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Burnout among nurses during Covid-19 pandemic: A Scoping Review

Mercy Jelimo

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Author: Mercy Jelimo

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Abstract

The current spread of Covid-19 (Coronavirus) has affected many people globally and resulted in a surge of patients in need of healthcare. Nurses have been on the frontline in providing care during the pandemic, offering support to COVID-19 patients and experiencing the suffering and death of their patