICU beds for COVID-19 patients. According to Kennelly et al. (2020), the total number of ICU beds in Ireland, exclusively in public hospitals, amounted to 255 in February 2020. In response to the rise of infections, Kennelly et al. (2020) also note the changes implemented to increase the number of ICU beds for ICU usage. The Irish government notified private hospitals that they were to be combined with public hospitals for the duration that the pandemic was expected to last. This plan was used to secure more ICU beds in the country should they be needed. In retrospect, the number of COVID-19 cases did not exceed its capacity. It can also be noted that there were different initiatives used to increase the workforce.

The 'Be on Call for Ireland' pleaded with the population to volunteer their time, especially if they had experience within the medical field (Health Service Executive, 2021). Retired doctors, doctors on career leave and those abroad made up 397 doctors who were accepted into this programme. The criticism comes from the influx of applications which were estimated to be 73000 (Brennan and Mcconnell, 2021). These individuals could have significantly alleviated the stress experienced by frontline healthcare workers amidst the pandemic. Doherty et al. (2021) found that in their study of 114 senior physicians, 77% (88 participants) were found to have experienced burnout almost a year into the pandemic. These participants were also

found to be more susceptible to experiencing loneliness and detachment from work.

From the first two examples of first-world countries, we could draw on the comparisons and contrasts between international and national countries. The findings from research in Norway and Ireland show that difficulties had been shared across continents. The importance of this research comes from the national response to the virus and policy implementation. In the final example, Switzerland was drawn on. As previously mentioned, Ireland and Switzerland shared the same HDI score. However, it was worth noting that the measures taken were context-specific and could provide more evidence as to recommendations for the local context. These could be used to detail information from the source of intensive care staff directly affected by COVID-19.

Riguzzi and Gashi (2021) state that several problems related to the pandemic could be improved. There was also the notion of a similar pandemic occurring in the next 20 years, emphasising the need for emergency and existing plans to be modified with the lessons learned in the pandemic. Healthcare workers have also called for better protections regarding their mental health care, as well as their physical health care. There were many levels where mental healthcare could be improved. The Swiss government reacted faster by giving healthcare workers more information about the pandemic and more time to prepare for the day ahead was a major issue that was experienced. Swiss health workers were also seen as altruistic by worrying about their co-workers working with COVID-19 patients. Medical professionals were highly respected by patients and the public, but their own mental health struggles were overlooked. They were seen as immune to the virus, ignoring their tireless work and essential role. The Swiss healthcare system suffered from poor communication between management and doctors, leading to a lack of guidance during the pandemic. Since there were no plans for such a large-scale pandemic and a lack of equipment, management played a vital role in ensuring resilience in healthcare workers to bring up morale when individuals had a great need for it (Juvet et al. 2021).

2.1.3. Historical context of global pandemics

Previous pandemics, such as various types of plagues in ancient times, have greatly

impacted the treatment of pandemics today. These created solutions that are used today, such as avoiding the sick, learning the concept of quarantining, vaccinations and sanitation. These diseases have taught medical practitioners about life-saving strategies and initiatives spanning hundreds of years, which unfortunately have come with a grave price (Roos, 2020). In the larger context of history, pandemics have been a part of this world as much as any other concept. As early as 541-542 BCE, the Plague of Justinian killed around half the population, which consisted of 25-100 million people (Debanjan et al., 2020). The estimation was due to statistical methods not being developed well enough to be accurately depicted during this era. Those people who survived this pandemic learned to use avoidance not to contract this infection.

The concept of self-isolating was currently also used to protect oneself from contacting infected persons. The Black Death plague of the year 1347 brought the concept of quarantine into effect, as scientists did not know much about the contagion (Roos, 2020). During the COVID-19 pandemic, governmental systems across the globe have implored citizens to stay at home should they show any symptoms. This had been under-way since the virus was spread into the world around the start of 2020, and global communities were still struggling to grasp this concept or heed the warnings. It had been effective since its establishment in 1347. This has inadvertently increased the number of infections in SA and other countries. Perhaps one of the most helpful treatments against the pandemic came from the first vaccine use. This initially occurred during the early 18th century by a doctor, Edward Jenner, who identified a way to increase immunity in our bodies to allow them to develop antibodies toward the virus, with little to no effect if exposed to it consequently (Riedel, 2005).

2.1.4. Current view of the SA epidemic

In the 2020 pandemic, people around the globe seemed to be unwilling to restrain themselves from partaking in social and cultural activities. Even with governmental regulations and punitive laws, individuals have had many run-ins with the law. In the period from March 2020 to February 2021, there had been 411,309 arrests that had already been made one year into the pandemic (Business Tech, 2021). These had occurred due to people breaking the evening curfew and gathering in groups even

when the rules forbade it because of social distancing from COVID-19 protocols. Regrettably, individuals who are apprehended for violating the regulations during this period are faced with two alternatives: either appearing in court or paying an admission of guilt fine. Opting for the latter option entails accepting responsibility for a relatively minor offence that can be swiftly resolved. However, it is important to note that this choice also leads to the creation of a permanent criminal record (Business Tech, 2021; Law Society of South Africa, 2019). There was much to be said about these fines used during the pandemic on citizens. It was difficult to determine whether breaking these regulations should have led to a criminal record which could affect a person's life even after the pandemic has passed. This may have seemed like a harsh penalty for a seemingly minor offence; however, being arrested for possibly spreading a virus seems there would be little dispute, especially since social distancing in the past had been shown to help individuals stay safe and prevent more people from becoming sick. Even though this virus was very serious, some individuals were apathetic to these precautions, and there were still multiple arrays of reasons as to why that could be so.

Davies (2021) looks at why individuals were not compliant with the lockdown rules, specifically in the December 2021 period. Most countries had been approaching their third lockdown period at this time. The first two lockdowns were not appreciated initially, so for a third lockdown, it made sense that people were not ecstatic about another lockdown with further regulations. Alexander (2021) and Davies (2021) contribute to citizens' lack of compliance as a breakdown in trust in the government. Individuals had seen how the first two lockdown periods had influenced their lives. It had justifiably led to positives, such as preventing the contraction of the virus and keeping loved ones safe, but it also had negative effects like isolation, depression, anxiety and the constant bombardment of (mis-) information (Sparks, 2022). In SA, messages about healthcare workers being overwhelmed by the virus had been circulating, yet the government was unwilling to do anything to help them (Sparks, 2022). There was a call for more PPE, more health equipment, reduced working times and better hospital strategies, yet these were only met with some assistance. This assistance has to be continued indefinitely throughout the pandemic and beyond, although there was doubt whether this could occur due to SA's history of poor service delivery. Similarly, individuals in the healthcare system, such as doctors and nurses,

were also subjected to stress on their mental health and personal lives outside of work (Vizheh et al., 2020).

A major influence on how citizens reacted also looked at the social aspect of the pandemic. Humans are known to be social beings who need to follow the norm of what is happening around us. People had seen a lot of media coverage showing them that other individuals could go out for non-essential supplies and had gathered in large crowds, alternatively to what was said to be necessary or regulated. As stated before, a little over four hundred thousand people were arrested for breaking these regulations, while many more were not. This disparity between the two leads to confusion among individuals and a process of thinking that if some individuals' actions have no consequences, surely, it would be acceptable for others to do it. People had tried to be as liberal as possible by interpreting these regulations as something they 'should' abide by but not something they 'must' do. It has led to many disputes on the importance of clear consequences for our society to be fair and equal.

The lockdown periods also seemed to have an infinite continuation, boasting fewer positive results than negative effects. The lockdown managed to reduce the transmissibility rate by 60%, which was very positive in comparison to the rest of the world (Investec, 2020) but deeply impacted society as a whole unit. In June 2021, the availability of vaccinations also affected the lockdown level. In mid-June 2022, the National State of Disaster was finally done away with, as infections had stopped increasing. There has also been a decline in hospitalisations and death rates in the country (Department of Health, 2022).

2.1.5. Vaccines

Vaccines have been successful in reducing life-threatening diseases. This greatly encouraged the World Health Organisation to mass-produce vaccines for viruses and curable diseases by rapidly testing them on volunteering participants. This process of trial and error did not come without a cost, as the longer, it took to find a cure, the more infections and deaths had occurred. From the beginning of the vaccine trials around the globe, the vaccine's efficacy and safety were evaluated through rigorous testing and analysis, however, this scientific process was not trusted by individuals.

The shortest time a vaccine was created was the Mumps vaccine which took place in 4 years (Solis-Moreira, 2020; Brothers, 2020).

Researchers have studied the Coronavirus family for over forty years and continuously added new information to existing research (Weiss, 2020). SARS-CoV-2 is the virus that causes coronavirus and was only one of the deadly strains in this family. Even if research had been done on this type of virus, creating a vaccine in one year has been astonishing. Scientists worldwide have decided to collaborate and share the results of trials that could be used to mass-produce vaccines globally (Fogarty International Center, 2020). In SA, 1.25 million frontline healthcare workers were the first to officially receive the vaccine (South African Government, n.d.). This has helped them to gain additional protection from the coronavirus as they treat patients.

The second phase included essential workers and citizens of SA. This was done in stages according to age from the age bracket of 60 years and above to the 18-34-year-old bracket on August 22, 2021. There is no cure for this virus but the vaccine was a way to increase the herd immunity of S Africans. This also protected others who could not take the vaccine due to autoimmune diseases and people with other underlying conditions (Pratt, 2021). Another problem was vaccine hesitancy and the spreading of misinformation concerning vaccines and their impact on the pandemic. Although vaccines had been rigorously tested and their effectiveness had been confirmed, the distortion of information reduced the number of people who took the vaccine. Another problem related to vaccines was the restricted access to them. Those who resided in townships and rural areas may have had to travel further to vaccination sites.

These sites were not able to accommodate the influx of people in certain areas which were densely populated. According to Ritchie et al. (2020), only a small percentage of 8.2 % of fully vaccinated people equated to 4.82 million people of the total population. This data was constantly updated to provide full transparency during this period. This was perhaps more helpful for hospitals as it provided a reprieve for overcrowded hospitals and workers who were at their limit. Subsequently, more individuals needed to register and then receive their vaccinations. Vaccine hesitancy was detrimental to the country as a whole, and the government needed to focus on making it easier to

register for individuals who were not competent in using technology or those who lived in rural areas. This had to also be done on a larger scale to promote the vaccine's benefits, despite side effects. Scientific evidence would be the key factor in explaining how vaccines work to the public with easy-to-understand terms, and health officials would provide more information to find swift results that would have encouraged South Africans.

With the vaccinations made available in mid-2021 and the lockdown, many South Africans saw more results and a decreased rate of COVID-19 by up to 30% (Doucleff, 2021). This indicated that there were benefits to taking the vaccine and being protected from it as well. As of July 19, 2022, 37,060,820 was the total number of vaccines that had already been administered, but only 18,428,447 adults had been fully vaccinated (first dose, second dose and booster vaccine). This worked out to 40.3 % of the population that had been vaccinated (COVID-19 South African Online Portal, 2022). This made for an interesting and worrying discovery as it showed that 59.7 % of the population was still not vaccinated. It was necessary to understand the impact that had been gauged from the availability of vaccines and how individuals had still actively attempted not to receive them. The dissemination of information on the internet and social media platforms can be overwhelming and challenging for certain individuals to comprehend. There was much uncertainty about which information could be trusted to help understand more about the virus. The South African government has created and shared many research articles and statistics about facts and falsified myths being debunked through science. These websites were generally user-friendly, with explanations and statistics that could be used to teach the public about vaccines and their purpose (COVID-19 South African Online Portal, 2022).

In SA, the vaccine brand most commonly administered to individuals was Pfizer vaccines, with 27,970,043 in total. The second most commonly administered vaccine given to individuals was the Johnson & Johnson vaccine, with 9,090,777 (COVID-19 South African Online Portal, 2022). These were not the only vaccine brands authorised for use in SA but were more widely available. The South African Health Products Regulatory Authority (SAHPRA) had granted use of the Pfizer Bio-NTech, Johnson & Johnson, AstraZeneca and Sinovac vaccines (Discovery, 2021). This

organization has been responsible for ensuring that these vaccines are safe and of the best quality for its citizens. The Johnson and Johnson (now referred to as J&J) vaccine seemed to protect individuals against 66% of the moderate to severe symptoms of COVID-19, against the Pfizer vaccine having a 100% success rate. The Pfizer vaccine trial was tested in a smaller trial group ((Mukherjee, 2021), but further studies show that it had a higher success rate ranging from 88% to 91% against severe illness (Discovery, 2021).

The J&J vaccine was administered to healthcare workers, as it was used during an implementation trial during the study. Phase 1 of the national roll-out vaccine plan occurred in February 2021 (Mukherjee, 2021; Western Cape Government Health, 2021). This was named the Sisonke trial, which vaccinated 479,768 healthcare workers (Discovery, 2021). This trial had also shown citizens that the vaccine was something to be trusted, as many healthcare workers had taken it already. The desperation healthcare workers felt to be vaccinated and have additional protection was astounding. In the study mentioned above, some healthcare workers had intentionally left out their past experiences with the vaccines, such as serious side effects (Bekker et al., 2021). This is crucial information that should not have been ignored and researchers should manage their expectations of these vaccines and discover the connection between them. It can also help in explaining to the public if they experience any allergic reactions that are mild or severe. Transparency was key to explaining the different side effects to the public and the steps to be taken. Vaccine sites had prepared pamphlets with fact sheets on the after-care for the specific vaccine, which can also be found online. After the vaccine was administered, individuals were also expected to wait at the vaccination site for an additional 15 minutes to ensure that there were no adverse effects that pose a risk to one's life (Centers for Disease Control and Prevention, 2022).

Besides the spreading of much misinformation through social media, another reason behind the hesitancy of vaccines was trypanophobia, more commonly known as a 'needle phobia'. One out of every tenth person is affected by this phobia which can prevent individuals from seeking medical care or taking vaccines (Brown and Gopal, 2021). At the commencement of the vaccination implementation strategy in SA, there existed no alternative vaccines, including oral or nasal vaccines (Matiwane, 2021). By

December 2021, trials had started on oral pills that could be taken should people be affected by trypanophobia or even if they were more comfortable with that option. Karim (2022) regarded why SA will not use one of the most popular and pertinent oral pills for COVID-19 named 'Molnupiravir'. This was authorised by SAHPRA, but there was too much unknown data for these vaccines, which needed to be identified first. It was also extremely costly as one pill is estimated to be around R10,000 per pill (Karim, 2022; Winning, 2022), which is too expensive for the already burdened healthcare system.

Regarding future concerns, as more data becomes available and more trials are completed, individuals may eventually receive a generic version which may be more cost-effective, easier to manufacture and will use up fewer medical resources such as syringes, cotton swabs and medical workers that need to administer the vaccine. It also depends on the national health authority (SAHPRA) and individual provinces, which allocate funds to the different vaccines based on their budget. As variants of the COVID-19 virus continue to emerge, many upcoming trials will help understand and identify a wide array of options needed to help combat the virus.

2.1.6. COVID-19 Testing

Compared to developed countries with more COVID-19 tests available, developing countries such as SA have had fewer resources such as COVID-19 tests, swabs, packaging, transportation to laboratories and staff needed to perform the tests (Adeniji, 2020). Swab collection alone unnecessarily takes up much staff that could be based in hospitals and ICUs for urgent cases. In April 2020, SA outperformed other nations in Sub-Saharan Africa by conducting the most extensive number of tests, reaching 54,224 tests per million individuals in the population (Adeniji, 2020, Chitungo, 2020). Africa also boasted low numbers of positive cases as there were still lower amounts of testing being carried out. Only 1 out of 7 infections were detected in Africa by 2021, which is estimated to be 14.2% of Africa's population (World Health Organisation Africa, 2021). With further inspection of finer details of what this means on a larger scale, only 8 million cases were reported when there were an estimated 59 million infections (World Health Organisation Africa, 2021). By June 2020, SA had 34,357 cases (Africa CDC Outbreak Brief- 20, 2020; Rutayisire, 2020) that were reported.

The number of tests administered in African countries faced different challenges, such as an already deficient healthcare system in which numerous other fragments contribute to the low amount of testing.

Regardless of how many tests had occurred in SA and globally, there was no exact number of how many individuals tested positive for COVID-19. This was because in developed and developing countries, there was still much hesitance in getting tested for the virus. This phenomenon may arise as a result of individuals' apprehension about acquiring the virus at testing facilities, the discomfort experienced during the testing process, the financial burden associated with the test, or the social stigma attached to the test outcomes. Chitungo (2020) looks at the disadvantageous effects of using the Polymerase Chain Reaction (PCR) test, which had been recommended by the World Health Organisation (WHO). It required many experienced and qualified medical staff to administer these tests. It was also very costly in the private sector for individuals who require their test results in under 24 hours. In January 2022, after investigating two leading laboratories, Lancet and Ampath Laboratories agreed to a reduction of PCR tests pricing from R850 to R500 (Pocius, 2022). This agreement was reached after individuals had to pay exorbitant amounts of money to undergo a COVID-19 test. One could state that was is a progressive move, but it comes too late. It could still, however, serve a purpose to lower costs for the remainder of the duration of COVID-19 by possibly encouraging individuals to take tests knowing it would not be very expensive. In the public sector, getting tested was not much better, either. Testing stations had long queues and results were only available after 3-5 days (Ground Up Editors, 2021; South African Government, 2022).

After the lengthy process of getting tested was complete, it was suggested that the test results should be discussed with an individual's healthcare provider (Centers for Disease Control and Prevention, 2022). This delays the isolation period that may be needed should the test result be positive. Individuals had to also pay a fee of R350-R400 for a consultation if they were going to a private doctor, while a state-owned practice would charge them around R55 (Buswell, 2022). General practitioners at private and public health institutions were occupied, and being able to get appointments at these establishments was a gruelling task.

For SA to improve its testing efficiency, several recommendations have been made clear in research studies carried out locally. There needed to be cheaper tests available which could help citizens save money in difficult economic times that were being faced. Tests could also be more widely available for self-testing, reducing the 'painful' notion of doing the test (Adeniji, 2020). Individuals could have more control over how they want to do the test and isolate immediately without the risk of further infection (Stent and Kantor, 2021). Results should also be discussed more quickly between doctors and patients. Doctors in SA could also use technology and video calling or phone calls to discuss the test result or what to do further. It reduced the risk of meeting individuals or spreading the virus to another individual. With the COVID-19 guidelines, it was helpful to consider different ways people could be helped through technology.

2.1.7. The use of technology during the pandemic

With more information on the internet, individuals now have more knowledge about the virus and what could be done should they experience these symptoms. With the constant change of technology, individuals could still have a glimpse of normalcy with activities such as online shopping, meetings with friends via online platforms (such as Zoom, Skype or Whatsapp) or ordering take-out from restaurants which deliver to homes. However, the scope of technology further exceeded these activities in the context of the pandemic.

For example, Whatsapp is known as the most common social media platform that almost everyone uses with a smart device (Daniel, 2020). Using this information, the Department of Health created a helpline to get specific advice on the COVID-19 virus. This also saved costs and human resources as an 'automated response' was sent in place of a person searching the internet for the answers (Whatsapp, 2022). This information was not randomly selected but instead searched the internet for the latest facts about the virus and looked at how to give the most relevant information to individual requests. This also helped verify facts against the coronavirus misconceptions (Daniel, 2020). By stopping rumours from spreading, people thought more critically about what they shared on these social platform sites and ended the infodemic that occurred alongside the pandemic.

In China, drones have been utilised to fight the coronavirus. They used drones to disinfect vehicles which were used between high-risk areas and in public spaces as well (Yang and Reuter, 2020). It boasts advantages such as being efficient while reducing the time spent on these sanitation operations. Drones were also reliable for transporting medical samples as far as 3km away in a very short time (approximately 6 minutes compared to the usual 20 minutes). This reduced the risk to couriers or healthcare individuals who were utilised for other purposes. Using aerial transportation shows us a glimmer of the future and what we can expect from it as well. In African countries such as Rwanda and Ghana, drones were already being used to send medicine to individuals who live remotely. They could also receive PPE and medical equipment in hospitals (Kretchmer, 2020).

As mentioned previously, online shopping was also commonplace during the pandemic because shops were being operated for essentials. It was another necessary development as there was no contact between people and a decreased probability of infection. This could pave the way for deliveries to be quicker and boost the economy as packages could be received more rapidly in the context of SA.

Using technology, doctors from around the world were able to collaborate on their experimental trials and results. The use of Artificial Intelligence (AI) (Robnett and Sexton, 2020) helped analyse 150 million texts to find out some of the effects of the pandemic from 30 different countries. This was a colossal task for humans, not to mention time-consuming and egregious to imagine. During the pandemic, time was a major commodity that humans did not have in abundance. The use of AI in these times has saved individuals by saving time and preventing many more infections from taking place (Yang and Reuter, 2020).

Under the lockdown level 4, the aspect of travel was also influenced by technology more often than before. Individuals were able to view the restrictions of the lockdown and how it would apply to them in the circumstances of the pandemic. It also reduced contact in terms of touching the equipment at the airport (Alton, n.d.). Passengers travelling had to self-scan their temperatures with a temperature scanner, and a security guard confirmed that it was less than 38 degrees Celsius. If it was above this temperature, a secondary screening would have been done and an isolation area for

the at-risk passengers (Airports Company SA, n.d.). COVID-19 tests were also available in the airport to enable passengers to double-check that they were negative and free from infection and could fly with other passengers. With the use of technology, tests efficiently provided a more specific diagnosis of the patient's COVID-19 status.

Lastly, technology has also helped to ensure school children can learn through long-distance learning via the Internet, radio or television (UNICEF, 2020). This led to the initial stages of shock for parents and educators alike who were unsure of the academic programme's direction. Remote learning was made available for school teachers and students in most countries. The goal was to reach as many individuals as possible who could benefit from long-distance learning. Implementing this in poorer developing countries was difficult as pre-existing boundaries existed. Globally, school children were affected by the pandemic in various ways. Some children were affected more than others due to the lack of pre-existing structures that could help education before the pandemic struck. Approximately 463 million children could not be contacted during this time and could not be taught remotely (UNICEF, 2020). This tremendous figure stemmed from the inability to prepare for the pandemic even though countries were forewarned as early as December 2019 (Alhattab, 2021).

In their study, Alcazar et al. (2020) examined the various approaches implemented in diverse nations across Sub-Saharan Africa. The challenging nature of the situation was evident as only a quarter of the population had the privilege of electricity access, thereby posing a significant obstacle in disseminating information to children (World bank, n.d, as cited in Alcazar et al., 2020). When electricity was available in households, TV stations were created to broadcast lessons at specific times with content to engage with children and encourage learning during these times. These were the most successful globally, with 62 per cent of children benefiting from them, equating to 930 million worldwide (UNICEF, 2020).

In cases where TV broadcasting was not so common, some teachers tried using modern social media platforms like Facebook or Whatsapp to help connect with children more easily. In Cameroon, there was a physical distribution of learning materials. Parents and teachers collaborated to ensure that these materials were

following the COVID-19 guidelines but showed determination in the wake of the pandemic. Countries needed to create a specific system which could help the individuals in that country and consider all the different circumstances, such as access to electricity, social distancing, cost of alternative methods and the different grades that were affected most by this pandemic to ensure that children still had the opportunity to learn. Alhattab (2021) finds that countries like Congo, Madagascar and 14 other African countries have remained closed for 19 months since the pandemic started. This is disturbing for younger students who struggle with focusing while at home for a long time. These are the formative years for their development; unfortunately, it was the most forgotten group regarding remote learning (Alhattab, 2021; UNICEF, 2020).

The pandemic had changed how students learned and interacted with each other during this time but going forward, online learning would continue to increase as countries make provisions for it when possible. Remote learning has already demonstrated numerous advantages, including enhanced efficiency and the ability to access a wide range of resources. Furthermore, it has been proven to enhance learners' retention of information. Using the Internet and other platforms seems to be one of the best options (Li and Lalani, 2020). In the future, should another pandemic similar to the current one exist, educational systems should be capable enough to adopt similar strategies so that individuals are not locked out of their academic environment without being able to continue learning. It is impossible to tell if this will occur successfully due to the distinct changes in education in a hurried manner. Educational departments must create policies that can be put into place to ensure a fluid change from in-person learning to remote learning (Alcazar et al., 2020).

In the context of SA, an estimated 17 million students were unable to continue learning during March 2020 due to the lockdown (Statistics SA, 2022), with close to 2 million individuals still able to continue with post-lockdown learning. Most schools in the country could only offer 'rotational learning' or alternative day learning, which focuses on scheduling half of the class on one day and half on another day (Dyomfana, 2021). This prevented overcrowding in the classroom and allowed for social distancing. Unfortunately, it also reduced the time spent at schools, which defied the right to education. There are also risks to this type of schooling in the long term.

According to Dayimani (2022), school children are less likely to achieve in school, which can lead to low-income jobs in the future. The alternative of using remote learning was also prevented by pre-existing difficulties such as a lack of technical devices like mobile phones and laptops and a lack of internet connection in rural areas (Statistics SA, 2022). The government, telecommunication companies and parents must work together to make remote learning successful, as it could become an important development in the future of South African schooling should it be more accessible and equal (Investec, 2020).

2.2. Healthcare workers

2.2.1. Who is a healthcare worker?

A healthcare professional refers to an individual employed in a healthcare environment, who directly interacts with patients in order to diagnose, treat, and administer medical care (Health Protection Surveillance Centre, 2021). Joseph and Joseph (2016), also include those individuals who work indirectly with patients such as laboratory technicians, helpers and medical waste handlers. In this dissertation, the focus is on the healthcare workers who work directly with patients to improve these patient's health. Healthcare workers, even though they exude diversity, have a primary goal to help patients using medical procedures to prevent or cure physical and mental ailments (World Health Organization, 2013). They can be found in the public or private sector, working in hospitals, community clinics, private practices, nursing homes, pharmacies, and rehabilitation centres (Health Protection Surveillance Centre, 2021, Healthcare Workers Care Network, 2022). By nature, these workers have risky jobs that could have caused them to get infected during the COVID-19 pandemic. In December 2021, an alarming 72,678 public healthcare workers were infected with the coronavirus. This equated to 18% of the public health sector (Bateman, 2021), which would potentially impact the sick individuals placed in the hospital's general wards. The normal isolation time for an infected person under the World Health Organisation's guidelines was 10 days. However, this posed a risk and understaffed hospitals, so there was a need for a slight reduction to 5 days that one needed to be isolated (Scales, 2020). This would have helped in many public hospitals and been able to continue still working with the large influx of individuals being placed in their

care.

Healthcare workers were tasked with challenges that were difficult to overcome based on the pre-existing challenges in their workplaces. Nevertheless, these individuals could persevere through it and work well within the boundaries of their work. At the same time, it was unfortunate that so many healthcare workers have been infected and, ultimately, passed away from the coronavirus. As of September 2021, more than 1300 deaths had occurred of healthcare workers in SA (Heywood, 2021). This proved to have a devastating effect on the healthcare system as healthcare workers underwent rigorous training and gained years of experience, which was lost with their passing. The South African government had not made plans to increase the number of healthcare workers at this time (Heywood, 2021). This provided a highly concerning glimpse into the future of healthcare in both the public and private domains.

Another worrying challenge is how healthcare workers were praised as 'heroes' during this time. This label was reviewed as a compliment which would metaphorically show them to be 'strong' and 'invincible' in their professional lives. Cox (2020) defined heroism as a voluntary action which acknowledges the risk for the person, which also goes beyond what is expected to be done in their normal duties. By calling them heroes, healthcare workers are seen as 'heroic' in doing their assigned job. This did not follow the definition agreed upon by Cox (2020) as working during the pandemic was not voluntary. Distracting from the lack of resources necessary to do their jobs safely should not be forgotten as it has caused healthcare workers to be exposed to the coronavirus more easily. Numerous healthcare professionals have made a deliberate decision to pursue their careers and undergo extensive training in order to provide assistance to individuals in need. Their unwavering dedication and commitment to their roles are driven by their genuine compassion for aiding patients (Shapiro, 2021). Calling them heroes deflects from their original purpose of going to work and helping patients because they love what they do. Halberg, et al. (2021) focus on the thought process that heroism does not give credit where it was due to healthcare workers and the skills that they had developed over years of working. Instead, calling these workers heroes could have led to an appreciation of their skill set and acknowledgement of how much work had been put in by these individuals over time.

Instead, calling them heroes has an undertone of being slightly jubilant, celebratory, and triumphant when this was certainly not the case. The term 'hero' is often synonymous with those previously mentioned; in actuality, these individuals needed more support, not just a name that rang hollow. In the case of healthcare workers, the term 'hero' should have been used sparingly to increase awareness of what these individuals have done. The defects in the health system should have been regarded as a tool that could help these individuals reduce the risk that they faced during this time (Halburg et al. 2021). The boundaries of healthcare workers could also have been established to determine how much risk these individuals were expected to take during the time of an infectious outbreak (Cox, 2020).

Nevertheless, workers were given parades, gifts, food, supplies, letters of gratitude and messages to thank them. This was a meaningful gesture, especially during a time when the economy struggled and inflation was at in increase (Cowling, 2023). Citizens still spent money on getting gifts for these individuals even though money was harder to obtain. The world had focused on making these individuals feel special even when citizens were scared as well. It showed that there was some unity from these citizens to try to abate the situation that these workers were in. Even though it had a small impact on healthcare workers as a whole (Shapiro, 2021), healthcare workers could still acknowledge how hard they had worked during this time and be proud of themselves and co-workers for continuing their work, regardless of the risks. Risks came from the lack of PPE, support from supervisors and the immense pressure of saving every patient (Anderson and Turban, 2021). Healthcare professionals across the globe, who were hailed as heroes during the initial phases of the pandemic, have continued to fulfil their duties diligently for two and a half years since the outbreak commenced. Meanwhile, individuals worldwide appeared to have progressed and adapted to their post-pandemic lives (Shapiro, 2021). The term 'hero' should have reminded individuals around the world that healthcare workers had continued to take the brunt of the pandemic and that the responsibility that the workers felt could be mitigated by helping them.

Whilst television broadcasts and social media had shown many people blatantly disregarding the COVID-19 protocols, Societies globally acted ignorant about the importance of these regulations to keep others safe and reduce the number of patients

who went to the intensive care unit or were admitted to the hospital. As goes the adage, actions speak louder than words, and if the actions did not equate to what was being said, the words were dishonest and little was done to help these healthcare workers. Anderson and Turban (2021) state that calling healthcare workers heroes was a deflection from real support and policy changes. Once again, actions, along with words would have been more appreciated in this COVID-19 pandemic. Campaigning for more PPE, as an example, could have proved useful. Healthcare workers' need for anonymity during this time might have led to a betrayal of trust in management or retribution (Boulton et al., 2021) and if the campaigns came from the public, healthcare workers would have less to worry about.

The types of actions that are needed would be helpful for healthcare workers such as intensivists or critical care workers to bring about change in their workplace. Short and long-term plans should be created to help individuals work with their colleagues and patients without sacrificing their mental and physical health. The health departments in different countries need to take care of their workers, or many workers will resign, and there will be a greater loss of experienced workers. As Boulton et al., (2021) state, these healthcare workers are not sacrificial, and they should be protected from harm at all costs. Their safety should have been prioritised as much as their patients which could improve the healthcare system, during and after the pandemic eventually would have come to an end.

According to Gold (2021), many 'anti-healthcare sentiments' have created trauma and went against the term of being a hero. Alongside being traumatized by individuals who were critically ill and close to their deaths, citizens also started demeaning and taking healthcare workers for granted. Healthcare workers were expected to single-handedly stop the pandemic due to their 'hero' status, and when they could not do so, communities turned against them (Cox, 2020). Mensik (2022) details the different types of violence which were being acted against healthcare workers. They faced threats, being yelled at, physical violence and assault, and even fatal attacks. The pandemic and the lack of security in hospitals have further increased these attacks. Croucher and Somayajula (2021), along with Shapiro (2021) also described how healthcare workers were punished for speaking out about these incidents that occurred for fear of further violence. Individuals could not speak about the challenges faced in

their workplaces, from a lack of PPE to criticising the government's response to the pandemic. If they did speak about it, they would be fined or imprisoned for spreading false news or fired from their place of work. Government officials took action when healthcare workers spoke out about their working conditions but did not change the current systems and help them when requested to do so (Mensik, 2022; Croucher and Somayajula (2021). The healthcare heroes could not be held responsible for working alone to end the pandemic. Systematic changes had to be implemented to further improve their working conditions. Politicians and media news outlets should have also been held responsible for trying to implement positive change during this time. Healthcare workers could have benefited more from these changes, along with being celebrated throughout the pandemic (Cox, 2020).

When vaccines became available, especially in SA, healthcare workers were the first to receive them (National Institute for Communicable Diseases, 2021). This was a step in the right direction, whereas many other steps needed to be taken as well, to help healthcare workers achieve safe, equal, fair and supportive working conditions. Nevertheless, these workers should be celebrated for their continued work, but reciprocity should be at the forefront of this discourse. Healthcare workers have tried to help and keep many citizens alive during the time of the pandemic. Healthcare workers have used the limited resources that were available to them to try to save as many patients as possible. Citizens should have also tried to help healthcare workers by protecting themselves and others during this pandemic. Citizens could have ensured that they had received their vaccinations, worn masks, socially distanced and isolated themselves if they had COVID-19 without severe signs such as the inability to breathe easily (Shapiro, 2021). Health authorities should have started implementing more changes to ensure that these workers could have a safer working environment and support from management. Amidst the COVID-19 pandemic, healthcare workers have been labelled as "heroes". However, there is a controversial debate about whether this term is appropriate and the potential impact it may have on healthcare systems and workers. In essence, it is crucial to recognize the bravery and selflessness of healthcare workers, address the underlying systemic issues that contribute to their challenges, and advocate for better working conditions and support.

2.2.2. The focus on Healthcare workers

As of the beginning of the COVID-19 pandemic, healthcare workers had been tasked with successfully dealing with an overwhelmingly stressful situation where thousands of people were admitted to hospitals daily. This epidemic has been taking place since early January 2020 and for the foreseeable future. Until a cure is found, healthcare workers continue to be bombarded with an increase in daily cases. Hospitals in and around SA were at their maximum capacity as they were experiencing the peak of the coronavirus (eNCA, 2021). During the mid-July of 2021, SA experienced a significant surge in daily COVID-19 cases, reaching a staggering number of 22,400. This alarming situation placed immense pressure on healthcare workers and medical facilities, leading to a depletion of both their physical and material resources. As the virus continues to persist, there is a lack of studies focusing on the long-term effects on the mental health of these healthcare workers. Nevertheless, it is feasible to examine the pre-existing challenges and the ongoing impact on healthcare in SA, specifically in relation to the mental well-being of healthcare workers.

2.2.3. The past versus the current view of South African healthcare

The state of the pre-existing healthcare system in SA led to an anticipated surge in the workload of healthcare workers during the COVID-19 pandemic. Pre-COVID-19, HCWs and healthcare facilities were already under major strain. This dilemma stemmed from the poor service delivery of healthcare delivered to South Africans, mixed with a lack of infrastructure and political history's impact.

Dating back to the apartheid era, the segregation of healthcare was the primary cause of the healthcare system not working at full capacity. During this time, non-whites (as referred to by the government of the time) were unable to access hospitals or basic health care easily or conveniently. This also increased the rate of mental disorders stemming from violence and oppression in the country (Coovadia et al., 2009). The ratios between doctors and patients were also unequally distributed, which caused many citizens to lose faith in the healthcare system unless drastic changes occurred.

According to Coovadia et al. (2009), doctors and nurses in the healthcare system

primarily worked in the private sector as only white people were privy to them. This led to a domino effect of fewer doctors and nurses in the public health sector, making it extremely difficult to seek medical care quickly. At least 40% of healthcare workers moved to the private sector in 1980, but this steadily increased to 60% by 1990. In 2020, the 40:60 ratio remained relatively the same over the years, despite plans by the government to increase the number of healthcare workers by 2030 (Clifford, 2021) in the public sector.

The affordability of mental and medical healthcare had not been prioritized for individuals who could not bear the exorbitant costs associated with it. Those who relied on public healthcare services had historically and continued to face long waiting times to access specialized care from medical professionals. Presently, only a small percentage (16-17%) of South Africans have had the financial means to afford medical aid and seek treatment from private doctors and specialists (Mumbauer et al., 2021). This was primarily due to the substantial monthly premiums and out-of-pocket expenses that must be borne. Consequently, there exists a significant disparity between individuals who can afford comprehensive medical schemes, offering extensive benefits, and those who could not. Moreover, this disparity is further exacerbated by geographical inequalities, particularly in terms of the availability of medical facilities and infrastructure in urban and rural areas across different provinces in SA (Hassim et al., 2007).

Corresponding to information about the inequality during apartheid, it led to gaps between the private and public sectors. The Department of Health had been underfunding and unevenly distributing resources which attributed to the inability to develop emergency plans for a pandemic of such a tremendous scale. This had been a global trend for developing countries, and it was quite evident that the South African healthcare system had been no exception. Countries were overwhelmed concerning their healthcare systems and could not withstand the high traffic of patients. Not enough active beds are available to accommodate such a high influx of patients (Evans, 2020; Isilow, 2021).

In 2022, 32.5% of SA had been fully vaccinated, and 37.4% had taken one dose of the vaccine (Our World in Data, 2022). Hospital admissions had decreased during the

COVID-19 period of August 2022. According to the daily hospital surveillance (datcov) report for the epiweek spanning from August 7th to August 13th, 2022, as stated by the National Institute for Communicable Diseases, a cumulative number of 17 fatalities among COVID-19 patients were recorded. An epiweek is the definition created by the CDC to describe an epidemiological week to compare data across a period (Centers for Disease Control and Prevention, 2021). This came from a combination of private and public hospitals.

From this data, we can gauge that there should have been an expected reduction in the workload of healthcare workers; however, more data needed to be confirmed. However, even with the reduction in cases, the pandemic was not over, and another COVID-19 wave was approaching. Healthcare workers needed to recover from the last two and a half years physically, mentally and emotionally. Healthcare workers also need to be better protected from post-impact COVID-19 for their mental health and to be free from the risk of contracting the virus.

In a national context, ICU nurses in Gauteng, ICU nurses expressed dissatisfaction with the lack of support that they experienced (Odendaal and Nel, 2005). Being unsupported in the ICU by the nursing managers and institution led to these nurses finding it challenging to create an environment that maximized their patients' well-being (Odendaal and Nel, 2005). This study by Odendaal and Nel (2005) also focused on shortages in the ICU and the workload that was experienced by the participants who were ICU nurses. The investigation was finalized almost two decades prior to the emergence of the COVID-19 pandemic. Surprisingly, the identical working circumstances persisted, as evidenced by recent studies conducted in SA during the pandemic. Naidoo and Naidoo (2021) conducted a comprehensive study which revealed a significant scarcity of ICU nurses throughout the COVID-19 outbreak. The government's lack of foresight resulted in an unforeseen shortage, leading to a failure in effectively assigning sufficient personnel to cater to the demands imposed by the pandemic. Clarke (2022) has revealed that one doctor in the South African public health sector is to be expected to help 3198 patients. These shortages reduced the patients that could be assisted and the psychological resources that could have been mobilised such as coping skills (Odendaal and Nel, 2005).

Prior research from the SARS and MERS pandemics also looked at the impact of the increased workload on healthcare workers. Apart from facing daily trauma caused by the death of co-workers, patients and family members, these individuals were also challenged with many different types of problems. This ranged from the lack of protective equipment and focus on their mental healthcare (Vizheh et al., 2020). These challenges had many major impacts on healthcare workers and their patients. If healthcare workers feel overwhelmed by the different symptoms arising from being burdened by their workload, it could influence their daily behaviours at work and home (Zhou and Zhang, 2020).

2.2.4. Personal protective equipment (PPE)

SA's Primary Care Preparedness Guide specified the equipment and training that was needed for such a large magnitude pandemic (Crowley et al., 2021). Critical care nurses and intensivists were both in dire need of PPE during the pandemic due to PPE being disposable whilst having an insufficient amount available for usage. In the case of single-use PPE, this could be critical in determining the level of protection given to individuals in the ICU. Nurse managers had to include separate courses purposed for efficiently wearing PPE in the correct sequence (GE Healthcare, 2021). This directly impacted whether more ICU workers got infected by the virus or not.

A lack of PPE in the supply chain was caused by sea and air freight delays and increased demand (Hartley, 2022). There were many alternatives, such as producing the equipment in the country, using PPE for a longer time and decontaminating the equipment as a last resort (Le Roux and Dramowski, 2020). Some of these alternatives presented both advantages and disadvantages. The advantages would be having PPE last for a longer amount of time while more was being procured. The disadvantages could be having equipment that might not be as effective in stopping the virus as the seals may be damaged, and the fibres might be unable to filter out the virus (Le Roux and Dramowski, 2020; GE Healthcare, 2021).

During the initial stages of the pandemic, healthcare professionals working in the intensive care units demonstrated their ability to recognize the heightened requirement for personal protective equipment (PPE) in order to further mitigate infection rates

(GE Healthcare, 2021). These additional requirements were to be worn alongside the initial protective equipment. Buffer zones were used as a safe space to take off 'used equipment', and then, normal cleaning procedures could apply to the healthcare workers. This ensured that risks of contracting the virus were mitigated between the staff, patients or visitors.

Although PPE was a necessity for intensive care workers and healthcare professionals who are in direct contact with patients infected with COVID-19, it also presented an environmental problem that was further exacerbated. Plastic pollution from plastic face masks, gowns, slippers, and goggles were not disposed of correctly (Benson et al., 2021). It was imperative to acknowledge that these PPE could not be disposed of in the same way as normal plastic or be recycled without being decontaminated first (Berea Mail, 2020). This relied on the premise that individuals were sorting their waste and making it possible to note which refuse bags were filled with hazardous waste. As an example of this, in the city of Durban, SA, the effects of the waste not being properly disposed of were seen on the beaches and the oceans (Sibisi, 2020). However, most individuals opted for cheaper masks made of cloth that could be reused to reduce the amount of waste (Berea Mail, 2020).

2.3. Critical care health workers in the Intensive Care Unit (ICU)

2.3.1. The focus on intensive care workers

The importance of intensivists and critical care staff stemmed from their job responsibility, increasing during the pandemic. In the ICU the workload had increased to accommodate the influx of critically ill patients needing medical equipment and ethical decisions to decide the treatment of someone's life. As some studies show, the degree of stress during the pandemic was even more catastrophic than before the pandemic (Hu et al., 2021).

Ahmed and Davids (2021) stated that in SA, ICU doctors did not feel comfortable sustaining life-saving treatment over a long period. This was important as it could affect the outcome of the pandemic. Young intensivists or nurses who had not

experienced the magnitude of an epidemic such as this needed to be physically and mentally ready to work for a long time as this pandemic was going on to its fourth wave. It was necessary to protect patients by providing training and education to intensivists and healthcare workers. Intensivists had to consider different ethical considerations when deciding who would get treatment and who would be moved into the high-care ward (Hajjar et al., 2021).

It should be recommended that intensive care doctors and nurses undergo psychological counselling. This was one of the key solutions which could be utilised to keep intensive care workers safe during the pandemic. Crowley et al., (2021) indicated that other solutions such as an increase in the amount of training that these workers received, along with flexible work schedules would be helpful. It would be advantageous for intensive healthcare workers to communicate what they were experiencing and how to work through trauma. However, time in the workday is limited for attending these counselling sessions due to the patient influx (Pheto, 2020). Intensive care staff did not get lunch breaks or any time off which made the option of face-to-face counselling difficult but could be supplemented with 24-hour helplines (Pheto, 2020; Discovery, 2021). Along with the already limited number of doctors and nurses available in the ICU due to being infected by the virus or through death (Ethiqal, 2020), there would have been fewer doctors and nurses available for medical treatment. to patients Strategies implemented should be productive and advantageous for the hospital, along with focusing on these intensive care workers.

2.3.2. Redefined roles throughout the COVID-19 pandemic

ICU workers had to work in a fast-paced environment throughout the Coronavirus to ensure that many patients were helped. These healthcare professionals put themselves at risk of being infected to care for their patients who are critically ill or those needing critical life-saving treatment (Health Engine, 2018). The intensive care unit comprised a multidisciplinary team of specialist physicians who all worked together to provide major medical procedures requiring life support (Kauvery Hospital, 2019). Some of these medical procedures included intubation and ventilation (Health Engine, 2018). During the pandemic, these protocols were replicated on a grander magnitude in order to safeguard the lives of individuals afflicted with COVID-19 and experiencing

respiratory distress.

During the pandemic, intensivists and other critical care team members were expected to do their jobs as an influx of patients were being admitted (Cook, 2020). These higher volumes of patients crowded ICUs and increased the number of hours that these healthcare workers had to work. The relevance of this study is to find out how these long hours and high-intensity jobs have affected them. The effects of the virus could be seen as these ICU workers were in direct contact with the infected individuals. These effects depended on a wide variety of factors based on the environment, social settings and personality traits of ICU workers. These factors were considered to interpret the effects in a specific and broad context.

One could argue that an ICU unit is the most important part of a hospital as it envelops a wide range of medical procedures. As an intensivist, many problems have to be dealt with, such as organ failure, traumatic shock, poisoning and major surgeries (National Health Service, n.d.). These problems are not disconnected from the pandemic and can spread through in-patients who had their lives threatened by the coronavirus.

Even though ICU workers had special training for the coronavirus, the rapid amount of cases in the ICU ward made intensivists and other critical care staff feel the pressure that was exerted on them from the beginning of the pandemic (Montgomery et al., 2020). Critical care healthcare workers had to obtain a degree in nursing or in becoming a doctor at a medical school. The degree completion typically depends on the time needed to finish the degree, such as 4-7 years (SA facts, 2022). Graduates then need to complete a specific amount of hours doing various programmes in their residency and then go into different settings to develop a special skill that leads to a specialised physician job. These individuals go through many different types of training (Health Engine, 2018) and learn from experienced doctors who can teach them how to handle different situations.

2.3.3. COVID-19 training

An estimated 10321 healthcare workers were employed in SA's KZN province during

the year 2020 to combat the surge of patients during the first and second wave of COVID-19 (SA news, 2021). These individuals had to start their work at a time when a lack of knowledge had devastating effects on patients.

These healthcare workers required up-to-date knowledge about the coronavirus and ways to prevent more infections, thus making their job more difficult when they didn't have said information. In SA, healthcare workers' retraining has been a necessary tool in preventing earlier infections such as TB, HIV, Ebola and many other infectious diseases in SA and the African continent (Tsiouris et al. 2022). This was blamed on the lack of medical resources to help healthcare workers prevent their deaths and that of their patients. Time is also a finite resource that limits learning new knowledge in different waves of the virus. A competent doctor or healthcare worker can learn from their interaction with patients, yet, if these interactions lead to healthcare workers getting infected or dying, it is futile (Bangalee and Bangalee, 2022).

Some short courses delivered via online learning have helped fast-track progress to ensure that healthcare workers are ready to combat the pandemic with their limited knowledge of the virus. Foundation for Professional Development (FPD) established by The South African Medical Association (SAMA), along with The Health and Welfare Sector Education and Training Authority (HWSETA), have sponsored the first conference in SA about the COVID-19 pandemic (Medical Practice Consulting, 2022). In one of the short courses provided by the FPD, course participants consisted of frontline healthcare workers who would learn about new strategies that could be implemented to update knowledge and help frontline workers adapt to how they could manage patients during COVID-19 (FPD, n.d.). Individuals could not participate in face-to-face training as time was an issue, but if they had virtual classes, they could participate in them at work or home. This provided a different approach to learning which amplified the time spent on learning, i.e. time would not be wasted during working hours. This course also emphasized the investigation into the origin of the coronavirus, the effective handling of both staff and patients, the appropriate utilization of personal protective equipment (PPE), and the public health measures implemented in response to the pandemic. Individuals must have a pass rate of 70% to be credited with certification on this course (FPD, n.d.). Another FPD course focused

on mental healthcare and resilience for healthcare workers (FPD, 2021). This course provided psychological knowledge of working with patients' mental health while also prioritising their own. Mental healthcare is an important part of healthcare. These courses can help individuals maintain a work-life balance, manage stress and work towards helping themselves post-COVID-19 (FPD, 2021).

A call for training on vaccinations for healthcare workers was also necessary in terms of training for the pandemic (Xinhua, 2021). The National Education, Health and Allied Workers Union (NEHAWU) rallied for the government to not only provide vaccinations for South Africans but also to provide logistical and educational aspects of these vaccinations (Xinhua, 2021). This information was necessary for creating vaccinators who were knowledgeable about the vaccines they delivered to help alleviate any patient concerns about the vaccine (Knowledge Hub, 2022). The National Department of Health offered a course on the training of COVID-19 vaccination for healthcare workers, which consisted of important elements such as storage of vaccinations and waste management, ethical considerations and how to get the community to learn about these vaccines and inadvertently, get them to participate in these vaccinations as well (Knowledge Hub, 2022). Data management was also covered, providing valuable information to the Department of Health and researchers. An extra advantage was that uncertain individuals could be persuaded by the large numbers of the vaccine and be more aware of the advantages of receiving the vaccine (s).

2.3.4. Redeployment of healthcare workers

In the start of the lockdown, healthcare workers from other departments had to be redeployed to the ICU to engage with patients and support these infected individuals. Some of these redeployed workers were from other hospital departments and had to be trained in doing other tasks necessary for the ICU (Magnusson et al., 2021). As mentioned previously, these individuals also experienced more stress as they felt unprepared for the change of pace and high volumes experienced in the ICU. This example exemplified when healthcare workers needed extra training, as their knowledge of the virus should have been updated constantly. Online courses that were free and concise provided this information to them quickly.

The National Department of Health has assigned a group of 28,000 community healthcare workers (CHWs) with the responsibility of conducting door-to-door visits in order to trace and conduct COVID-19 testing within disadvantaged and impoverished communities (Mpulo and Mafuma, 2020). Patta (2020) wrote about why SA had these experienced workers ready to test and track patients. In the past of SA, HIV and TB have claimed three and a half million lives combined in the last decade (Patta, 2020). These CHWs worked with communities that they were familiar with and did more to combat the virus. They remained worried about their safety as the National Health Department has not mentioned ways that they planned to keep these workers safe from the virus, even with the shortage of PPE (Mpulo and Mafuma, 2020). This was particularly concerning given the critical period at the onset of the COVID-19 outbreak. Healthcare workers were still willing, nonetheless, to complete the tasks assigned to them to combat the pandemic. The World Health Organisation, in December of 2021, also deployed a surge team in the province of Gauteng. The purpose of this was to help speed up the vaccine process and also with the tracing of infected individuals (Houreld and Shirbon, 2021)

The South African Military Health Service (SAMHS) also deployed 301 individuals made up of nurses, administrative and cleaning staff and various others who were willing to sacrifice their lives for the benefit of others (KwaZulu-Natal Department of Health, 2021). This was at the behest of the acting Minister of the Department of Health in SA (Stoltz, 2021). By focusing on the importance of screening individuals, healthcare workers had more human resources available for helping the patients admitted to hospitals.

2.4. Mental Health in SA

2.4.1. The impact of the pandemic on the mental health of workers

The primary focus during the pandemic revolved around swiftly resolving the challenges posed by the outbreak. Regrettably, the significance of mental health for both patients and healthcare workers was largely overlooked within healthcare systems due to the overwhelming burden on the system. Ornell et al. (2020, as cited in

Nguse and Wassenaar, 2021) contend that mental health is often disregarded during pandemics, despite the fact that neglecting it can have enduring consequences on individuals even after the pandemic subsides. However, there has been a growing recognition of the importance of mental health, as evidenced by the studies conducted by Søvol et al. (2021) and Shreffler et al. (2020) during previous pandemics, which shed light on the psychological impact experienced by healthcare workers and the necessary interventions.

Unfortunately, mental illness has always been placed below other illnesses in the medical field as it has not been recognised as a medical condition (South African Society of Psychiatrists, 2020), which impacted patients and healthcare workers by not resolving issues. Previous epidemics in SA, such as Tuberculosis (TB), Human immunodeficiency virus and Acquired immunodeficiency syndrome (HIV/AIDS), suggested that patients and healthcare workers suffered when directly affected by such diseases (Bachmann and Booysen, 2003). This indicated an idea of which symptoms were present in health workers. In addition, SA's healthcare system was previously affected by the severity of the HIV/AIDS pandemic (Bachmann and Booysen, 2003). The pandemic had unforeseen effects that had increased the impact on these workers. It was difficult for healthcare workers to focus on in-patients suffering from co-morbid disorders as they were understaffed during a pandemic. However, this had been the expected response from the medical staff around the country and the world.

Alongside chronic and other medical conditions existing simultaneously, the massive influx of patients from the pandemic has increased the psychological pressures that exist (Roberson et al., 2020). Some ramifications could not be immediately seen, which further impacted the health care system, especially concerning the mental health aspects. If there were no interventions to help diminish these symptoms, the result could be an increase in the general populace's risk of suffering from medical and mental complications.

Healthcare workers suffer from elevated levels of depression, fear, stress, anxiety and burnout in both their professional and public lives. Miguel-Puga et al. (2020), Trumello et al. (2020) and Carmassi et al. (2020) stated that gender and age played a

considerable role when deducing the symptoms that arose during a pandemic. Female medical staff who were younger accounted for most of the population, and the potential reason for this occurrence may be attributed to the imbalanced distribution of sample sizes across various research studies. There was a possibility that younger critical care nurses may not have experienced a pandemic before and may be unfamiliar with the considerable amount of work expected. Michel-Puga et al. (2020) stated that the consequences of this global health crisis was linked to poor working conditions before the pandemic, such as highly stressful work environments, crowded hospitals, operating spaces, witnessing death daily, and consistently making life-or-death decisions. This could also include poor leadership and supervision and insufficient guidance and support when handling difficult workplace situations between co-workers and/or patients (Carmassi et al., 2020).

2.4.2. Mental disorders in intensive care workers

Furthermore, these mental-health effects as mentioned above were exacerbated during the pandemic, increasing healthcare workers' risk of mental disorders. Several mental disorders exist in healthcare workers, and the COVID-19 pandemic has worsened them. Robertson et al., (2020). described that stress comes from the fear of not knowing what to expect during the pandemic and from feeling overwhelmed. Robertson et al., (2020) also explained that stress could also come from inadequate resources available during the pandemic. Cook et al., (2021) indicated that stress felt over a prolonged time, along with anxiety and exhaustion could more likely lead to experiencing burnout or getting an illness. Centres for Disease Control and Prevention (2023) explained that this pandemic further exacerbated the distress felt by healthcare workers from the pressure that they had from interacting with critically ill patients, and the patient’s family members. However, Engelbrecht et al., (2021) stated that the stress that these healthcare workers had experienced had taken place in other epidemics in SA due to these workers being the first respondents for patients in the country.

Anxiety was also a stressor that influenced these workers, both during the pandemic and before that. Some causes of anxiety were due to personal and occupational reasons (Cook et al., 2021). The anxiety experienced by healthcare workers in SA has

been exacerbated by certain stressors, which can be attributed to the inadequate support provided by management at healthcare institutions, especially those employed in public health facilities (Watermeyer et al., 2023). According to the American Psychological Association (2022), anxiety is characterised by consistent worrying even after the stressors disappear but stress is characterised by external triggers that could improve one's condition after the trigger is removed or resolved. Both mild anxiety and stress could be resolved by support from management and colleagues, loved ones and other coping mechanisms such as following a healthy diet and following a sleeping routine (American Psychological Association, 2022). In Cook et al., (2021), even though health workers faced a lot of difficulties, some were able to use coping mechanisms, rely on their organisations and draw on their resilience to avoid being deeply impacted by the COVID-19 pandemic.

Depression is occurring more commonly in healthcare workers during the coronavirus (Lee et al., 2022). Depression, anxiety and stress were associated with physical conditions such as weakening of the immune system, which determines the impact of a viral infection (Dawood et al., 2022). Ergo, healthcare workers had a reduced chance of being protected against the COVID-19 virus due to their weakening immune system from depression. The study conducted by Hain et al., (2021) in KZN primarily concentrated on rural regions and determined that medical practitioners working in these areas encountered elevated levels of depression, anxiety, stress, and burnout. A further explanation of this study showed that these doctors planned to exit the public healthcare sector in the next two years (Hain et al., 2021). Interventions must be made in both type of areas namely rural and urban areas in SA, to retain the workforce that was employed before the pandemic and those that experienced the pandemic as well. These healthcare workers would be needed even after the pandemic has disappeared as well.

The aforementioned risks were in line with the inadequate healthcare system prevalent in the South African setting, resulting in an imbalance between work and personal life and a decrease in the workforce pool (Watermeyer, 2023). Intensive care staff often took longer shifts to help critically ill patients, which often left HCWs in a constant state of exhaustion that could lead to burnout. Burnout can be described as a syndrome that arises from prolonged stress in the workplace, which has not been

effectively addressed or managed (ICD-11, 2019, as cited in Savold et al., 2021). According to Necho et al. (2021), the interconnection between the mind and the body played a significant role in understanding the potential consequences on physical well-being. The presence of stress, anxiety, and depression can result in detrimental effects on the body, including weakened immune system and increased vulnerability to contracting the COVID-19 virus. Furthermore, Laher et al. (2021) discovered that stress can also contribute to various other health issues such as pneumonia, insomnia, diabetes, heart disease, and numerous other adverse health outcomes. Even so, it was difficult for individuals to reduce their stress levels when exposed to these conditions and given little reprieve from the stressful environment. These biopsychosocial effects occurred in the ICU and healthcare workers' private lives.

Engel (1960, as cited in Stuart et al., 2020) argues that the biopsychosocial model offered a more comprehensive perspective compared to the biomedical approach, which solely focused on the medical factors influencing diseases. The biopsychosocial model acknowledged the significance of environmental and other factors in exacerbating the impact of a disease. Therefore, it was evident that the biopsychosocial model was better suited for understanding the complex interplay between various determinants of health. Different perspectives could clarify how some were deeply affected by the pandemic, whereas others were not. The biopsychosocial perspective took an integrated approach to the differences experienced in individuals that led to these disorders and those worsened by these factors. A few factors in this approach are genetic functioning, brain structure, behaviour, development and learned responses (Burke et al., 2019).

Each dimension of the biopsychosocial model considered aspects seen in previous pandemics. Laher et al. (2021) found that through understanding these different aspects, individuals feel understood and have individualised treatments tailor-made for them. It was essential to focus on a multi-dimensional perspective incorporating more than one theoretical approach, as humans are complex and have had many interactions between themselves and their environment. Similarly, this approach can lead to the development of more inclusive policies which can help healthcare workers get their required help.

2.4.3. Risk factors

Whilst focusing on the impact of these disorders, it was equally necessary to look at how risk factors and protective factors counteracted each other and could be employed by healthcare workers and patients alike. The need to co-exist arose in individual, familial, communal and institutional domains. Risk factors included the different factors or conditions more likely to affect a person and their ability to develop a disorder (World Health Organisation, 2004; American Psychological Association, n.d). Many risk factors were present in SA. From the state of public medical institutions to the focus on mental health and the lack of resources, these were based on the institutional level, which was a probable risk factor.

Other risk factors that may be associated with belonging to the institution's domain include a dearth of assistance from colleagues and supervisors who were actively engaged in patient care at the forefront. If an individual has less medical training and insufficient knowledge in the medical field, this could also increase the risk faced by that person (Robertson et al., 2020). Hospitals not considering these particular risk factors increased the probability that HCWs could not avoid worsening mental disorders. All the different risk factors that need to be reduced would have been emphasized by examining institutions to set boundaries and offer support to individuals in dire need. A front-line worker must choose between a person’s life and death. This choice was not an easy feat and should be at the forefront when new policies are being formed to help HCWs after the pandemic is over and for possible pandemics which may arise in the future.

2.4.4. Protective factors

Some countermeasures allowed some risk factors to be alleviated. These are known as protective factors and were necessary because they served to buffer against risk factors. By employing protective factors, an individual could reduce the risk or lower the severity of developing a disorder by focusing on those factors which aim to reduce stress in an individual (World Health Organisation, 2004; American Psychological Association, n.d.). The most successful protective measures could be used in short- and long-term circumstances where a decrease in physical and psychological

symptoms, reduced burnout and increased resilience could be found in HCWs. Nonetheless, it is crucial to emphasize that protective factors do not wholly stop a mental disorder from occurring.

Characteristic traits that increased the protection of the individual included resilience, self-care and mindfulness, personal fulfilment and work satisfaction (Søvold et al., 2021; Miguel-Puga et al., 2021). By implementing novel protocols that fostered the growth of these elements, medical professionals in critical care and healthcare personnel experienced enhanced productivity and improved personal lives. New protocols should be mandatory along with mental health checks that were often performed to help screen individuals at a higher risk (female, younger age, inexperienced, less social support, overworking, etc.) for developing mental disorders (Luceño-Moreno, 2020). A person's living conditions also play a role when determining how protective the factor could be. A male living alone fared better than a female living with someone else as there was an underlying extra sense of responsibility, even on time off from work. The infection rate increased from the infected to the health worker, such as a family member or close friend (Luceño-Moreno, 2020). It was important to look at protective factors that were institution based such as providing hospitals and staff with personal protective equipment, an increased number of active beds and sufficient training to be better prepared to handle the pandemic and the influx of participants (Robertson et al., 2020). A systemic review of previous epidemics in SA could also indicate those interventions that had been most helpful for healthcare workers (Dawood et al., 2022).

2.4.5. Mental Health Regulations

From the beginning of the Democratic era, the government had included policies that tried to be implemented in the health care system for workers (Department of Health, 2012). These were created to be put into place ways to help healthcare workers avoid losing these workers to the possibilities of burnout, depression, stress-related disorders or even suicide. These policies regarding legislation changed from apartheid regimes that consisted of unfair treatment of individuals that were then added to the constitution in 1996. In 1997, a draft of legislation was reformed to include Mental Health Policy Guidelines and turned into the Mental Health Care Act (No 17 of 2002).

This policy has governed SA since its promulgation in 2004 and was amended in 2014. This is the primary legislation that details the application of the South African Constitution and the responsibilities that mental health practitioners must abide by (Burke et al., 2019). This law could potentially change the healthcare system, but unfortunately, many obstacles still need to be overcome (Department of Health, 2012). Insufficient financial resources and understaffing were reasons that SA had a large gap between physical and mental health. Even if the legislation was in place, the application still needed to be applied.

In the past, there existed a prevailing stigma associated with seeking treatment for mental disorders. The South African context included the demonization of mental illnesses due to the primarily Christian undertones prevalent in the country (Ntombana, 2015). Due to this reason, people were afraid of being ostracised and seeking assistance from doctors or medical practitioners. The demonisation of mental health had a debilitating effect on patients as they had suffered unnecessarily for a longer time.

Based on the previous demonization and stigma of mental illness, patients were afraid of speaking to others or finding help (Ntombana, 2015). It may seem daunting to healthcare workers themselves as they are professionals who now need help from others According to Knaak et al., (2017), stigma negatively impacts help-seeking in healthcare workers due to mental illnesses being treated as a lower priority than physical illnesses in healthcare (South African Society of Psychiatrists, 2020). During the global pandemic, frontline workers were portrayed as heroes in the prevailing narrative (Søvold et al., 2021). This has been used to show appreciation for healthcare workers but could delay these workers' need for help and support, if not seen holistically. If healthcare workers were seen as heroes and not as regular people, they may find it difficult to admit that they are struggling mentally or physically. They may have felt reluctant to disclose their mental health status or even show any sign of a disorder, as confidentiality may have been betrayed. Individuals' mental health status being disclosed could make them seem less capable of their duties as they have to seek help when they usually give help to others.

2.4.6. Mental Health Awareness in a hospital setting

Mental health was and will always be necessary for all individuals to maintain a balance in their lives between their physical, emotional and mental health. Mental health affects different facets of a person's existence, such as their behaviour, thought patterns and actions (McLean, 2021). The effects of not focusing on mental health were discussed above but focusing on it led to ways to improve mental health awareness in the workplace, particularly in hospitals. This awareness would benefit healthcare workers such as the research study's sample of intensivists and critical care nurses. Examples of mental health conditions seen in these intensivists and critical care nurses were anxiety, stress disorder, depression, post-traumatic stress disorder and burnout (Engelbrecht et al., 2021; Cook et al., 2021; Hain et al., 2021).

Adults spend over 90,000 hours at work, which is a significant part of people's lives. It influences our lives and can impact the feelings and emotions we experience daily (Gettysburg College, n,d). It is necessary to be satisfied with the work we do and be at peace. Spending this amount of time at work also reflects how we can live and be at peace at work and home. Focusing on our mental health does just that. Individuals who learn about mental health learn coping mechanisms that could be applied at work and home, resulting in a more balanced life.

During the pandemic, humans globally realised that mental health was more important as it became a point of awareness in the media. Stress and isolation during the pandemic have affected the well-being of individuals unable to cope during these situations. (Mental Health America, n.d.). It was an essential factor that could have helped intensive care staff cope better. Knowing that it was important, raising awareness during the coronavirus and, hopefully, even after the virus has been eradicated should be emphasised.

Employees and employers are responsible for working together to create a work environment conducive to learning about mental health without the stigma of mental health. Stigma is a barrier which inhibits healthcare workers from asking for help (Knaak et al., 2017). Traditionally, there was an underlying connotation of mental health having a negative meaning. This negative connotation made employees not

want to discuss the problems that they were facing for fear of being ostracised (McLean, 2021). Employers should bring up the topic of mental health, which could encourage employees to want to participate. The language employers use to speak about these topics should also be in an empathetic manner. Being demanding and confrontational should be avoided. Employees should feel in control of their mental health and well-being. Discussing the topic of mental health at work makes individuals proactive in seeking out help. Once individuals are relieved from the sole responsibility of dealing with their mental health issues, they experience an increase in productivity at their workplace. This new-found freedom would allow them to effectively balance their presence in their professional and personal lives (Knaak et al., 2017).

In the specific setting of the ICU in the hospital, there should be a mental health team which solely focuses on providing advice on how to cope with stressful situations. This team should have comprised individuals certified in psychology with the knowledge and experience of how to discuss sensitive issues (Mental Health America. n.d.). Individuals in a hospital have a higher possibility of having such teams, but doctors, nurses and other healthcare workers may need more time to visit these health teams to discuss pertinent issues with them. As mentioned previously, individuals in a hospital may also feel that they should be the ones providing cures and not needing a cure. This thought process will delay the process of finding a healthy coping mechanism that could help make them more productive and helpful to patients. Managers and individuals in more senior roles must also be trained in cases where intervention is necessary. If the higher-level executives were inclined to assist their subordinates, they would possess the capability to provide aid to these employees and mitigate the likelihood of mental health disorders that these individuals would have encountered (Hain et al., 2021).

In addition, healthcare professionals may also undergo mental health evaluations and receive counselling services. There should be workshops discussing how important these assessments are to move forward with mental health conditions and through the other side of this pandemic. These workshops could teach reliable and convenient techniques for workers who do not spend much time during their workday to reduce stress, anxiety and a general sense of being overwhelmed. The National Center

for Chronic Disease Prevention and Health Promotion (2019) also mentions having a separate space for relaxation and calmness as another treatment option.

This quiet room exists in the hospital and for two uses. One use of this room is to deliver unfortunate news to patients or patient's family (Masiakos and Griggs, 2017) and another use of this room is to allow healthcare workers to be away from the bustling crowds and noise in the hospital (Ding, 2020). Having a designated space would allow individuals to switch off from their work stressors and could maybe assist them in calming down. Individuals who are in this space or room should also have access to brochures or pamphlets to inform workers about the possible options that exist for them in the space of their workplace. Being proactive is crucial to giving employees choices to discuss their mental health. In this area, healthcare workers would be able to regain control and collect themselves after a traumatic experience (Spring Grove Hospital Centre, 2013).

2.5. Post-Traumatic Stress Disorder (PTSD)

2.5.1. The impact of PTSD

Severe mental disorders like Post-traumatic stress disorder (PTSD) or depression can persist for a long time because of the effects occurring and occurring after the pandemic peak. PTSD in healthcare workers was the main focus of this research as healthcare workers went through repeated exposure, which could lead to several problems in the future for the medical industry and the medical staff within it (Benfante et al., 2020). According to Burke et al. (2019) and Trumello et al. (2020), PTSD involves exposure to a traumatic experience over time that can lead to different fear responses between individuals. Exposure was work-related in this study, and prolonged trauma affects the individual. According to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) and the International Classification of Diseases, Tenth Revision (ICD-10), it produces several symptoms.

The four categories of PTSD are classified as "re-experiencing, avoidance, negative cognition and mood, and arousal" (Burke et al., 2019, p. 186-188). These were the main groups of symptoms that need to be researched to diagnose and assist health

workers with short-term plans and long-term prevention strategies. Through conducting experiments with healthcare professionals amidst and following a pandemic, it became feasible to observe variations in the levels of stress experienced by these individuals (Trumello et al., 2020). Dealing with these disorders could ensure that workers continue working in the medical field. It could also entice others to join the medical field to understand that policies are available to improve mental health. The increase in medical workers also helps the remaining workers as they would oversee fewer responsibilities instead of being overworked.

Other protective methods that would help with coping include accepting the risks and keeping a positive mindset because people are being helped because of them. The sense of isolation that intensive care staff experienced also contributed to the likelihood of suffering from PTSD (Lee et al., 2022). Isolation occurred when healthcare workers could not go home often, receive love and support from their family members, or have familiar interactions before the pandemic. By studying the impact on HCWs, new policies and legislation could be implemented. This could also reduce the stigma of the healthcare system and mentally ill HCWs.

2.5.2. Causes and Symptoms

There are many causes for Post Traumatic Stress Disorder. It affects almost 7%-8% of the global percentage in their lifetime (Wolmork, 2023), as several stressors are present which could be harmful or threatening to a person's life. Certain events are seen as more stressful to individuals, whilst others may be unaffected. These all depend on the varied risk and protective factors that a person experiences in their lives.

Being in a situation which re-occurs affects a person more compared to an individual who experiences something only once (Mind, 2021). In the case of healthcare workers such as intensivists or critical care workers, repeated trauma occurred as individuals could not leave or escape the situation. This is also known as secondary trauma (Mind, 2021). In the aetiology of PTSD in the DSM-5, it is crucial to emphasize that secondary trauma solely occurs as a result of exposure in the workplace (Burke et al., 2019). Another major protective or risk factor could be the support received from friends, family and loved ones. Depending on how it was viewed, it could be a risk or

protective factor. If there was little or no support from loved ones, a risk was created, and if loved ones gave much support to colleagues or senior management, it was a protective factor.

The above causes or symptoms are not exhaustive for PTSD but are relevant points necessary for this research. Re-experiencing is commonly recognised in PTSD, whereas an individual has flashbacks, nightmares or intrusive thoughts about the traumatic event. During these re-occurrences, individuals may feel like they are in the moment again, and it is a real experience, i.e. not just in their minds. They may also experience shaking, sweating, nausea or pain (NHS, 2022, Burke et al., 2019).

In the context of PTSD with intensivists and critical care nurses, avoidance was one of the most difficult for healthcare workers as they could not avoid these stressors due to these stressors being a necessary part of their work. (Burke et al., 2019). Stressors, in this case, referred to patients being critically ill due to the coronavirus, dying alone, being overwhelmed by the influx of patients being admitted, being understaffed and not having enough equipment for their patients and themselves (PPE) (Michel-Puga et al., 2020). Nonetheless, these intensive care workers could avoid speaking about the COVID-19 pandemic by repressing the memories that had carried a lot of negative feelings and thoughts for them. By repressing these feelings, individuals may have started to lose feelings of happiness in performing their jobs. They may not see it as a satisfying activity, which may lead to depression, anxiety, or even suicidal ideation. The effects correlate with the negative cognition and mood cluster of symptoms (Post-traumatic stress disorder, 2023; Burke et al., 2019).

Burke et al. (2019) mentioned how it affected other aspects of a person's daily life. It is possible that individuals experienced difficulty recalling certain aspects of the distressing incident as a result of dissociative amnesia. The mood of that person was also affected by their behaviour and thoughts for other situations such as work or their private life (American Psychiatric Association, 2022). The last cluster of symptoms was where an individual was in a state of constant arousal or hyper-arousal (NHS, 2022). An intensivist or critical care worker who had gone through this would have experienced a feeling of being unable to relax or able to escape from the memories of their work lives (Post-traumatic stress disorder, 2023). This also affected the amount

of sleep they got or whether they experienced complete sleeplessness. They might have also been unable to concentrate during work which can have dire effects on patients if they cannot focus during life-saving medical procedures.

2.5.3. Treatments

Even though there are many identifiable symptoms, there is still hope to be found in the treatments of this disorder. It was and is never too late to find treatment for a disorder, no matter the circumstances or how long it has been since the traumatic event. Trained professionals such as psychologists and psychiatrists can choose cognitive behavioural therapy or medical treatments for these symptoms.

Initially, an assessment will be performed to determine the symptoms that an individual and the specialist will identify to ensure that the treatment is individualised and specific. If the symptoms occur for less than a month, individuals can monitor these symptoms to see if they improve or worsen as time passes.

Cognitive Behavioural Therapy (CBT) instructs individuals on how to reconcile with distressing experiences and adapt to the subsequent transformations in their lives. Symptoms such as stress or fear about the event would be discussed to improve the mental well-being of the person involved. These symptoms would be the most helpful for individuals like healthcare workers because their health could improve their perspective on working during the pandemic. This therapy usually occurs between 8 to 12 weekly sessions for around 60 to 90 minutes (NHS, 2022).

These forms of therapy could help intensivists, and critical care nurses deal with their experiences and ask for help. If CBT was not effective, many other therapy approaches could be tried. A therapy approach may work for one individual but not for another. Medicines are prescribed based on individuals having underlying symptoms making it difficult for CBT alone to relieve symptoms. Doctors will typically prescribe a dosage suitable for the individual and inform them of the side effects and precautions of the medicine being used (NHS, 2022).

2.6. Conclusion

In the second chapter of this thesis, a comprehensive literature review was undertaken to provide an overview of the factors pertinent to the study. The primary topics addressed encompassed crucial background information essential within the context of SA. After the study was completed, there was more information specific to critical care staff at a hospital in KZN.

The first main heading discusses COVID-19 or the coronavirus and details how it impacted individuals' lives, such as healthcare workers, and patients. The history of the pandemic versus the current view tells us about how COVID-19 progressed over time and its general effects. These were not solely related to or focused on the connection of PTSD. The perspective on international and national views solved the problems that accompanied the pandemic. Vaccines and testing during the pandemic were also a necessity related to finding solutions to the pandemic.

The second and third topics distinguished how healthcare workers versus critical care staff in the hospital were prioritized. The second heading mentioned factors which affected all healthcare workers due to their jobs. It broke down what could be done to assist them and their importance in the pandemic. The third topic also discussed healthcare workers but looked closely at the healthcare workers from this study specifically. The intensive healthcare workers also had many factors which challenged them in completing their jobs during the pandemic.

Similarly, there was a distinction between the fourth and fifth subheadings of mental health and post-traumatic stress disorder. Even though these topics overlapped slightly, they could not be combined into one subheading as it would not accommodate the need for a specific focus. These chapters provided context on the national perspective and highlighted the problems which could be solved in the results chapter further in the research.

Chapter 3: Theoretical Frameworks

3.1. Introduction

In this section, an exploration is conducted on the theoretical perspectives that are essential for comprehending the study. The aim of these theories is to elucidate the reasons behind why certain intensivists and critical care nurses encounter the effects of post-traumatic stress disorder (PTSD) while others do not. The following theories examine the influence of the individual's surroundings and the difficulties they encounter as a result of the COVID-19 pandemic. This section situated the traumatic experiences within the literature that has been reviewed, and the theoretical frameworks presented offer a crucial foundation for gaining a deeper insight into PTSD within the context of the COVID-19 crisis.

A list of the theories and approaches in this chapter include:

- Biopsychosocial Approach
- Ecological Systems Theory
- Contemporary Trauma Theory
- Cognitive Theory
- Social Cognitive Theory
- Narrative Cognitive Approach

3.2. Biopsychosocial Approach

In O'Neill (2011), the biopsychosocial model was not used in SA due to the biomedical approach being used more often. According to O'Neill (2011), this has led to inequality in the health domain. This inequality limited the focus on the mental health of individuals admitted to hospitals. If physical symptoms of an illness were the sole focus, the mental health aspects would be neglected. A more holistic approach would be integrating different health aspects, such as psychological health and the social elements derived from the environment

(URMC, n.d.).

As depicted in the biopsychosocial model below, different categories interacted within the model to find the influences exerted on each other. These aspects of the model described examples of what was included in each category of this approach. In the centre of this diagram (Diagram 3.2.1.), mental health was seen to be a combination of biological, social and psychological health variables. The diagram indicated that mental health is comprised of many different factors which overlap and influence each other. According to U.R. Medicine (n.d.), all these factors should be acknowledged and emphasised when deciding on a therapeutic solution to improve mental health. However, Physiopedia (n.d.) has also noted that a criticism of this model is its subjectivity and the data obtained for every individual cannot be tested. In this way, the model could be inconsistently used as there would be different factors to be considered for each individual (Physiopedia, n.d.) This approach was also not used consistently in education, healthcare, research, and work settings which made it challenging to locate consistent results.

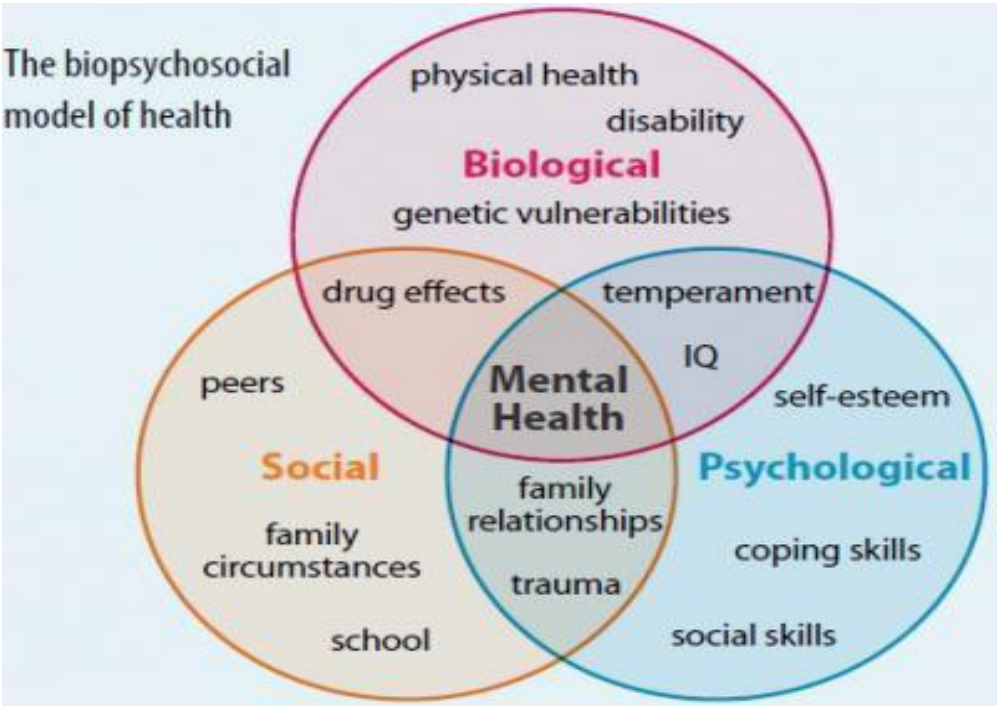

Diagram 3.2.1. The biopsychosocial model of health (Physiopedia, n.d)

The biopsychosocial approach exists on a continuing sequence of systems that are found naturally. In diagram 3.2.2., the hierarchy of the biological systems is distinct, yet all are needed to be understood regarding a person. In the second diagram (Diagram 3.2.2.), there was an emphasis on understanding how health and illness could be contextually understood. The biopsychosocial model should be incorporated in SA as opposed to the current biomedical model which solely utilises physical symptoms to diagnose an illness (Scott, 2020).

Diagram 3.2.2. Hierarchy of Natural Systems (Adapted from URMC, n.d, p 1.)

This biopsychosocial approach was chosen and discussed during the research proposal of this research study as it was a critical theory needed to understand the results that followed. The government focused on ways to help patients and healthcare workers by looking only at the narrow biomedical aspects of illness. Borrell-Carrió et al. (2004, p. 576) described this as "the dehumanization of medicine and dis-empowerment of patients". The biomedical model has undertones of being ‘cold and impersonal’. Researchers in the biomedical model could not neglect the human factor as it encompassed the different aspects of the person (Gask, 2018). It was vital to understand which treatments would contribute to the well-being of an individual. However, the biopsychosocial

approach also looked at reducing health costs by considering specific treatments for patients and could be indicative of how different approaches to healthcare benefited different individuals (Wade and Halligan, 2017). Reducing any part of the biopsychosocial model takes away from the well-roundedness of this approach. To move forward with finding optimal treatments for intensivists and critical care nurses, there needed to be a broader focus on all three aspects, namely biological, psychological and social aspects.

Applying the biopsychosocial approach to a real-world application, such as in healthcare settings (hospitals and clinics) can utilise more helpful solutions, especially in the medical field. Relationships central to the individual should be recognised to determine which factors impact their overall health. For example, some relationships that could impact their health may entail those between friends, family, colleagues, or partners. These relationships do not necessarily have to be wholly positive or negative, simple or complex. These relationships have to be considered as they affect different people in different ways. The patient's life circumstances should also be factored in to view their lives holistically.

The individual's history stems from childhood and investigates how the individual has developed specific protective mechanisms. These protective mechanisms could be used as a buffer against trauma that arose during the pandemic and envisioned strengthening them. Therapists could identify risk factors which worked against the individual and made them more vulnerable to trauma. Strengthening protective factors involved ensuring that individuals learned about the importance of risk and were conscious of their impact.

Therapists must decide which aspects of these domains from the psychosocial model are essential to the patient's health because this creates a multidimensional therapy plan. The way to recognise the domains was to discuss the therapy plan and goals hoped to achieve in detail. The person experiencing trauma could work with a therapist and go forward from there. As it is a subjective approach, patients could also take charge of their healthcare and make changes by collaborating with medical specialists. This collaboration moves towards a client-centred

relationship which manages expectations from relationships between healthcare workers and patients (Borell-Carrió et al., 2004).

This biopsychosocial approach could be utilised for patients, doctors and healthcare workers. Having a patient-centred approach could help the healthcare worker release some power to the patient by creating a solution together. It could also be utilised in this study for the sample population of intensivists and critical care nurses by treating them with the same approach they would treat their patients. Their lives also consisted of different dimensions necessary to understand the trauma that formed during the pandemic. By interpreting the responses given by the participants, it was easier to understand their perspectives and determine the best therapeutic solution for them.

3.3. Bioecological Model

The importance of the biopsychosocial approach had been discussed above, and its benefits were crucial to help traumatised individuals However, the initial approach is comprehensive in focus and could be time-consuming to execute. Using the biopsychosocial theory, along with the ecological systems theory provided the direction on what to factor into the treatment. In this theory, an approach that was broad, yet specific could have been more helpful (Hoffman and Kruczek, 2011). Instead of these two theories contradicting each other, they could be used in conjunction with each other to get the best result in minimal time. This approach used a clear framework to demarcate which individuals and systems should be of focus.

Bronfenbrenner and Ceci, 1994 (as seen in Hoffman and Kruczek, 2011) initially created this updated approach regarding large-scale catastrophes and finding multifaceted ways to deal with the aftermath of these disasters. The initial approach of the ecological systems theory did not include interventions and prevention during disasters. In contrast, newer versions included topics necessary for the solutions that trauma required. Using this approach was also different as it took into consideration the vocational disruptions that occurred during a disaster. In the context of this research study, it was necessary due to the COVID-19

pandemic creating several disruptions, from increasing the daily workload to affecting the psyche of individuals.

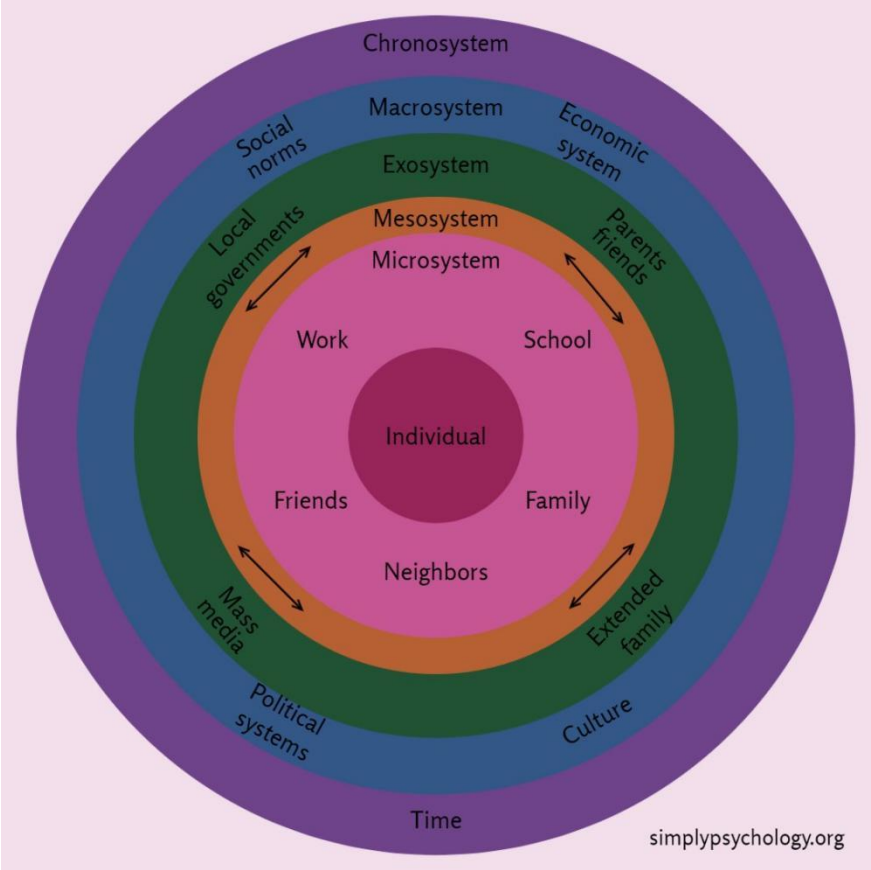

Diagram 3.3.1. The Bioecological model (Guy-Evans, 2020)

Diagram 3.3.1 shows the Bioecological model explaining the differences between this model and the biopsychosocial approach. The Bioecological model and the biopsychosocial model are two different approaches to understanding human health and development. The Bioecological model focuses on how different environmental systems, from the immediate to the broad, interact and influence the individual over time. The biopsychosocial framework takes into account the impact of biological, psychological, and social elements on an individual's overall health and susceptibility to disease. Both models recognize the complexity and interrelatedness of various factors that shape human behaviour and outcomes.

The connections between the different levels are in diagram 3.3.1. show the relationships between the individual and their environment. These relationships

are crucial in determining whether these systems help or hinder the process of moving forward from mass trauma. In biophysical responses, fear responses come from stimuli connected to trauma (Foa et al., 1992, as seen in Hoffman and Kruczek, 2011). This re-experiencing symptom cluster of trauma is seen in PTSD, such as nightmares and intrusive memories (Cohen et al., 2002).

De Candia and Guarino (2015) explained why this response was necessary for mass trauma. Additionally, in terms of the pandemic, individuals preferred the denial of the trauma of healthcare workers by calling them 'heroes'. If these heroes also needed care or support, they would not be accepted as heroes. Denial was much easier than putting in the work of changing the reality of the societies in which we lived. The amount of work needed to reconstruct the medical field to benefit healthcare workers' mental health was seen as too much but could prevent mass trauma from reoccurring in the future. The first step was to admit that change needs to occur. This change needed to come from different levels of the Bioecological model to work together and create a better support system for trauma.

3.4. Contemporary Trauma Theory

Contemporary trauma theory was used to understand the impact of trauma from the biopsychosocial approach. It looked at how the fundamental underpinnings of trauma affected adults and children in various ways. Goodman (2017) introduced three basic assumptions as critical elements to understanding contemporary trauma theory. Traumas refer to an occurrence or a sequence of occurrences encountered by an individual. These occurrences were either physically or emotionally detrimental, posing a threat or overwhelming the person, and subsequently leaving long-lasting impacts on their ability to function in their everyday activities. Following this, there was a maladaptive change in the individual's life concerning the biopsychosocial life. Biologically, it affected brain development, decreasing cognitive growth (Lizeretti et al., 2012; SAMHSA, 2012). Emotions and behaviour were also seen as becoming maladaptive from this perspective. By using the Contemporary trauma theory, the change in perspective was seen from not blaming an individual for their lack of coping but

instead seeing them as being psychologically injured. These injuries required intervention for the individual to move past their trauma and maladaptation to heal (van der Kolk, 2014; Williams, 2006). This theory was created as a theoretical framework by focusing on how the person functions after the traumatic experience.

Several properties were used to detail the individual's response to trauma. The first property was seen in disorders like PTSD, making it possible for individuals to continue functioning even after a traumatic experience. The first property that would be discussed was dissociation. This property involved the mental health trick focused on disconnecting from thoughts, feelings or memories that stemmed from traumatic events. These healthcare workers' sense of identity was also influenced when dissociation occurred. This could lead to dissociation disorder or dissociation identity disorder if it is not treated in extreme cases (Better Health, n.d). This disorder could treat itself in cases not seen as extreme such as when individuals' dissociation did not stem from post-traumatic disorder or schizophrenia (Wiginton, 2021).

According to Goodman (2017), dissociation is a defence mechanism against violent trauma that enables individuals to continue living after a traumatic event occurs. This dissociation often helped the individual feel that the traumatic experience was inaccurate or that they had not experienced the event. Stemming from that, some may never be conscious of this experience and its related symptoms. The symptoms include spacing out, having flashbacks and memory loss. A distorted sense of reality is necessary after trauma because it makes individuals create a less traumatising reality and gives them a sense of control (Tull, 2022).

Another property that allows individuals to gain a sense of control is called re-enactment or trauma re-enactment. This phenomenon was a way for someone to revisit their traumatic experience. In the case of someone who felt stuck or unable to move on, the individual recreated these behaviours or actions to feel the same

emotions. This recreation could be done consciously or unconsciously until the person feels like they remembered the events from the experience and can move forward while healing from it. Levy (1998) indicated that there were several reasons why individuals re-enacted their traumatic experiences.

These trauma re-enactments had negative consequences, such as continuing the trauma cycle and being unable to move away from the distress that came with it. This maladaptive response of re-enactment also created displaced aggression by recreating the traumatic experience for others. By projecting these experiences onto others, in the context of this study, intensivists or critical care nurses could have felt more in control instead of being controlled (Goodwin et al., (1982) as cited in Levy (1998). The adaptive way of working with re-enactment was more flexible and allowed the individual to confront all parts of the experience until it no longer caused distress.

Attachment also plays a major role in trauma. According to the Contemporary trauma theory, trauma has a long-lasting effect on the individual's ability to create fulfilling friendships. In this study, the participants might be unable to form a healthy relationship (Goodman, 2017). Individuals may feel it difficult to trust others if there is a sense of pointlessness which comes from traumatic experiences such as the ones created by the pandemic. Creating a secure attachment with other healthcare workers was more likely to ensure ease and prevent additional stress. These valuable relationships could also be extended out of the workplace and impact friends, family, partners and other loved ones. External workplace relationships provide external support; if that support is cut off, it is more likely that individuals will have long-lasting adverse effects (Tarren-Sweeney, 2013). This could be seen when healthcare workers such as intensivists and critical care nurses could not meet their loved ones during the pandemic but could use technology and social media to check in with them.

Lastly, the long-term effects could continue if individuals did not treat their trauma as it could impact them later in their lives. These long-term difficulties could stunt emotional and mental growth in the individual's life, preventing them

from moving on from the difficulties. This difficulty could impact the physical aspect of growth, leading to co-morbidities or mental health problems (Goodman, 2017). According to van der Kolk (2014), as found in Goodman (2017), emotional growth is stunted by constantly being vigilant, causing insomnia, agitation and anxiety. Individuals cannot self-regulate when they have not moved through the trauma in their lives.

It is for this reason that Contemporary trauma theory is important while discussing trauma. It corresponded with this research topic regarding the impact of trauma and how individuals could focus on these effects. It could also help to understand how traumatic experiences are broken down into their constituents and the obstacles needed to overcome trauma. This theory linked with the study in that it provided greater insight into what the healthcare workers had gone through and might have gone through if they did not get help for the trauma that had been experienced. However, these experiences varied in difficulty and were person-centred. It is required to also factor in the levels of resilience and coping in each person.

3.5. Cognitive Theory

Cognitive theory is based on an individual's thoughts and actions based on emotions. Certain emotions could lead to adaptive behaviours which were healthy for the individual, while others could create an unhealthy plethora of behaviours. The conceptual premise of this theory is that a disturbance in emotions leads to maladaptive thinking (Di Giuseppe, 2016). This new way of thinking creates a continuous thought pattern until maladaptation is resolved. By doing this, an individual is forced to confront the thought process and find ways to change it to an adaptive one (Fritscher, 2020). Cognitive theory has had major developments in trauma and the field of psychology. This theory was considered in the way that maladaptive behaviours were not static and used different therapeutic strategies for individuals to overcome these behaviours. The theory's premise relied on comparing a computer and the individual's mind (Fritscher, 2020). The delays faced by the individual and their learning abilities were due to cognitive processes being unable to complete tasks (Valamis, 2022). Thoughts

influence emotions which in turn influence behaviours. These three components are integral in creating the desired outcome to move past the traumatic disturbance.

3.5.1. Social Cognitive approach

The social cognitive theory branches out from the cognitive theory to describe the influence exerted on one another through social interactions. Individuals observing different behaviours work toward learning desirable and undesirable activities or behaviours more beneficial to their lives (Valamis, 2022). By focusing on one specific behaviour, the mind needs to expend more energy to focus on the desirable or undesirable behaviour. This technique is generally known as 'modelling' and is commonly used to treat phobias. External influences that impact people were relevant to research because they enable a specified approach while narrowing down the context. The approach to this study was more feasible and less time-consuming. There is also an emphasis on working together to achieve goals one needs help to complete (Johnson and Johnson, 2015).

Cooperation is a crucial aspect of Social Cognitive theory in that after the goals are completed, the mind can retain the process of achieving a similar goal in memory and repeat the process for the individual. Self-efficacy is another concept that allows individuals to reach a goal by determining whether they believe in themselves to reach a goal or the capability to achieve it (French, 2015). If they have confidence in themselves, they believe behaviours are under their control (Conner, 2015). These different concepts are helpful because therapists can provide a new perspective for engaging with trauma and focus on the cognitive ability of trauma survivors.

3.5.2. Cognitive narrative approach

Corey et al. (2017) emphasise the assumption of multiple realities, i.e., many versions that depend on the person. An example which is relevant to this research paper is the COVID-19 pandemic. The critical care staff may have had a different

view on what happened during the pandemic, whereas patients who went through the same pandemic responded with their perspectives differently. How the perspective is narrated is essential because it helps individuals become aware of the stories narrated to others and themselves. These stories have different characters, plots and themes and can help them take control of their stories. The emerging themes can help the individual see which themes have been redirected and taken into the person's personality. With the Cognitive Narrative Approach, individuals can break these self-reinforced themes and have a voice regarding their experiences. This approach changes the narrative from what happened to them to their reaction to how they handled that situation (Watson, 2012). Individuals can reclaim their voices and develop coping skills if this approach is successful when working with clients. These coping skills are instrumental in the way that they can promote resilience in healthcare workers for any future difficulties or pandemics.

3.6. Conclusion

In the third chapter of this dissertation, there are four main approaches or theories and two sub-approaches to describe trauma and PTSD. The origins and key concepts of the various theoretical frameworks and how they relate to the current study were discussed. These theories are namely the Biopsychosocial Approach, Ecological Systems Theory, Contemporary Trauma Theory, Cognitive Theory, Social Cognitive Theory, and Narrative Cognitive Approach. The theories' differences help describe approaches that can take on differing views of trauma. The theoretical approach that was used in this research paper was the biopsychosocial approach which incorporates the definition of the medical and social aspects of trauma. This produced a wider scope of the results from the study and provided multiple directions to view the results. As the participants had different factors which influenced their lives and the creation of their trauma, it was better to use this approach in the context of the study. Each participant's viewpoint was considered as their perspectives were valued due to their subjectivity. This approach could also be used to speed up the process of finding specific treatments for individuals with trauma that stemmed from different factors, both for healthcare workers and other frontline workers. In each of the

theories mentioned, properties which pertained to each theory were discussed and its relevance to the research study's topic was also included. These trauma-related theories found different aspects to be focused on, which ensured that many different options were available when finding treatment solutions.

Chapter 4: Research Methodology

4.1. Introduction

This section provided an in-depth examination of the research methodology employed in this particular research investigation. The process of data collection and analysis played a crucial role in comprehending the overall structure of this chapter, as it presented the subsequent data findings in the following chapter. The data collection approach utilized a mixed methods research design that followed a sequential pattern. This design consisted of two components: a checklist utilized for the initial diagnosis of PTSD, and a semi-structured questionnaire aimed at gaining insights into the experiences of the study participants, who were ICU doctors and nurses. The purpose of adopting this approach was to align with the phenomenological perspective, which sought to explore the first-hand experiences of these individuals during the challenging period of the COVID-19 pandemic.

4.2. Research Design

The interpretative research paradigm was chosen to apply in this study, which corresponded with the research aims provided in the first chapter of the dissertation. In this research paradigm, individuals' subjective experiences were identified through semi-structured questionnaires to find the meanings behind their social actions (Steyn, 2017). The ontology (nature of reality) presumes that the reality of the social world is subjective and formed by how individuals experience the world (Research Methodology and Design, n.d). These experiences formed an internal reality that could be studied by researchers. These experiences could be studied using daily interactions, the routines of these healthcare workers (intensivists and critical care nurses), and the interactions between them and other individuals. The personal reality was created based on the context of that individual and could not be generalised to another person (Yuli, 2018). This approach could also lead to a group-shared reality. An individual who shared a standard part of reality with someone, but simultaneously, details of the experience differed between individuals.

The epistemological assumption was subjectivist, as cited in Steyn (2017) and Cohen et al. (2006). Due to the subjective nature of this research, the researchers could not separate themselves from the research context. The true meanings of subjective realities stemmed from natural conversation and not forced settings. An empathetic approach to the participant's perspective allowed subjective meanings to arise. The researcher had to ensure that their personal biases did not influence the participants, whether they consciously or unconsciously existed. The lack of bias also helped the research participant explain their meanings uninhibited. The researcher used qualitative and quantitative methods (a mixed methods approach) for this research project, using a semi-structured questionnaire and PCL-5 Checklist to identify hidden meanings derived from the participants. A mixed methods approach was necessary because it allowed more information to be collected quickly and integrated the benefits of qualitative and quantitative data (Terrell, 2012). Another benefit of the mixed methods approach was that the qualitative and quantitative approaches could improve the strength of the study when used together. (Creswell and Clark, 2007 as cited in Creswell, 2009). When qualitative data is normally regarded, the small sample size cannot be generalised but by using quantitative data with the qualitative data, the generalisability strength can be increased (George, 2021). Both types of data could describe the research problem most efficiently. The mixed methods approach could also provide a holistic perspective of a phenomenon that has taken place by providing deeper insight (Wasti et al, 2022). In this dissertation, the phenomenon indicated is the COVID-19 pandemic. Due to this mixed methods approach being an integration of qualitative and quantitative approaches, disadvantages could be that the researcher had to be familiar with both methods and that there could be more time taken to complete the study (Regnault et al, 2018). This could be difficult if there was a time limit for a research study to be completed. However, these disadvantages could be mitigated by the advantages of the mixed methods approach.

These pieces of information were then coded using content analysis to locate emerging themes as seen from the participant's responses to the questionnaire. The epistemological and ontological views were the same for the mixed methods

approach. The qualitative data informed the reader about the effects of the COVID-19 pandemic. The quantitative data from the PCL-5 Checklist informed the readers about the score that identified how high their provisional PTSD score is. These two data types examine how the participants reacted to the pandemic. The PCL-5 Checklist indicated whether respondents would benefit from therapy or not. Since the checklist was not a stand-alone assessment, the semi-structured questionnaire further indicated whether the respondent would benefit from the therapy based on their written responses.

4.3. Research Approach

The research approach for this research project used phenomenology to understand the COVID-19 phenomenon. The phenomenological approach studied a particular phenomenon and how commonalities existed in different people (Chambers, 2013). A phenomenon was seen as an experience which could have elements to it which were unexplained and questioned why it occurred. This research project focused on intensivists and critical care nurses and what they had experienced during the COVID-19 pandemic. It also factored in research participants who were provisionally diagnosed with PTSD (via the PCL-5 checklist) and experienced symptoms while working with COVID-19 patients.

Phenomenology branches out into three categories, as per Dudovskiy (2022), and these were discussed as follows:-

- Transcendental Phenomenology: This approach focuses on studying the structures of the consciousness through the parts of the experience that had occurred (Yee, 2019).
- Existential phenomenology: This branch focuses on deepening our understanding of experiences through the meanings that one made in their personal lives and how choices led to different behaviour and actions (SeattleU, n.d.).
- Hermeneutic phenomenology. The focus was on making meaning of lived experiences as unique experiences (Goble, 2014).

In this research project, the chosen phenomenology is hermeneutic phenomenology. This approach followed the school of thought that already saw our world as full of meaning (Goble, 2014). Hermeneutic phenomenology helped individuals learn from each other and find meaning in each other's experiences. Neubauer et al. (2019) considered how these meanings also influenced their lives through their decisions and behaviours. Researchers could interpret and describe these meanings to find common themes in their narratives to understand the phenomenon's impact (Hellman, 2016). This phenomenon was the COVID-19 pandemic and looked at how different healthcare workers were influenced by this virus. Focusing on this phenomenon was essential as it affected humans globally.

4.4. Sampling

The data sources most appropriate for this study included intensivists and critical care nurses who had been in contact with COVID-19 patients. The rationale behind this was to assess how the provisional diagnosis of PTSD had affected them regarding their professional lives as intensivists and critical care nurses. It was important to note that no tests had been done before this study to indicate that the research participants had PTSD. Therefore, the PCL checklist has been utilised for this very reason. The PCL-5 checklist can be administered along with another research method such as a questionnaire to determine an initial diagnosis. This diagnosis had to still be further substantiated by their responses to the questionnaire. For the provisional diagnosis of PTSD, the total scoring amount from the PCL-5 checklist must be over 31-33 as these determine whether the individual could benefit from PTSD treatment (National Centre for PTSD, n.d). This checklist had been used to assess the possible PTSD symptoms that correlated with the DSM-5 criteria (National Centre for PTSD, n.d). It also aimed to discover how hospitals could create treatment options for the participants to manage the symptoms of PTSD.

The sampling method used was non-probability sampling, and purposive sampling, as this allowed for the inclusion of characteristics relevant to this data. These characteristics included being an intensive care doctor or nurse in a South African public hospital with a functioning ICU. The public (government) hospital had to be

located in the province of KZN. This chosen hospital had an estimated eighty ICU beds almost a hundred high-care beds in their facilities, and two hundred beds that could be used additionally (KZN Health, n.d.). A private hospital was not chosen due to private hospitals had more resources available during the pandemic and were not an accurate representation of the country. Choosing intensivists and critical care nurses from this hospital provided insight into what occurred in a public hospital and provided more focus for the study. In the initial research proposal, participants were supposed to be from a different hospital in KZN, but the time constraints were difficult and could not be accommodated by prospective participants. Additionally, interviews were supposed to be completed but potential participants were unwilling to do so. The sample size and location were changed. The research method was altered to include critical care nurses and intensivists from another hospital in KZN with more participants who were willing to do the study with semi-structured questionnaires instead of interviews. Semi-structured questionnaires were also considered more time-practical than interviews to avoid repeating the same difficulties at the first location. These semi-structured questionnaires were helpful as they allowed the participants to answer questions expeditiously.

Thus, purposive sampling was more descriptive and relevant. The sample size was expected to range between 6-8 intensive healthcare workers who provided descriptions of the effects of COVID-19 on themselves as intensive healthcare workers. Since qualitative data was used to explain certain phenomena, data was aimed to produce similar results in different contexts to individuals of the same characteristics (Steyn, 2017; Hammarberg et al., 2016).

Some limitations for acquiring the sample size had been that individuals could not recall the information about what they had experienced as they might have repressed those memories. This limitation could be resolved by posing open-ended questions that allowed the individual to consider their experience.

4.5. Data collection

Since having a mental health condition is highly stigmatised (Egbe et al., 2014), healthcare workers may have felt reluctant to discuss their experiences with the

ongoing epidemic. Finding willing participants, during the pandemic was a challenge. However, scientifically sound research hinges on complete confidentiality, which could be the key to collaborating with intensivists and critical care nurses. Each individual was handed a booklet which contained an information sheet, an informed consent form, a demographic questionnaire, a short structured questionnaire and a PCL-5 Checklist.

The purpose of this mixed method was to explore the biopsychosocial effects of intensivists and critical care nurses during COVID-19 and to explore more about the experiences that they had during this time. Due to these objectives being studied, the explanatory sequential method was utilised. First, quantitative data was collected and thereafter, qualitative data was explored to better explain the quantitative data. Semi-structured questionnaires were used as they did not limit the responses to pre-determined questions as in the case of a structured questionnaire (Angola Transparency, n.d). The same questions were posed to everyone, but the responses varied based on the individual (no limit of answers) (Researchgate, 2014). The semi-structured questionnaire approached the individuals' thoughts about an experience and allowed the researcher to learn more about it (Pollock, 2020).

These methods were considered appropriate because they allowed the researcher to gain as much information as possible within the time limits that individuals had to participate in the study and respond to questions. A broad range of categories were encompassed within the semi-structured questionnaire such as emotional responses, personal and professional experiences, and leadership. The initial coding of the data was broken down into categories that have already been decided by research found in earlier chapters, nonetheless, these themes could still change based on new emerging categories. This process to find themes occurred more than once to represent the data most authentically. For the data to be accounted for as being credible, this research study took place when there were many political, social and cultural influences which could affect the results of this research.

However, the data that was collected was also coded systematically to reduce these influences or determine the extent to which these influences varied from one person to another. Bracketing occurred to maintain an empathetic attitude that

allowed participants to purport their frames of reference without the researcher's preconceptions interfering with the derived responses (Steyn, 2017). Bracketing refers to the phenomenological approach to diminishing personal bias when conducting the research study (Creswell, 2003 as cited in Weatherford and Maitra, 2019). These biases came from unconscious perceptions and beliefs that the researcher was not aware of (Dörfler and Stierand, 2020). By making the researcher aware of these biases, they can refrain from communicating these biases to the research participants to get a clearer picture of the event being described (Weatherford and Maitra, 2019). Since the lived experiences of intensivists and critical care nurses were being described, the researcher's perspective should not alter such experiences according to their own beliefs. Tufford and Newman (2010) further indicated that this process of bracketing could protect the researcher against sensitive topics that could emotionally affect them. Despite trying to use bracketing to increase rigour (Tuffman and Newman, 2010) in the research process, the criticism of bracketing includes the inability to abandon their perceptions and beliefs. These beliefs may also help the researcher to have an open mind when they are aware of these biases to manage them during the research process.

Transferability was achieved using the research context's description to find the central aspects of this research, which were shared amongst other research contexts. An example of this would be hospitals, where many individuals face extensive workloads that could increase the severity of their mental health. These results could transfer to research contexts influenced by the pandemic, such as other frontline workers like as police officers or retail workers. Since this data also contained richly detailed descriptions, triangulation could be attained through cross-checking information from different perspectives of participants and researchers. This triangulation method could also be seen from multiple sources of information, from the managers of healthcare workers to colleagues of healthcare workers (Korstjens and Moser, 2018).

4.6. Data analysis method

The descriptive data from the semi-structured questionnaires used coding to identify

themes in healthcare workers' responses. Coding refers to the qualitative process of doing a line-by-line analysis of the research questions and responses (Dissertation Centre, 2013). Initial codes were then categorised by finding similarities between the codes. These questions were analysed using inductive content analysis which indicated the emerging, hidden themes from the participants' responses. This inductive approach was more exploratory and was able to allow for flexibility in finding these themes for the research study (Delve et al., 2023). It also enabled a deep understanding of the phenomenon that was studied to identify patterns that existed in the data contents (Delve et al., 2023).

These themes were further clarified by using qualitative data analysis software called ATLAS. ti. This software was able to reduce the time taken by data analysis by 90% (ATLAS. ti, 2023). This software improved efficiency and could further enhance the themes that were determined after the initial analysis. It indicated valuable insights which could help the researcher to make informed decisions about which themes to consider in the results of this study.

Using the mixed methods approach, the researcher found the sum of the results in the PCL-5 Checklist to understand the severity of these participants' mental health. A higher score correlated to a higher severity of PTSD. Along with these scores, the responses from the questionnaire determined which participants would benefit from therapy to improve their mental health.

According to McLeod (2019), six different phases are required to complete the data analysis process qualitatively. Firstly, being familiar with the data which included noting the preliminary ideas about the data. The second phase consisted of creating the codes for this data which could be completed after reading through the data and searching for patterns that exist or were common among research participants' semi-structured questionnaire responses. Thirdly, this data must be categorised accordingly to obtain possible themes from the codes. Completing this phase and organising the data made it easier to understand the data and ensure it worked well for the research project (Braun and Clarke, 2006). In the case of this research study, the use of software was a time-effective solution.

After that, the same information should have been reviewed for the fourth phase of the analysis process. The potential themes found in the categorisation process must be reviewed to check that they are logically derived from the data (McLeod, 2019). In this step, additional themes may be found for the researcher. Next, themes had to be correctly labelled. Accurately identifying themes shows the role in the data set and what this could explain regarding the study results. Lastly, the information was collated into a research report in the sixth phase. If these steps were completed in the order above, it could ensure that the research project was written correctly to best explain the research results.

4.7. Interpretation

It was necessary that during this stage of interpreting the research results, the researcher ensured that personal projections were not involved in the interpretation of the participant's results. Each research participant may have had different themes, which could be seen in the data, and these different themes are all valid. By understanding the results through a phenomenological lens, individual and group-shared realities co-existed in this study. This information was necessary as to focus on what these individuals endured during the pandemic. Some individuals showed differing amounts of trauma than others, and the result explained why that difference exists. Participants with high PCL-5 scores were not able to cope with the increased amount of work and responsibilities as opposed to those with lower PCL-5 scores. This was just one example of the different realities and experiences of these individuals.

4.8. Ethical considerations

In the introduction to ethical considerations which was first covered in Chapter 1, the ethical considerations of confidentiality, anonymity, informed consent, no harm to participants, withdrawal from study, voluntary participation and criminal activities were examined. However, further ethical considerations could be described to ensure that no ethical boundary was crossed.

According to the National Department of Health (2015), the relevance of the study

should respond to the population's needs and work to benefit society. By conducting this research study, the results from this research study could help critical care workers explore their experiences with the coronavirus and find treatments that could prevent these workers from experiencing negative effects without treatment options such as therapy. This could be helpful in future pandemics and could be utilised for frontline workers in SA. The ethics in health research document (National Department of Health, 2015) also details that participation in the study should be more beneficial than the risks that participants could face. The participants in the study should be able to benefit from the results of the study. They would be recommended to seek professional help and share what they have experienced to help them work through their trauma. By resolving these issues, participants would be able to cope with emotional and mental factors that directly impact their daily lives and better focus on their work (Waters, 2022). For other stakeholders in the research such as the hospital in KZN, the benefit would be that more healthcare workers could be retained and the workforce in the ICU could not be reduced. Decreased productivity, burnout, and depression (Leonhardt, 2022) could be indicators of poor mental health and would cause workers to lose job satisfaction or leave the company. Alternatively, feeling valued and appreciated increased productivity rates which could keep healthcare workers in the hospital (Bourne, 2020).

In terms of the analysed data, it should be kept for an amount of time between 5 to 10 years which seems reasonable after the research study was completed (Creswell, 2009). After the time has passed, this information should be destroyed to prevent the data from falling into the possession of other individuals which would break the researcher’s ethical guideline of confidentiality to the participant and the research process. Stemming from this point, confidentiality should also be held in high regard as participants had hoped to remain anonymous. If the government hospital in KZN had asked for information about these participants, it is up to the researcher to ensure that anonymity and confidentiality were not betrayed as this goes against the direct consideration of non-maleficence (American Psychological Association, 2002).

4.9. Conclusion

This chapter contained the information necessary for the research methods being

used in this project. It was vital to consider different parts of the study to further understand how these research methods and designs were implemented. Necessary changes were revised as compared to the research proposal if necessary. However, compared to the research proposal, the research site has changed to accommodate more participants which were critical care nurses. Ethical considerations were also completed to ensure the continuation of chapter 1 but also to include more information about the study and how risks could be mitigated. The research process should be written in greater detail to allow for clarity and credibility of the study.

Chapter 5: Theme Analysis

5.1. Introduction

This chapter focused on analysing themes that emerged from the participants' responses to the semi-structured questionnaire. Firstly, participants of the study were briefly introduced to data that was extracted from the demographic questionnaire. Secondly, in terms of the PCL-5 checklist, the quantitative data that was derived from it was calculated and could be seen in a table (Table 5.3). Thirdly, the participants' direct quotations and emerging themes were discussed. Lastly, treatment options were discussed in terms of which would help these participants and could be used to treat symptoms of PTSD that existed in the participants.

Limited demographic data was discussed to ensure the ethical considerations of confidentiality and anonymity were protected. The process involved the researcher immersing herself in the data and adhering to the thematic analysis method. Once data familiarity was attained, coding was conducted to search and review emerging themes. Thereafter, themes that emerged from the semi-structured questionnaire described the effects of the pandemic on the participants to inform the final write-up. Some of the effects dealt with emotions such as fear and stress, working with an increased workload and not being adequately prepared by senior staff members to handle the influx of patients. This chapter describes the individual's responses to their personal, subjective experiences during the COVID-19 pandemic. The objectives of this study aimed to describe and include the different aspects of the biopsychosocial approach, namely the biological, psychological and social dimensions. These responses also lead to explanations of recommendations from the workers in the public hospital in KZN on how these responses will be clarified through content analysis. By using content analysis, themes varied to match the different questions that were posed to the participants in the semi-structured questionnaires. Finally, treatment interventions would be introduced to understand the most beneficial treatment options for the participants.

5.2. Participant Introduction

A total of seven participants took part in the study. The participants met the inclusion criteria because they worked as intensive care doctors and nurses in the hospital ICU. Secondly, they indicated on the consent forms that they worked directly with COVID-19 patients. In this research study, there were three males and four females. The current researcher had no control over choosing the gender of participants because the recruitment process included sending out questionnaires through a manager who distributed them to participants until the number of participants had been fulfilled. All seven participants have a specific code which indicates which participant is being referred to, i.e. participant 1, participant 2.

Participant 1 (P1) is a doctor who works in the ICU ward (intensivist) and has worked with COVID-19 patients during the pandemic of 2020- 2022 (currently). He is employed full-time.

Participant 2 (P2) is a critical care nurse and his tenure at this hospital is 30 years, with permanent full-time employment as well.

Participant 3 (P3) is a critical care nurse and identifies as female. Her tenure at the hospital has been 20 years, with permanent full-time employment.

Participant 4 (P4) is a critical care nurse and is female. She has worked in the hospital for 20 years as a permanent employee who works full-time at this institution.

Participant 5 (P5) is a critical care nurse and has been tenured at the hospital for 10 years on full-time employment.

Participant 6 (P6) is a critical care nurse and female and has been a full-time, permanent employee at the hospital for 25 years.

Participant 7 (P7) is an intensivist or an ICU doctor. Only two intensivists remain after the COVID-19 pandemic due to a third resigning. This doctor is a permanent worker.

It is important to note that all the participants in this sample population share many things in common such as residing in KwaZulu Natal, having a South African Nationality and being permanent, full-time employees in the hospital. The ages of participants ranged from the mid-30s to the early 60s. The tenure of individuals ranged from 10 years to 30 years of working as a critical care nurse or intensivist. The two intensivists and five critical care nurses who participated in this research project completed the information efficiently. Despite the linguistic diversity among the participants, they were able to take the tests without any issues related to their English proficiency. Their responses to the semi-structured questionnaire allowed for an expansion of details, along with different, emerging themes found in all their responses.

5.3. PCL-5 Results

The purpose of the PCL-5 Checklist was to follow the DSM-5 criteria for PTSD. It stated that it could not be used as a stand-alone test; therefore, it had been used with the semi-structured questionnaire (See: Appendix 6). The responses were used to identify some correlating symptoms shown in the DSM-5 (National Centre for PTSD, n.d) and the participants of this study. These responses were necessary to identify which individuals in this research study would benefit from a therapeutic intervention or treatment. A recommendation for the post-study could include further interviews which could be conducted if individuals scored more than 31-33 points. As mentioned previously, the total score alone could not determine whether these individuals should go to therapy. Their responses and these scores give a better indication of what should happen next, in terms of treatment options.

Below are the scores in a table format. This table summarised which individuals scored under and over 31-33 points.

Table 5.3. PCL-5 Results

Participant:	Total Score:
1	15
2	18
3*	40*
4*	36*
5*	46*
6	15
7	0

*Participants 3,4, and 5 have scored above the 31–33-point cut-off score for this checklist. Based on what these individuals had said, combined with the high scores of participants 3, 4 and 5, they would benefit significantly from speaking to a professional therapist about the problems they have experienced during this time. It would be better for all the research participants, including the individuals who scored below the PCL-5 checklist cut-off score to attend. This would enable the participants to use healthy coping mechanisms for dealing with the constant death in the ICU. These participants would also be able to continue working in the ICU successfully, as they would have the necessary tools to deal with future crises of this proportion.

5.4. Questionnaire results

In this section of the chapter, the different questions and their responses were directly quoted from the answers of different participants and how they had experienced COVID-19. A clear and detailed description of themes was also extracted based on the responses to these questionnaires. Each question's response is related to a particular theme. The seven participants in the research project were represented as P1, P2, P3, P4, P5, P6 and P7. This coding helped to simplify the responses and avoid repetition. The responses were only edited for cases where the context was unclear or confusing to those except the researcher. Using the hermeneutic approach emphasised

in IPA (Interpretive Phenomenological Analysis) contributed to themes that emerged from the transcripts, which were verbatim quotes from the participants. The Atlas. ti software was a data analysis programme that linked the emerging themes to the seven transcripts by their conceptual similarities. These findings also responded to the credibility and trustworthiness of data as they were directly derived from the participants.

5.5. Responses and themes

These findings integrated the importance of linking the study objectives with the aims of theory and data analysis results to give a clearer picture of the confirmation of the study findings. These follow in the next few sub-headings. A summary of these themes and how they were derived can be seen in Appendix 2.

5.5.1. Experiences with COVID-19 in personal life

This question pertained to the different participants' interactions with various individuals in their personal lives. It looked at discovering a way to approach the social construct of the biopsychosocial approach explained in Chapter 3.

P1 described that there was not much of an impact on his personal life as he stated,

> “Not much impact. But there was isolation, but I was not bothered”.

Even with the isolation, the individual was not bothered by the virus around him. He had a tepid response to the relationships as they were not affected by the virus.

P2 described the experience as scary and sad thrust upon the healthcare workers stating,

> “It was a scary, sad experience that we went through”.

Many deaths were seen among friends and family, and the relationship with COVID-19 patients was lost during the pandemic. P3 contracted the virus from working with infected patients, which caused much distress at that point in her life. P3 described it as

> "A very depressing, scary, exhausting experience which was mentally and physically draining."

This description painted a vivid picture of what the participant went through whilst

having COVID-19 and still taking care of other COVID-19-infected patients. Family and friends were fully supportive during this time to provide strength for this worker. P4 described her experience as

> "The most daunting and frightening experience of my life"

but did not indicate the interactions with friends, family, or other loved ones.

P5 talked about

> "The darkest, most depressing pandemic experience and most desensitising two years of my life".

She described it as being a very emotional time, as used by the words "emotional roller-coaster". These emotions ranged from negative emotions such as increased anxiety and nervousness ("nerve-wracking"). She also described the pandemic as giving her the most "humbling time in my nursing career", as she learned many tough lessons during this time. P6 described the difficulty of staying away from loved ones during the pandemic and the feelings of loneliness after work. Additionally,

> "The feeling of constantly worrying during the pandemic about unexpected situations that may arise at any time",

further complicated the feelings of the participants.

P7 talked about his father "dying from COVID-19", which could devastate a person after a loved one has passed away.

5.5.1.1. Theme: The importance of loved ones as a protective factor

As mentioned in Chapter 2, protective factors act as a buffer against stress and other mental health-related problems and are the counterpart for risk factors (World Health Organisation, 2004). Friends, family and loved ones were considered necessary because of their invaluable support in maintaining a healthy life (Pittman, 2020). Looking at the biopsychosocial approach from Chapter 3, individuals need to balance all three of these dimensions to have a positive outlook on their mental health. Family, friends, and other peers belonged to the social dimension of the approach and could work with the individual from birth to adulthood. During neonatal development, a child starts to grow physically but also learns cognitively, socially, and emotionally from their parents (Swartz et al., 2013). The child was then taught necessary skills by their parents or caregivers which allowed a closer bond to form between them. This

bond promoted resilience in the individual and enabled them to combat future challenges. Having loved ones in one's life also helps one to trust others and depend on them (The Family Support Centre, 2020). Knowing that people support a person and can provide empathy significantly promotes resilience (Swartz et al., 2013). When an individual belonged to a family that had created a strong, loving bond, individuals were more likely to overcome different obstacles.

In the participants' responses, many had spoken about the impact of family or friends being supportive during this pandemic. This support encouraged healthcare workers who felt discouraged during the initial stages of the pandemic when lives were lost and there were no existing treatments to save their lives. Support from loved ones inspired and led individuals to a place of peace. The first Coronavirus vaccine became available only in mid-December 2020 (FDA, 2021).

Many theoretical foundations mentioned in the third chapter such as the Biopsychosocial approach, the Bioecological approach and the Contemporary Trauma Theory, are ascribed to the importance of families and loved ones in their lives. Theories like the family systems theory examine how individuals in the family unit interact to influence each other's behaviour (Pfeiffer and In-Albon, 2022). A family unit helps to support other individuals with different issues, e.g. mental health problems, and a change in one can cause a change in other individuals belonging to the family. In the context of this research project, an individual may have experienced a low mood from the experiences at their workplace. Another family member could support them and increase their mood (Corey et al., 2017). Watson (2012, p. 186) described how familial beliefs could "hinder or facilitate pathology or health". This description could also apply when individuals did not feel supported by the individuals in their family unit. Other family members may unconsciously influence individuals, which could also have led to the family unit being seen as a risk factor.

5.5.2. Supportive feelings from friends, family and co-workers

This second question looked at individuals' range of emotions from others and their perception of other people. The focus was on the feelings that these participants experienced during the COVID-19 pandemic.

Question 2 differentiated between support from friends or family and colleagues or employers. Some participants solely focused on the first part of this question, while others responded with answers for both halves. Furthermore, these participants' responses were further described.

P1 had spoken about the understanding nature of friends and family positively, whereas management was described as

> "unsupportive and giving individuals no help when needed".

As of March 2022, the minister of health mentioned that there were currently over ten thousand vacancies available in state hospitals and a little over one thousand three hundred and thirty vacancies for doctors (Maqhina, 2022). In terms of this, management could also help healthcare workers to treat patients.

P2 mentions they

> "prayed together to feel connected to one another and give all colleagues a shared sense of purpose to bring them closer together".

They had prayed for the patients critically endangered by the virus and tried their best to work together for their lives and alleviate patient concerns. The use of technology has played a role in allowing colleagues to phone each other daily to check how they are feeling, as P2 is quoted as,

> "We kept phoning one another daily to ask how we were doing."

P3 described friends as a significant source of support as they both lived through the COVID-19 pandemic. P3's friends were also intensive care nurses who had similar experiences during the COVID-19 outbreak. People who were experiencing the same situation helped empathize with others more efficiently which brought them closer.

However, the downside to being empathetic was that individuals could not differentiate between negative and positive feelings (Israelashvili, 2020). All individuals had different feelings towards the same experience, which were still acceptable and valid. A research study done by Israelashvili (2020) produced results that showed that individuals were less likely to recognise negative feelings from

another's point of view as they projected their feelings onto that situation. They recalled these negative emotions and focused solely on how they handled the situation and did not actively listen to what others had said. P3's family was also anxious for her as she was constantly exposed to COVID-positive patients who were highly infectious.

P4 stated that:

> "family had to support me from a distance because of the fear of infecting loved ones".

Even with the precautions taken by healthcare workers, due to the virus being highly transmissible (Hu et al., 2021), these workers did not want to infect the same people helping them get through this virus. P5 described her family as her 'biggest pillars of strength' who were always there to motivate her when they felt down. Her work friends always tried to motivate each other to keep working and not give up, even when the situation seemed hopeless. P6 had a similar sentiment and included their pets, which provided comfort after a workday. During this pandemic, her

> "pets provided physical comfort for her as she could not get that comfort from others".

Lastly, P7 described feeling supported as his family went through the grieving process, but they were still concerned about him and did their best to be there for him during the pandemic. He says:

> "they (family) were very supportive."

5.5.2.1. Theme: A feeling of being together while being apart

This social theme looked at the importance of our feelings in how they could help us appreciate our loved ones more often. This theme looked at how individuals could feel connected to their loved ones, even though they could not physically be near each other. The feelings during the pandemic from 2020 to 2023 made people reconsider what was truly important to them and helped them to realign with the remainder of the time being fickle and limited. During this difficult time of the COVID-19 pandemic, many individuals could pay attention to parts of their lives that they did not focus on before.

Examples were an appreciation for the loved ones in our lives and how quickly they could be taken away from our lives (Olin, 2020). People have also started to appreciate technology even more as it has enhanced communication and helped them stay in touch with people, even without seeing them in person. Video calls enabled people to see each other through a screen, and although it could not replace real-life touch, it was better compared to not having any other way to communicate. Before this virus, technology was used as a tool to help us connect from afar. The use of technology was by choice, but as the pandemic had started, it was more than just a tool and had become a necessity in life.

According to Olin (2020), 72% of Americans in a survey by the National Research Group stated that there was a positive impact on the way future communication would take place. Sinh (2020) also touched on various lessons learned, such as family being extremely important for providing security and safety. These lessons did not disregard the horrors experienced during this pandemic period. However, it had positive lessons from this dire time that enabled people to work together to make lives meaningful in whichever way possible. Individuals started enjoying the natural scenery and slowed down in the daily buzz of life. People had to learn the art of being creative with what little resources existed in the space of their homes. It was truly unique how individuals learned to adapt so quickly. People learned to appreciate healthcare workers and other frontline workers who were not appreciated before this pandemic as they were called 'heroes' (Shapiro, 2021). Unfortunately, these healthcare workers were also given heavier workloads with very little increase in their pay or a fair warning that there would be no additional remuneration during the pandemic (Olin, 2020; UNICEF, 2020). This pandemic has allowed people to feel more in tune with their emotions and how to support each other. By providing emotional support, individuals have helped each other not to give up.

5.5.3. Initial reaction to working during COVID-19

The third question focused solely on the participants and how they expressed their raw reactions to initially hearing about the pandemic and knowing work had to continue alongside patients who had contracted this deadly virus.

Their responses were as follows:
P1- felt “very concerned and anxious about the pandemic.”
P2- “The situation faced was scary and threatening.”
P3- speaks about being “scared, nervous and afraid for my life and that of my family.”
P4 mentions being “fearful, unprepared, and lacking knowledge of the virus.”
P5 mentions being “petrified at what is about to happen.”
P6 felt “uncertain about the future, anxious and cornered.”
P7 saw his initial reaction as “just being a part of work, and I had to shoulder the burden and move on.”

5.5.3.1. Theme: The consequence of working with fear

During the initial stages of this pandemic, many non-essential workers had the option of staying at home and working remotely. Staying at home followed the South African lockdown from late March to mid-April 2020 (Heiberg and Winning, 2020). This opportunity came with many benefits, such as avoiding the risk of COVID-19 infections and potentially losing employees to hospitalisation or death. Companies could also avoid losing skilled staff members who preferred working at home and refused to return to the office after successfully remote working for over two years (Rossouw, 2022). The other added benefits for employees occurred when individuals could save money and time from daily commutes in their day-to-day workday. These employees also boosted productivity by approximately 30% (Rossouw, 2022).

In the case of healthcare workers and other essential personnel, they were not given the option of working remotely as their jobs consist of interacting with people on-site to provide a service. Critical medical care was primarily available to critical care doctors and nurses at hospitals. Doctors could use technology by utilising video calls to diagnose or check in with COVID-19-positive patients. This technology was helpful as waiting rooms were kept clean and were not overcrowded (Grant, 2022). In the case of hospital healthcare workers, they could not provide remote assistance whilst the working conditions were also unsafe.

Most participants in this research study had expressed their fears by working during this time. While many healthcare workers would probably share the sentiment about

working in unsafe conditions, providing financial support for their families and themselves was necessary. However, making someone choose between their safety and their job was unfair to these individuals. A COSATU (Congress of SA Trade Unions) spokesperson discussed employees' return to work and the circumstances surrounding their return. Employees who felt that the workplace had not followed the COVID-19 regulations could not be forced to return to an unsafe workplace (Nyathi, 2020). They also could not be fired during this time and should have had the option to take accumulated leave days. As seen in Olin (2020), there was already a need for more healthcare workers who could assist patients during this time, and this option did not apply to them in that case. Two months after the lockdown was initiated in SA, more than 300 infected healthcare workers, which had only increased the initial fears of these individuals (Nyathi, 2020).

Fear was a natural response to anything that threatened our safety or health. However, it was also one of the most natural reactions that could help avoid scary or dangerous situations (Stieg, 2020). In this theme, the biological and psychological aspects of the biopsychosocial approach combine to provide a context for how fear was created and what happened to the mind due to it. When this fear was uncontrolled, individuals could not see how it directly impacted behaviours and emotions after that traumatic event. Naugle (2021) mentioned the paradox of feeling fear, as it could help and hurt people simultaneously. When there is an intense fear response, the part of our brain that was involved in decision-making shuts down. The fight-or-flight response was activated instead (Javanbahkt and Saab, 2017; Naugle, 2021). The fear that healthcare workers experienced was justifiable due to something that could harm or kill them or their loved ones. When the body responds to this fear response, the body is reactive and willing to respond to any threat which may arise. Newman (2021) described how this response increased blood flow to muscles with the breathing and heartbeat rates increasing. Glucose is also released to provide energy. This response produced adrenaline (epinephrine), which was a standard response to the fear that every living organism experiences. It is perceived in different ways depending on the animal or person.

Fear produces physical symptoms, which vary from person to person. These physical symptoms could include chest pains, nausea, dizziness, trembling, dry mouth,

shortness of breath, tunnel vision, reduced hearing, pupil dilation and an upset stomach. These symptoms also accompany psychological symptoms such as feeling an absence of control, doomed, overwhelmed or anxious (Fritscher, 2022; Newman, 2021). Feeling fearful over an extended period can lead to chronic fear which occurs when the brain and body are constantly fearful or under threat (Delegran, 2016). Delegran (2016) also mentioned that fear can weaken the immune system, worsening healthcare workers' circumstances. If an individual's immune system was weakened, especially during this time, they were more susceptible to catching the virus. It also impacted their digestive and cardiovascular systems. From a mental health point of view, additionally, fatigue, PTSD and depression were symptoms of long-term fear. Chronic fear impacts memory processing (Delegran, 2016). This fear could make a person anxious as they see the world as frightening, and the scary memories repeatedly affirm that fear in a constant loop. Fear also makes people have impulsive reactions to the mundane and susceptible to feeling emotions more intensely.

To overcome fear, individuals and, more specifically, healthcare workers need to deal with this fear, professionally or personally. These overwhelming feelings could be overcome by checking in with the body and taking deep breaths when there is tension. Finding out more about the triggers that make fear or anxiety worse helps to reduce the fear (Stieg, 2020). These strategies ensure that the body and person function healthily, regardless of the situation. It also helps with improving resilience in the individual. Fear has a slight positive connotation due to individuals being brought present moment instead of ruminating about what could have been done differently and reliving these experiences to keep them in the fear loop.

The good news about fear is that even though it is harmful and detrimental, overwhelming amounts of fear for a long time have effective treatments available via psychotherapy or medications (Javanbahkt and Saab, 2017).

5.5.4. Impact on daily tasks

This question examined how the professional setting impacted healthcare workers (intensivists and critical care nurses). It clarified how the workload changed and what these changes were during the pandemic. P1 said there was

> “a significant impact as it was much harder to work during this time. This impact changed how we worked in the ICU with COVID-19 patients.”

P2 focused on the patients and how this pandemic was created.

> “bad memories of many losing their lives. This loss of life occurred after we tried to keep them alive and save their lives.”

P3 talked about the mandatory mask mandate and how,

> “we still use it today to help prevent infections from individuals who are COVID-19 positive”.

It helped them to increase protection while still being able to attend to individuals who were sick. P4 discussed how,

> “managing staff became more difficult during the pandemic. Absenteeism within the department impacted patient care, which created difficulties among staff.”

P5 talked about being “extra cautious” at work to avoid the virus. P6 mentioned about,

> “the large influx of patients and how attending to so many patients in an ICU ward was challenging. They also mentioned wearing PPE for a long time, which took a huge adjustment, especially when it felt restrictive and bothersome”.

P6 also mentioned that there were,

> “increased feelings of guilt because they could not save their patients”.

P7 describes how

> "The ICU was very busy back then and is still the same”.

Since there was no change in the volume of patients, there was no break or time for relaxation after the different COVID-19 waves (the times when more patients were entering the ICU were entering in higher numbers compared to the rest of the pandemic's duration).

5.5.4.1. Theme: The impact of an increased workload

Most participants explained more about the increased workload in their professional lives and how it has changed their work. These individuals had this increased workload due to the pandemic and pre-existing conditions that occurred in the past. This theme looks at the impact of individuals who continued working during the pandemic and how this impact can be reduced.

During the pandemic, many intensive care nurses and doctors had an increased workload because of the additional medical assistance required for critically ill individuals (Bruyneel et al., 2021). These healthcare workers also worked for extended periods to help more individuals, resulting in fewer hours of rest at the end of their shifts. These shifts ranged between 8-12 hour shifts spanning 3-5 days per week depending on the time worked (Indeed, 2021). A shorter time would be worked over fewer days (8-hour workdays for five days, 10-hour workdays for four days or 12-hour workdays for three days) (Indeed, 2021). The extensive duration of workdays and the apprehension of acquiring the virus or transmitting it to beloved individuals (as observed in the preceding topic) constituted a significant consideration, in addition to various other situations encountered in hospitals within South Africa (Bangalee and Bangalee, 2022). De Beer et al., (2011) described these factors 11 years ago, which are still applicable today. The healthcare system needs more resources, staff, and public hospital beds. These factors lead to 'brain drain' as in de Beer et al. (2011), which occurs when professionals and experts emigrate to find better options with better compensation. Olin (2020) mentioned the unfairness towards healthcare workers when they were expected to continue working in these unfavourable conditions where they were overworked and felt unsafe during the COVID-19 pandemic.

The psychological impact of having an increased workload was depression, fear, stress, anxiety, and burnout (Carmassi et al., 2020). These changes occurred in the individual's private and professional lives. In the workplace, intensive care doctors and nurses must focus solely on what is happening around them, and a mere moment of losing focus can determine the contrast between survival and fatality for the individuals under their care. Other physical and emotional impacts of the coronavirus creating an increased workload include but are not limited to physical exhaustion, low mood, fatigue, insomnia, behavioural changes, changes in appetite, loss of routines and a change in relationships (Mazars, 2022). A repeated theme in research articles shows that the impact of this increased workload needs to be addressed to help workers. This increased workload can be reduced by improving the benefits, such as higher compensation and actively recruiting more nurses and intensivists into the ICU. Healthcare workers also need to be able to receive psychological help from trained individuals to make sure that there is support for those who need it.

5.5.5. Workplace Preparation

This question looked at what hospitals and senior members of management had done to prepare ICU doctors and nurses for the pandemic. It also aimed to question what happened inside the ICU ward to accommodate the influx of COVID-19 patients. P1 has written about the preparations undergone in the unit to receive COVID-19 patients, such as,

> "getting medical equipment needed and securing beds for use".

PPE (Personal Protective Equipment) has also been provided for these HCWs, such as gloves, masks, face shields and plastic aprons, which can still be found in the ICU ward upon entering. Providing PPE allowed these individuals to access protective equipment quickly to reduce the infection risk. P1 also mentioned that "psychological support was offered" but does not mention whether there was any time or other factors that could have affected the decision to take up this support. P2 talked about the

> "emergency training we all had, along with training that helped us wear protective clothing correctly. We were also taught how to curb transmissions by ensuring that we all wore our PPE correctly so as not to affect more individuals and, therefore, increase the hospital infection rate".

P3 also mentions the

> "training for using protective gear or clothing correctly".

There is also the mention of the donning and doffing technique. This technique involves the right way of putting on or removing PPE at the start or end of a shift of handling COVID-19 patients (Mun Global, 2022). This technique prevented infection to the healthcare worker or their loved ones.

P4 states that there were

> "insufficient staff members to help in the COVID ward and wishes more individuals could have been sent there". I want better independent protocols and procedures as the protocols in our hospital need to be revised".

P5 described the

> "donning and doffing training we received and the proper way of using different PPEs".

P6 speaks about the

> "different training and how our workplace needs to do more during this time to prepare us for other parts of this pandemic. Better preparation for the ICU and the patients were made, but the training did not cover how to protect ourselves, nor did it show appreciation for us doing these strenuous tasks".

P7 has just written down one word to say that there has been no hospital or management assistance. The term "nothing" has been used to show the lack of interest from the view of P7 concerning management. P7 has felt as if there was no support.

5.5.5.1. Theme: Training and support

The COVID-19 pandemic necessitated the provision of training to healthcare professionals, particularly those directly involved in the care of patients afflicted with the coronavirus. The intensive care physicians and nurses derived significant advantages from this training, as it equipped them with the necessary skills to handle diverse scenarios encountered during this global health crisis. Moreover, this training instilled a sense of psychological assurance, enabling them to face this novel virus with confidence. Due to the need for emergency training in SA, healthcare workers were given training in the local contexts of each hospital. This need for training was evident as some participants included the same sentiment in their responses. Training was still seen as insufficient to prepare individuals for the tasks ahead, which was also evident in others' responses. There were many online courses which made accessibility more convenient while being able to learn at one's own pace. Participants had the choice of accessing various courses from institutions such as the World Health Organisation, UNICEF, the CDC and Project Hope. Most of these courses were free, but a possible issue that could have arisen was the availability of time. Healthcare workers needed more time to volunteer for these courses. However, many of these courses covered much information about the virus and its management. These training courses also described themselves as self-paced, which might have been alluring to those who needed more time for these drawn-out courses. On the World Health Organisation web page, there were approximately 50 courses which detailed health- and frontline workers how to continue working in a conducive manner during this time. The courses were also available in 60 languages, allowing more people worldwide to be reached and understand the best way to follow safety procedures (World Health Organisation, 2020).

However, courses from NOSA (National Occupational Safety Association) have been around for 71 years to prevent work fatalities. They offered COVID-19 safety courses, which required a high fee (NOSA, 2020).

A lack of training showed a lack of support from workplaces and senior management due to the under-preparedness of workers for the situation presented. This lack of training could be due to public hospitals being underfunded and needing more staff that were available to work in the ICU ward, especially during the coronavirus (Bussiness Tech, 2022). The disparity between public and private healthcare concerning the number of individuals is concerning. Many individuals (from both sectors) were also emigrating to look for better work opportunities and remuneration. If we find a possible way to prevent doctors or nurses from leaving, we could ensure that 'brain drain' does not happen and that healthcare workers are more willing to stay, as well as teach younger, inexperienced HCWs.

Senior management and a failure in leadership in hospitals connected the disparity between implementing policies on the ground to forming them on paper. This disparity was because the need to have more efficient processes prevented improving management's leadership skills. Several factors were taken into consideration, encompassing budget processes, limited financial delegations, top-down directives, communication channels, supply chain processes, ineffective supervision, and performance management systems. These factors played a significant role in shaping the overall outcome (Michel et al., 2019).

Some challenges came from inadequate political commitments and inadequate use of resources in the public sector. This lack of resources was exacerbated by the historical imbalance in the public health sector due to diseases such as HIV/AIDS and TB (Michel et al., 2019). There was also a need to create better policy implementation and courses for management, which would allow them to learn how to implement policies correctly. Being able to track how the policy was being implemented is also of vital importance. The need for more training at a managerial level in the public health sector was also echoed by Pillay (2008). Private health managers felt more confident and competent in their abilities, and this is because of the training and good

use of resources in the private sector (Pillay, 2008). Both private and public health sectors should increase the training to ensure that managers from both sectors are confident and can lead staff members by imparting critical thinking skills necessary for working in a hospital or ICU ward.

5.5.6. Mental health protection at work

This question examined how mental health was protected during work training dealing with COVID-19. Many individuals have had training on the necessary points of their job in dealing with PPE, patients and medical decisions. Despite the limited coverage of various topics in this training, it is imperative for hospitals to incorporate mental health into these sessions. When it comes to mental health, hospitals may still need to give it more importance, as they may face constraints in terms of time and financial resources for such training.

P1 has been

> “offered psychological services should they be needed”

but had not mentioned whether he had taken up the offer. P2 indicated that

> “the hospital has offered the services of a psychologist or a therapist after COVID-19. This service was used to help with the post-Covid impact and I visited a psychologist”.

The next participant responds with just one word, which is “nothing”, and comes from P3.

P4 wanted,

> “more sessions, meaning more time off from work during the peak times of the pandemic”. There is a need for more staff in the ICU ward to reduce burnout and stress”.

P5 echoes P3's sentiments and says,

> "Nothing has been done to protect their mental health".

P6 explains that

> “psychological assistance had been offered, but there was more talk than action. She also talks about the saying that 'actions speak louder than words'. She says there was no time for going to a psychologist and that when she was off from work,

she just wanted to rest and contact her loved ones".

Three participants in total (P7, P5, and P3) all stated that the hospital had done "nothing to protect their mental health".

Using a subjective view of these individuals' responses, the participants were not completely in agreement, as three said nothing was done, while the other four said there was only an offer. The respondents' perspectives could help researchers understand what occurred during this time, and the theme can explore their responses more deeply.

5.5.6.1. Theme: Benefits of focusing on mental health

In the biopsychosocial model of health, mental health falls under the second category, which consists of emotional and cognitive aspects of an individual's life (Lumeus, 2022). The importance of mental health was no longer a luxury but a necessity in the workplace. The importance of mental well-being helps the individual cope with daily life stressors (Waters, 2022). These challenges adversely affect physical and emotional factors, directly impacting work performance (Rise, 2021). These adversities affect all parts of an individual's life. Suppose an employee is affected by overwhelming stress without proper tools to deal with it; they are more likely to have more severe symptoms. In that case, it could lead to a lack of concentration, muscle tension, restlessness, insomnia and a higher range of negative emotions such as anger, sadness, depression and irritability (Lumeus, 2021; Van Eys, 2021). Although these effects were internalised, they equated to how individuals worked and how well they continued completing their daily tasks. These effects increased during the COVID-19 pandemic as there were blurred boundaries that made it difficult to distinguish between private and professional lives. The cost of mental ill health is more significant to a company than having programmes and tools available to assist individuals with their mental health (Lumeus, 2022). Factors such as decreased productivity, burnout, and depression (Leonhardt, 2022) reduced the workforce even further, which was unhelpful when the workforce was already spread thin.

The focus on mental health was helpful to employees, especially during and eventually after the COVID-19 pandemic. This focus will increase workplace productivity, save the company money, and reduce absenteeism (Leonhardt, 2022).

Firstly, employers and management acknowledging that employees face these mental health problems was an important step because it helped employees to feel comfortable talking about mental health and reduce the stigma of this 'taboo' topic (Van Eys, 2021). Talking about mental health should also lead to the formation of mental health check-in days, self-assessment tools, and accessible mental health sessions which are available should they need them (Waters, 2022). These changes cannot occur immediately but could occur over a short period, with both employees and employers working together to create a safe space to discuss mental health issues. Since the pandemic, there has been a greater focus on mental health care, but many employees with their increased workload, were not available to attend these sessions. Employees also needed to make sure that they participated in these programmes so that more resources could be allocated to them and that future employees receive help for mental health, should they need it.

5.5.7. Sleeping habits

Question seven examined how sleeping habits were affected during the coronavirus period. The participant's responses indicated whether they have experienced a negative, positive or no change. Individuals with PTSD might have undergone sleep changes such as insomnia, nightmares, or tiredness even after sleeping for a long time (NHS, 2022).

P1 finds no change in his sleeping habits. P2 experienced some

> “bad dreams of some patients that died and some that had almost survived”.

The sentiments from P2 about the “hopelessness” felt during this time are devastating. Healthcare workers who worked directly with COVID-19 patients tried very hard to save their patients, but with years of experience and training, they did not have any available cures to get rid of the virus. P3 was

> “unable to sleep through the night. When I was eventually able to sleep, my sleep 'broke' around 2 a.m.-3 a.m. daily.”

P4 also speaks about insomnia that she experienced. She talks about constantly

> “feeling tired, overwhelmed and nervous about what the day will hold for me and my colleagues”.

She felt anxious, not knowing whether the next day would be the one that held the most challenges for her or not. The ‘uncertainty’ of not knowing was the hardest for her and prevented her from sleeping. P5 describes her sleeping patterns as

> “erratic, to say the least"

describing the unpredictable sleeping patterns she had to go through. P6 speaks about her insomnia and how

> “I was physically and mentally exhausted but could not fall asleep, which made me agitated. I felt like my sleep was ‘never enough’ and wanted an uninterrupted night. I felt like I was too tired to function properly”.

When she did manage to sleep, she had ‘nightmares’ which prevented her from going back to sleep for fear that the nightmares would return. P7 said there had been “no change” in his sleeping patterns.

5.5.7.1. Theme: The importance of sleep for mental health

According to the DSM-5, irregular sleeping patterns are an indication that an individual has PTSD (Burke et al., 2019). Recurring dreams during this time are usually distressing and related to the traumatic event that already occurred (Burke et al., 2019). As some participants had responded, there have been times when they were plagued by insomnia and bad dreams. These sleep disturbances must occur for more than a month to fulfil the criterion of PTSD as per the DSM-5.

Concentration and focus needed the most effort during a crisis, such as this epidemic in SA or a global pandemic. Unfortunately, a lack of concentration and sleep disturbances occur after a traumatic event leading to PTSD. Sleep plays a crucial role in maintaining the overall well-being of both the physical body and the mental health of an individual. This is a combination of biological and psychological effects. Sleep is a period when the individual's mind refuels to help them rest for the new day and recover from the previous day. During the sleeping process, especially REM sleep (deep sleep), the body processes memories and emotions from the previous day (Suni, 2022). According to PCC (2019), information from new stimuli helps the brain to understand what happened. It helps to store this information because it needs to be more engaged in dealing with more information at that current time.

Without getting enough sleep, it increases the risk of diabetes (Type 2) and cardiovascular illnesses (Kingsland, 2020; CDC, 2022). In addition to affecting the physical body and increasing the risk of getting these diseases, the lack of sleep directly impacts an individual's psychological dimension. Emotional instability is the most common impact. Individuals may have experienced heightened emotions and be unable to keep them within their normal range. Individuals could have been more irritable than usual, with increased mood swings and erratic behaviour (PCC, 2019). Hormonal imbalances were also common when individuals did not get enough sleep as the brain could not communicate with parts of the body correctly, and these imbalances led to appetite, weight, mood and immunity functioning incorrectly (PCC, 2019).

The treatment for sleep disorders or insomnia at the current time is CBT-I (Cognitive Behavioural Therapy for Insomnia) to reduce disturbed sleep patterns (Suni, 2022). Kingsland (2020) explained how restricting the amount of time in bed was more helpful than spending a long time in bed without sleep. This restriction of being in bed leads to restricting restlessness and rewiring the brain only to use the bed for sleeping. Other activities such as abusing electronic devices, reading, watching television or just lying in bed trying to sleep are not conducive and, therefore, should be avoided. Sleeping pills, sleep diaries, and psychotherapy are also well-known for helping individuals to work better, which directly contributes to the person's well-being (Mental Health, 2021).

5.5.8. Appetite changes

This question pertained to any changes in eating habits, such as a lack of interest in food or eating more than is average per individual, since food is necessary for everyday life to help us survive.

P1 and P2 have had “no change in appetite” over the last two years. They both said that they kept up their same eating habits and the same appetite as before the pandemic. P3's appetite was affected during this time. She describes

“losing much weight during COVID-19 from always being stressed”.

During a shift in the ICU, she also explained how they were fully donned in PPE

for six to seven hours without access to food or water".

In the same way that sleeping helps the brain, food helps the brain by providing energy for the vital functions of life (NHS Inform, 2022). P4 also experienced a reduced appetite. She also lost weight and blamed it on

"the stress of being unable to assist other staff members that were weakened from self-loathing and depression".

P5 shares the sentiments of P3 and P4 because she also had a poor appetite during this time and provided feedback about the present change. She says:

"I am starting to get my appetite back after two years since the pandemic started".

P6 described her eating habits as "poor as I overate during this time" in what she calls 'stress-eating'. She speaks about the

"destructive relationship with food and how I mostly ate sugary and salty foods. The energy those foods gave me compared to other foods was completely different. I am now changing my diet to include almost no sugary, salty or processed foods. I am eating more vegetables and fruits moving forward".

P7 had "not changed in eating habits and has been eating well as usual".

5.5.8.1. Theme: Changes in appetite

When a person is under much stress, it causes changes in their appetites which increases or decreases the intake of food per person. Physical or biological factors in this theme caused and were linked to psychological changes. In some individuals, the desire to eat any food is reduced. The diminished inclination to consume food is a consequence of the body's fight-or-flight reaction that occurs in individuals experiencing stress. The adrenal glands release adrenalin into the body, which stops the body from eating. While this could be helpful during a stressful event, saving energy for the necessary responses is not practical long term (Harvard Health Publishing, 2021). Harvard Medical School has also found a correlation between stress-eating and gender. Women were found to be more prone to experiencing stress compared to men, who may opt for alternative coping mechanisms such as alcohol consumption or smoking (Harvard Health Publishing, 2021). This overeating may have caused obesity in women, which is related to stress eating. The adrenal gland also releases another hormone called cortisol which typically increases appetite, but

after the stressful situation is over, cortisol levels remain high. Other causes of weight gain were caused by a lack of sleep and other unhealthy habits which increased weight gain.

In this study, female participants all described their appetite changes, and we discovered how they either lost weight or had a relationship with food changes. In contrast, the male participants had no change in appetite. Also, a change of appetite in the opposite manner occurred while analysing the participant's responses. Stress also stops eating or reduces the urge to eat for extended periods, leading to weight loss. The body is so focused on stress that the brain temporarily forgets to listen to the hunger cues (Cleveland Clinic, 2020). The cortisol (also known as the stress hormone) makes the body crave these sugary, salty junk foods that fatten the body to produce energy during these stressful times (Cleveland Clinic, 2020).

There are many ways to combat stress or to remind the body to eat. CBT is again mentioned to help individuals identify stressors and how they respond to them. When individuals are aware of their stressors, they can have a food diary to write down. In times when stressors are prevalent often, these individuals should also have healthy snacks available. Any junk foods should not be kept in the workspace or home environment as easier access makes individuals slip into their past behaviours. King (2020), talked about setting a schedule or alarm to ensure that you were reminded to eat. Drinking water is also very helpful in replenishing lost fluids in the body. The foods an individual chooses to eat should be easily digestible to avoid nausea related to high stress levels (King, 2020). Overall, the reaction to food is individually based, and for these changes to occur, the individual needs to find help to ensure that they get a tailor-made nutritional eating plan. If they cannot change their unhealthy eating habits to healthier ones, they should ask for help from loved ones or a psychotherapist.

5.5.9. Low feelings, stress and sadness

This question focused intensely on the feelings associated with COVID-19. These responses give insight into what people were feeling daily and what could be done to help them accept these feelings without judgement. It also described when individuals felt at their lowest and what circumstances made them feel that way. P1 had said,

"I am constantly feeling stressed and waiting for the surges to end so that more patients are not constantly added". I felt low when I had to deal with the inability to admit patients into the COVID-19 ICU because of the shortage of resources such as beds and PPE".

P2 stated

"I felt low when I thought about why we had to go through this terrible virus and lose so many people in our job. I wondered what else could have been done to prevent the deaths of patients".

P3 felt sad when

"I saw many patients struggling to breathe and eventually dying without loved ones".

P4 wrote about what had happened throughout the pandemic through her eyes.

"I have experienced high levels of stress, burnout and depression. Everyday staff and the COVID-19 ICU ward had many problems at this time. Trying to manage the adults and the paediatric ward without expertise on this virus was very stressful for me".

P5 has mentioned,

"the death of patients was the lowest time and gave me low feelings. Loneliness was one of the worst things to see when it came to patients who were dying, but they died without being able to see their family or have the comfort of the family by their side. After seeing all the death and dying, I felt desensitised by this experience".

P6 echoes the sentiments of P5 and focuses on

"the sadness the patients around me felt as they tried to survive but could not". I was seeing how my co-workers were stressed out all the time and how I questioned how helpful my job was during this time".

P7 says

"I have not been bothered by any low feelings during this time".

5.5.9.1. Theme: Emotional impact of COVID-19

The participants' responses talked about how they experienced many distressing emotions in situations over which they had no control. Being able to identify these

moods to accept them was the first step to moving forward psychologically. A low mood differs from depression in that even though both describe mood changes; depression is more severe on the spectrum of feelings. When someone experiences low mood, they can still focus somewhat on their work and motivate themselves. This low mood typically lasts for a few days or until the person resolves any issues that are causing the low mood (IESO, 2022). Depression is more severe in that it creates a problem with focus and the ability to complete tasks successfully at work. It leads to procrastination in tasks that typically seem very easy to complete (Burke et al., 2019; IESO, 2022). This procrastination applies to tasks done at home or the workplace. In this research study, a low mood was applied to the participants as they could not focus during their work. This focus problem was caused by ICU doctors and nurses wanting to do their work regardless of their low moods or feelings. However, when an individual went through low feelings, it was perfectly understandable to go through times of uncertainty during this time with an unprecedented health crisis that had affected the entire globe. These emotions are part of being human and, therefore, could be understood in the context of this pandemic. Since these individuals had gone through a low mood for more than two weeks, it is more likely a major depressive disorder with symptoms such as low mood, being overwhelmed and feeling hopeless (Institute for Advanced Psychiatry, 2022). A further diagnosis was necessary to identify if individuals do identify with a majority of the other symptoms of major depressive disorder based on these symptoms that they identify with and could get treatment for it.

5.5.10. Feelings at work during the pandemic

This question differed from question 3 as the time frame was different. These feelings had changed, intensified, or stayed the same during the progression of the pandemic.

P1 felt

> "just stressed about the state of working during this time. I am concerned by the exposure of my fellow doctors and the other staff in my unit".

He was worried if they got COVID-19 and how it would feel if they got severely sick. P2 talked about how awful COVID-19 was, but,

> "it did bring people together in the ward. We also worked hard together as a family

instead of just co-workers".

P3 commented:

"I was scared and terrified at times. In the beginning when COVID-19 started, patients were dying almost every hour".

P4 felt:

"demotivated, desensitised and disappointed with senior management. They had not done much to help during this time. I also felt surrounded by death and experienced feelings of hopelessness".

P5 was

"scared because of the fear of the unknown during this time. This fear was a new experience for everyone, constantly making me and others nervous. Nothing could have prepared me for what we had to endure during this time". She also explained how she was "anxious all the time and emotional".

P6 described how she felt:

"so pressured to perform well during this time. I felt worried for my friends and family".

P7 viewed:

"every health worker who did not work directly with COVID-19 patients is a coward. I still feel the same and have no respect for them".

5.5.10.1. Theme: Change of feelings initially to during the pandemic

As we could see from the responses from the participants, their feelings had intensified in that they felt more stressed and overwhelmed. These feelings intensified because individuals worked with patients and saw how COVID-19 made many of them suffer and eventually succumb to this virus. Their feelings could be described as more specific and directed towards their patients, co-workers, management and themselves.

The social view of the workplace is to form a type of family culture with co-workers as they spend almost ninety thousand hours with them throughout their work (Executive Forum, 2020). As people lived during the pandemic, the work-life balance was blurred, and more work was being done outside working hours. These working

hours were not fixed during this time, and there was a need to form close friendships with co-workers to get comfort (Harrison, 2020). Gleeson (2017) referred to colleagues as friends who turn into family and the ones we choose to be in our lives. It was only natural to be worried about their well-being, especially during these difficult times. This common theme is found in the responses to this question. Patients also became the people who were cared about during this time, as healthcare workers tried against all odds to help these people. During this time, the patients could not be saved and seeing the death of patients was highly desensitising.

The anger directed at management was due to the lack of direction and help from management at a time when individuals needed it the most. As seen before, it came from a lack of training in leading others and being emotionally available to help those staff that were being led. P7 has described them as 'cowards' he did not respect because they did not help in the COVID-19 ICU and used their services to help the patients. Instead, they could have led by example and lent their services to the patients who needed them.

5.5.11. Job Satisfaction

In the last two years, during the pandemic, this question tried to ascertain whether specific causes had given these participants satisfaction during their time working as intensivists and critical care nurses. P1 said,

"Nothing has given me any satisfaction during this time".

P2 had spoken about,

"the dynamic and elaborate-on- job unit manager".

This was the first time a manager had been positively mentioned as successfully fulfilling their job role. Other sources of satisfaction for P2 were:

"Happy colleagues who were able to keep their spirits high, and those that have learned and gained experience from this pandemic have also caused satisfaction for me".

P3 had spoken about the,

"COVID-19 patients recovering entirely and being able to leave the ICU ward fully. When they were able to return home to their loved ones, it made me and the staff happy and was a sharp contrast to seeing patients dying and not being able to see

their loved ones again".

P4 found:

"no satisfaction in her daily work as every day always felt like just another day with more challenges and hopelessness".

P5, like P3, also:

"found satisfaction in patients leaving the ICU, breathing and surviving independently".

P6 found that:

"working together during this difficult time has brought the team together in the ICU COVID-19 ward. I felt that because many healthcare workers had experienced the same thing, we could find solace in knowing they were not alone during this time".

P7 found that,

"saving lives and being able to teach junior staff had given him job satisfaction".

5.5.11.1. Theme: Impact of job satisfaction

Job satisfaction looks at the good parts of this job that give healthcare workers a sense of happiness and purpose during this time (Future Learn, 2022). It helped individuals to know that there were suitable components in their jobs that balanced out or outweighed the harmful components. For many individuals, many factors could be a factor for satisfaction, such as being paid a good salary or feeling valued at their job.

Some aspects, such as having a secure job, helped individuals feel like their job was not under threat. If healthcare workers felt like their jobs were not stable, they might not have felt motivated enough to keep fighting during that time. Leadership was also a significant cause of job satisfaction. As discussed before, intensivists and critical care workers were desperately hoping for leadership at a time when they did not have direction. In the time when they did not know what the next day held or how to proceed without little information, they needed proper leadership (Bourne, 2020). Good communication skills play a crucial role in enhancing the rapport between employees and their superiors. Communication is critical in deciding whether there could be an open, trusting relationship. Employees can voice their opinions and be

heard when they give their perspective on something creating turmoil (Bourne, 2020; Future Learn, 2022).

As the participants' responses showed, there was a sense of purpose when they were able to successfully save patients' lives (Villa Nova University, 2022). If the workers were recognised for doing their best and saving many people, they were likelier to stay in the job position. Psychologically, employees wanted to feel satisfied as they were more likely to feel valued and appreciated (Bourne, 2020). These were not a complete list of reasons individuals may have felt satisfied at work, but there were small lists of possibilities. By ensuring that workers feel satisfied, workplaces can make sure that they can make their employees happy, which will result in higher productivity and turnover rates for the company, regardless of the field that they are in (Bourne, 2020).

5.5.12. Recommendations for a future pandemic

Finally, recommendations come from intensivists and critical care nurses who have seen improvements during this time and what could be changed in the case of a future pandemic.

P1 started by mentioning management and how they should be able to ensure that

> "everyone is involved during this time and in the future".

If all the individuals were involved during this time, there would be more help as there would be more staff willing to help. There should also be more direction from management which could be helpful when individuals do not have other options available as treatment. P2 had many suggestions for a future pandemic. He stated that:

> "more staff were needed as there are dwindling figures which can be resolved by employing more staff. I also want to have the appropriate PPE and other protective clothing before the pandemic has different waves that create influxes of patients. I also want suitable medical equipment and more availability of off days to rest and recuperate during this stressful time".

P3 had written about the hospital having

> "more organisational skills to reduce panic. Having proper isolation facilities for patients, as only a few isolation facilities hold only two beds each. Readily

available PPE that can be discarded when used, and there will be an available supply for when they need new PPE. Compensation for risking our life during this stressful time".

P4 mentioned

"proper protocols during this time and having procedures in place ahead of a pandemic. I recommend having more staff".

Human resource planning could ensure that there were enough staff to help patients. She asked for,

"more facilities to deal with the stressful career that we're a part of and to focus on mental health and how to cope with death. I want debriefing sessions to share the staff's information, so everyone can collaborate and have more direction".

P5 asked for "more staff", which was a recurring theme in this final question, as well as the focus on getting more appropriate PPEs which were more than enough for everyone. She mentions that,

"I bought my coveralls, which were not compensated. I also want compensation for what I went through, as we have risked our lives during this time. I want acknowledgement for the hard work and recognised for the efforts that I and others put into our work".

P6 says that,

"We all worked hard, and I felt our efforts were not valued. I want more time off to avoid the stressful environment and feel safe with her loved ones. If there were more staff and planning, time off would be fine".

P7 wanted to:

"eliminate the cowards"

As he mentioned in question 10; these were healthcare workers who did not help during the pandemic and merely watched from the sidelines.

5.5.12.1. Theme: Listening to the perspectives of employees

As seen in the previous theme (theme 11), being heard in the workplace was one of the most necessary traits that encouraged workers to feel satisfied. Bourne (2020) spoke about getting recognised for their efforts at work, improving employees' perspectives about work, and encouraging them to make further efforts. Listening to

employees was essential because it developed a trusting relationship between employees and their companies. If the individuals voiced their opinions, they would be able to be upfront about what they felt and how to improve the working environment (Buck, 2017).

This improvement helped them as these healthcare workers interacted with patients and risked their lives. They should be able to have felt safe during this time to treat patients without worrying about not having appropriate PPE or getting infected with the virus simultaneously. To avoid mishandling a situation such as an epidemic, senior managers should work with staff to ensure everyone feels motivated to put forward their ideas to see what would work well. Employees feel encouraged to stay in the working environment where they are valued at the same time and heard. Employees become more productive during this time and can be retained in the work environment (O'Donnell, 2020). The progress from active listening combines with using what is heard to put together an action plan. Both actions and words are necessary to ensure that individuals want to remain an employee at this place of work. Brain drain in the workplace should be avoided at all costs, especially with insufficient staff. These recommendations should be considered to change how the hospital runs and will be run during an epidemic.

5.6. Treatments

Participants who had scored higher on the PCL-5 checklist differed in their coping mechanisms with impact on work expectations, relations with others and well-being. These differences were expressed and evident in each participant's narrative. Even though participants 3, 4 and 5 had experienced a higher score than the other participants, their ways of coping relied mainly on friends, family and colleagues as support systems. Since they had not been offered psychological help from their workplace to protect their mental health, they had to rely on loved ones as a protective factor (Refer to 5.5.1.1. theme: The importance of loved ones as a protective factor.).

If individuals want to attend therapy, many steps must occur before the healing process begins. To diagnose that the individual does have PTSD, medical tests have to be performed to ensure that the symptoms in the DSM-5 have no other cause. After

the medical tests are completed, the individual attending therapy would undergo psychometric tests to ensure that PTSD is present. By doing these psychometric tests, individuals could get the most appropriate treatment by focusing on the symptoms (Mayo Clinic, 2022). Stein and Norman (2022) mention that when an individual is diagnosed with PTSD, they are believed to change their behaviour and cognitive processes to avoid traumatic reminders of a stressful event. There are therapy interventions that have worked with patients with PTSD and are effective.

These therapeutic interventions are cognitive behavioural therapy or cognitive processing therapy which are generally the first options that are recommended when individuals with PTSD attend therapy. Both include attempts at restructuring the individual's cognitive processes or beliefs for the latter to overcome maladaptive ways of thinking. American Psychological Association (2023) states that overcoming this maladaptation helps the individual to express healthier behaviours and better emotional modulation. Exposure therapy was also helpful in terms of its proven effectiveness against PTSD (Stein and Norman, 2022). In this type of therapy, an individual is exposed to the traumatic experience again, but in a safer, more controlled setting. The purpose of this exposure was to regain control and learn how to cope in a healthier way (American Psychological Association, 2023). By using advanced technologies, virtual reality settings could be entered to change the individual's behaviour in reaction to the first trauma they received (Mayo Clinic, 2022).

Individuals presenting with PTSD could also have undergone group therapy, which helps them feel less isolated when talking about their experiences. Group therapy ensures individuals feel supported by other individuals providing support to each other (American Psychological Association, 2019). How individuals choose to have therapy is based on their preferences and therapist recommendations. Based on the councillor’s recommendations, these individuals could also explore medications to help with the symptoms should therapy not be viable (Mayo Clinic, 2022). Individuals could also join support groups to stay connected to others and explore recovery methods independently. There is always help available regarding PTSD, and various treatments could be perfectly tailored for different individuals.

A list of further interventions could be considered as well for the treatment of PTSD.

Table 4. Suggested interventions

Management initiatives	Psychological support
• Be psychologically prepared ° Access training and support • Keep informed with scientific updates • Conduct a rapid needs assessment ° Found beneficial in four articles;[10,37-39] may allow HCWs to feel heard, foster team spirit, and enable managers to set priorities • Communicate clearly and regularly ° Facts about the outbreak ° Risks to HCWs, PPE availability ° Daily tasks, clinical guidelines, adaptations to resource constraints ° Expectations of HCWs' self-care, including their mental healthcare • Incorporate support in daily routine ° Ask about coping of team members in handover rounds and meetings ° Discuss difficult clinical situations, providing containment of any distress • Engage with local community ° Educate community leaders on the outbreak, risks, and treatment; destigmatise HCWs ° Identify supportive resources, e.g. child carers, lay counsellors, faith-based organisations • Establish peer support networks ° Identify peer supporters and facilitate training in mental health literacy and psychological first aid ° Allocate HCWs to supporters ° Encourage sharing of emotions and experiences ° Receive feedback from supporters, and provide ongoing direction • Establish referral pathways and human resource mechanisms • Recognise mental disturbance in HCWs or self and refer accordingly	• Training and support of managers, supervisors and team leaders ° Leadership skills ° Self-help skills, mindfulness-based training ° Mental health literacy ° Psychological first-aid techniques ° Ensure ongoing support • Training of peer supporters ° Self-help skills, mindfulness-based training ° Psychological first-aid techniques ° Support via support of supervisors • Locally relevant educational flyers and/or mobile app messages ° Information on mental health ° Information on substance use ° Self-awareness strategies ° Self-help tips ° Destigmatise the act of seeking help ° Available resources and how to access them • Locally appropriate online, mobile app, and hard-copy psychological materials • Telephonic or online counselling • Telephonic or online lay counselling • Telephonic, online or face-to-face psychotherapy for those with severe symptoms • Psychotropic medication if needed

HCWs = healthcare workers; PPE = personal protective equipment.

Diagram 5.6. : Robertson et al., (2020)

5.7. Conclusion

In this chapter, individual responses from the participants were directly quoted, showing that the intensivists and critical care nurses needed help during this traumatic time, as well as after it. To move forward from this pandemic and to ensure preparedness in a future pandemic, this public hospital in KZN and other public hospitals should understand these individuals' perspectives and put treatment and prevention plans into action. Caring for these workers was essential to create a healthy workplace which could benefit both the workers and the patients.

Chapter 6: Conclusion

6.1. Introduction

In this final chapter, the summary of the research findings, recommendations for future research, and limitations were included. This final chapter concludes this research study and aims to identify any additional information that is needed for further clarity.

6.2. Summary of research study

During this research study, many introductory topics had been explored that were specifically related to the aims of the study. Critical concepts for this dissertation were discussed such as key concepts to understand the local context of this study, and essential research designs that would be used were detailed. The study's differences compared to the research proposal were highlighted to strengthen the results. It considered the new details that changed, such as the sample population now including critical care nurses along with the initial sample of intensivists from a different hospital in KZN. The research design had also been changed to accommodate the time limitation (of the academic year) due to changing to a new hospital. The semi-structured questionnaires were revised instead of interviews as they were easier for the participants to respond to. The second chapter discussed the literature review, followed by the different factors influenced by COVID-19. This chapter looked at precursors for PTSD, explaining more about healthcare workers and, specifically, ICU staff who worked directly with COVID-19 patients.

The third chapter included the different theoretical approaches that formed part of this research project. These theoretical lenses had a specific way to view the coronavirus' effects on HCWs. This virus impacted the ICU staff very frightfully, and these experiences were explained to be more transparent to locate the causes of this impact. In the fourth chapter, the research design and methods described how the phenomenological design with the mixed methods use could increase the further understanding of what was completed in this study. The fifth chapter contained the

results that came from the semi-structured questionnaires and the PCL-5 checklist.

The databases that were used to search for journal articles were derived from a variety of medical journals and psychology journals. Some of these databases included Elsevier, JSTOR, PubMed, EBSCO, PsycINFO and Google Scholar. The reference manager software called Mendeley was utilised and enabled the researcher to find various topics of research articles, dependent on the topic. Keywords that were searched for included the province of KZN or the country of SA. Other keywords included the COVID-19 pandemic, critical care nurses or doctors and PTSD, which directly originated from the main title of this dissertation.

6.3. Synthesis of research findings

In this chapter, the research findings found that 3 out of the 7 participants scored high points on the PCL-5 Checklist, indicating the presence of provisional PTSD. According to the PCL-5 scoring guidelines, any score between 31-33 suggested that those individuals would benefit from therapy during the pandemic. The responses from the participants described how these individuals experienced the pandemic. The impact that they had experienced showed that all participants identified with the criteria of PTSD, according to the DSM-5 criteria and would benefit from therapy and finding new coping mechanisms in the different dimensions of their lives. If the participants were willing to attend therapy, they would cope better with the traumatic experiences that they had gone through. Additionally, the other 4 participants should also attend therapy as their written responses to the questionnaires indicated their painful feelings and experiences during the pandemic.

6.4. Strengths and weaknesses

This study's strengths were that it was one of the first studies of its kind (as per the researcher's knowledge at the time) to take place in the localised context of KZN, SA, in a public hospital with this specific sample population. This present study was envisaged by the author to have opened the pathway for further investigating the post-COVID-19 impact when COVID-19 would finally be less critical. The significance of a study on the impact of COVID-19 on healthcare workers is twofold. First, it provided valuable insights into the physical, mental and emotional challenges that

healthcare workers faced during the pandemic, and how they coped with them. Second, it could be used to inform policy makers and health authorities on how to better support and protect healthcare workers in future outbreaks or crises. Such a study could also contribute to the existing literature on occupational health and stress management, as well as enhance public awareness and appreciation of the vital role that healthcare workers play in society. The study showed how the intensivists and critical care nurses had felt during the COVID-19 period and what had to be done to support them after they were impacted. These participants had first-hand accounts of what South African healthcare workers had gone through. In SA, research studies have yet to focus on these two groups of healthcare professionals in KZN Since this study was completed in a government hospital, changes could take place in public hospitals and help improve similar hospitals in KZN. In the case of a future pandemic, protocols could be implemented to provide better policies for newer critical healthcare workers.

6.5. Limitations

This study has several limitations that should be acknowledged. The sample size was relatively small and may not be representative of the general population. The data collection methods relied on self-report measures, which may introduce biases such as social desirability or recall errors. The study design was sequential and caused difficulty in processing data due to time constraints and the amount of data that occurred from a mixed methods approach. The study focused on a specific domain of mental well-being and did not measure other aspects such as physical health, social relationships, or environmental factors. The time limitations including ethical clearance largely depended on approvals by relevant authorities. Furthermore, the phenomenological research design could have produced superior results if the phenomenon had been studied over a longer period. Hence, it is imperative to exercise caution while interpreting the outcomes, and additional investigation is required to duplicate and broaden the discoveries.

6.6. Recommendations

In order to gain a thorough and detailed comprehension of the subject matter, it is recommended that future research endeavours adopt a mixed-methods approach. This

approach entails the integration of both quantitative and qualitative data collection and analysis techniques. By doing so, researchers can obtain a comprehensive understanding of the phenomenon under investigation, while also identifying causal relationships and underlying mechanisms. To ensure the validity and generalizability of the findings, it is crucial to recruit a diverse and representative sample of healthcare workers. Additionally, the sample size should be sufficiently large to guarantee statistical power and the ability to extrapolate the results to the broader population. The research should encompass the measurement of various aspects that influenced healthcare workers during the COVID-19 pandemic, including physical health, social relationships, and environmental factors. Furthermore, it is imperative to assess various indicators of mental health, such as mood, anxiety, stress, self-esteem, loneliness, and overall well-being. The study should use valid and reliable instruments to assess these variables. The study should employ a longitudinal design, following the participants over a period (e.g., 6 months or 1 year). This would enable the examination of the temporal dynamics and directionality of the effects of the pandemic on mental health and post-traumatic stress disorder, as well as the potential moderating and mediating factors. This study should also ensure adherence to ethical principles and guidelines, ensuring informed consent, confidentiality, anonymity, and data protection. This was a critical step in ensuring that sensitive data of possible diagnoses were not divulged to third parties. The current study should also address potential risks and benefits for the participants and the society, as well as the limitations and implications of the findings.

6.7. Key elements

The key elements of this study arose from the themes from the fifth chapter. In this research study, the importance of loved ones was a key element as loved ones played a vital role in reducing the impact of mental health problems. They provided emotional support and a sense of belonging and meaning. Research has shown that having strong social ties can protect people from stress, depression, and suicidal thoughts (NIH, 2017). Therefore, it is important to maintain and nurture relationships with family, friends, and other significant people in one's life. Another key element concerned the workplace, workload and relationship between employers and employees. Working with fear could have negative consequences for both employees

and employers in the long run. Fear reduces motivation, creativity, and productivity, as well as increases stress and anxiety (Al Majali, 2020). An increased workload could also contribute to these problems, especially if healthcare workers feel overwhelmed or unsupported. Therefore, it was important for managers and employers to listen to the perspectives of their employees and understand their needs and challenges. By doing so, they may be able to create a more positive and collaborative work environment that fosters trust, respect, and engagement.

The next key element focused on the impact of job satisfaction, training and focusing on the mental health of healthcare workers. The pandemic has changed the way that healthcare workers interact with each other. That's why it was important to invest in their mental health and well-being, as well as the training and support that they needed to perform their tasks effectively. Studies have shown that employees who are satisfied with their work environment and have access to adequate resources are more productive, creative, and loyal to their organizations (Biason, 2020; Kulkarni et al, 2023). By focusing on their mental health, they could foster a sense of belonging and collaboration, even when they were physically apart from loved ones (Danna and Griffin, 1999). Finally, the last key element focused on the changes that healthcare workers went through during the pandemic and how it had an impact on their daily functioning of sleep, appetite, emotional states and feelings. Sleep was essential for maintaining good mental health, as it helped regulate mood, cope with stress, and process information (Nunez and Lamoreux, 2023). However, the COVID-19 pandemic has disrupted many doctors' and nurses sleep patterns, as they faced changes in their routines, increased anxiety, and uncertainty about the future (Altena et al., 2020). Some participants may have experienced changes in their appetite, either eating more or less than usual, as a way of coping with their emotions (Sidor and Rzymski, 2020). These changes could affect their physical and mental well-being, as well as their sleep quality. The emotional impact of COVID-19 could vary from person to person, depending on their circumstances, personality, and coping skills. Some people may have felt more isolated, lonely, depressed, or anxious than before the pandemic, while others may have found new sources of support, resilience, and hope (Brooks et al., 2020). The pandemic could also trigger different feelings at different stages, such as shock, denial, anger, sadness, or acceptance (Lazarus et al., 2020). It was important to acknowledge and express these feelings in healthy ways,

and to seek professional help if needed.

6.8. Conclusion

In this final chapter, this chapter indicated which key elements emerged from the study. It also focused on the research aim of the study and how it was achieved in the context of this study.

This research study provided an important addition to include the impact of the COVID-19 epidemic on a small sample group of critical doctors and nurses in KZN, SA. in. It has allowed future researchers to understand the importance of delving into the mental health of critical care workers, especially at a time when there was an infectious virus. This research topic could also be adopted and improved further. Future research could consider exploring preventative measures to reduce the impact on these health workers, should there be another pandemic. This study aimed to discover what effects emerged in intensivists and critical care nurses when they were provisionally diagnosed with PTSD via the PCL-5 checklist. From this research aim, three (3) out of the seven (7) participants were found to be provisionally diagnosed with PTSD.

The study findings should be considered to help individuals make better use of protocols and procedures. Healthcare workers (intensivists and critical care nurses) should attend therapy to improve their mental health and help them cope with the after-effects of the pandemic. These workers have saved countless lives, and it is the responsibility of those in management positions to try to save said employees' lives, whether that is physically or mentally. The literature review provided guidelines on interrogating and developing the HCW's support system and the surrounding background factors. The biopsychosocial model provided a transparent theoretical background of dealing with issues about impairments and psychological trauma culminating in PTSD. Henceforth, this biopsychosocial model posits applying the medical, social, and psychological factors in HCW support and interventions. The application of this model explored HCW experiences and shared challenges in the ICU environment during the COVID-19 context. The person-centred theory grounded the study in psychology as it focused on each individual's experience.

The phenomenological research paradigm was the most suitable method of enquiry and provided the appropriate data collection platform. A mixed methods approach was used in this study by use of qualitative semi-structured questionnaires and a quantitative checklist which were conducted to collect data. Ethical considerations were followed, to protect participants and the process of bracketing promoted trustworthiness and made research free of bias. The researcher envisaged that the study results and recommendations would inform policy and human resources departments in hospital settings for enhanced HCW support.

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Appendices

Appendix 1- Semi-structured questionnaire

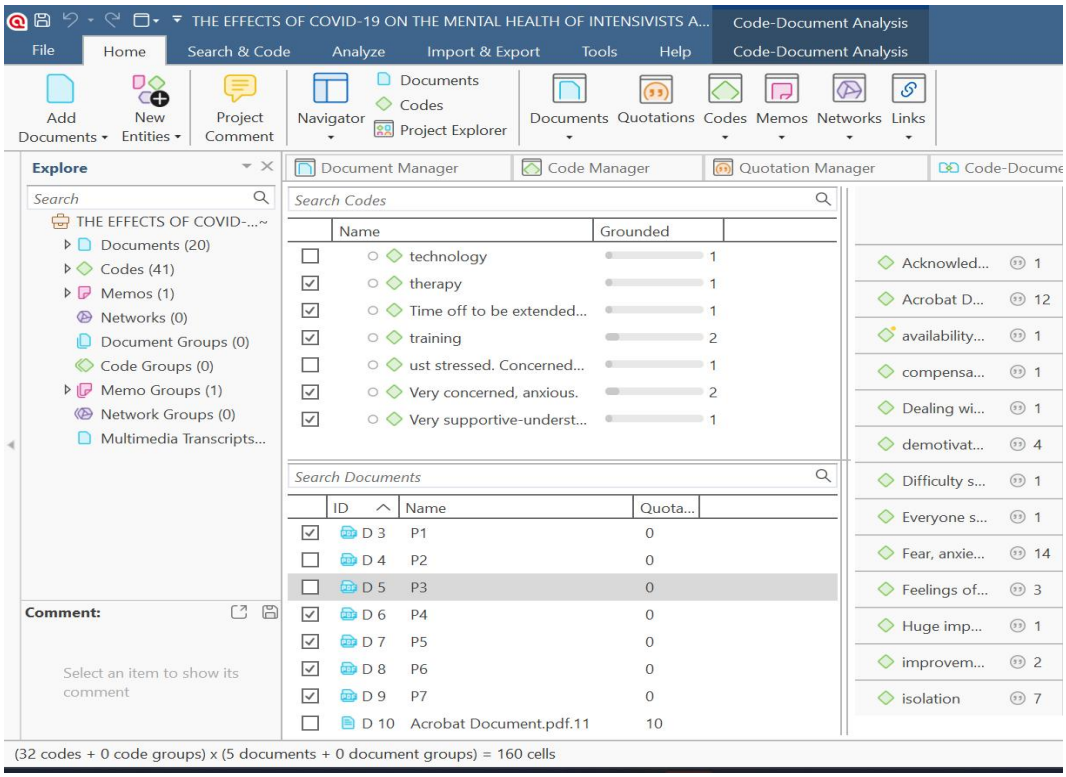
1. Share your experiences with COVID-19 in your personal life regarding friends, family and partners.
2. Describe how supported you feel by others around you- your friends, family or colleagues.
3. How would you describe your initial reaction to the COVID-19 virus in relation to your work?
4. In your professional life, how has COVID-19 impacted your daily tasks at work?
5. Share what your workplace has done to prepare you for the virus in terms of training and support systems.
6. Describe what your workplace has done to protect your mental health.
7. Describe your sleeping habits over the past 2 years. Have you noticed any changes such as difficulty sleeping or restlessness?
8. How would you describe your appetite over the past 2 years. Have your eating habits changed in any way?
9. Could you write about any times over the past 2 years that you've been bothered by low feelings, stress or sadness?
10. How would you describe your feelings at work during the pandemic (COVID-19)?
11. Describe what caused you to experience job satisfaction over the past 24 months.
12. In your opinion, what could have been improved in case of a future pandemic in your workplace?

Appendix 2- Themes analysis table derived from Atlas.ti 23 software

Final themes	Themes from codes	Codes	No. of quotes
The impact of an increased workload Training and support Impact of job satisfaction	Workplace safety and support	Acknowledgement for hard work and effort.	2
		Availability of PPE	2
		Compensation	1
		Lack of staff support for protection	3
		Lack of support workplace, management	2
		Organization, isolation facilities	1
		Training	2
The consequence of working with fear Emotional impact of COVID-19 Change of feelings initially during the pandemic	Emotional well-being	De-motivation, helplessness	4
		Fear, anxiety, depression	13
		PTSD	1
		Scared, terrified	2
The importance of loved ones as a protective factor A feeling of being together while being apart.	Social Isolation	Difficulty staying away from friends and family.	1
		Feelings of loneliness after work.	3
		Isolation	7
		Technology	1
Benefits of focusing on mental health		Eating disturbances,	4

The importance of sleep for mental health Changes in appetite	Stress and burnout	weight gain	
		Sleep disturbances, insomnia	6
		Stress	2
Listening to the perspectives of employees	Time off	Time off to be extended to be away from the stressful environment	1
	Patient care	Improvements, debriefing, case loads	2
		Satisfied when patients recover - leave ICU	1
		Therapy	1
	Support from others	Support from colleagues	5
		Support from community	1
		Support from family	6

Appendix 3-Codes derived from Atlas.ti software



Appendix 4- Editor's Certificate

REGCOR
ENTERPRISES PTY LTD
(2015/375453/07)

Date: 10/02/2023

Dear Sir/Madam

This letter is to certify that I, Sarah Louise Cornelius, of Regcor Enterprises Pty Ltd, have completed the initial editing of the dissertation titled *The effects of COVID-19 on the mental health of intensivists and critical care nurses affected by PTSD* by Arisha Soodhin.

I have ten years of experience in the field, having worked on multiple doctorates. Currently, I am a member of the Professional Editor's Guild (PEG).

All recommendations and errors have been noted in the comments. Any changes or lack of corrections done to the document after editing is not a reflection of the editing services provided. The onus is on the student to make sure the document is fully corrected before final submission even if that requires multiple edits.

Kind Regards
Sarah Louise Cornelius

Professional Editor's Guild
Associate Member
Membership number: COR003
Regcor Enterprises Pty Ltd
Registration no: 2015/375453/07
Contact no: 0768156437
Email: sarah@regcor.co.za

Appendix 5- Ethics Certificate

UNISA university of south africa

COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

29 March 2022

Dear Miss Arisha Soodhin

Decision:
Ethics Approval from 29 March 2022 to 29 March 2025

NHREC Registration # :
Rec-240816-052
CREC Reference # :
64112349_CREC_CHS_2022

Researcher(s): Name: Miss Arisha Soodhin
Contact details: 64112349@mylife.unisa.ac.za
Supervisor(s): Name: Dr. R.S. Wells
Contact details: wellsrs@unisa.ac.za

Title: The effects of COVID-19 on the mental health of intensivists affected by PTSD.

Degree Purpose: MA

Thank you for the application for research ethics clearance by the Unisa College of Human Science Ethics Committee. Ethics approval is granted for three years.

The ***medium risk application*** *was reviewed by* College of Human Sciences Research Ethics Committee, in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.

5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date **(29 March 2025).** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

*The reference number **64112349_CREC_CHS_2022** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature: pp

Signature: PP

Prof. KB Khan
CHS Research Ethics Committee Chairperson
Email: khankb@unisa.ac.za
Tel: (012) 429 8210

Prof K. Masemola
Exécutive Dean: CHS
E-mail: masemk@unisa.ac.za
Tel: (012) 429 2298

Second, below is a list of problems that people sometimes have in response to a very stressful experience. Keeping your worst event in mind, please read each problem carefully and then select one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

Your worst event: _____

Appendix 6- PCL-5 Checklist

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4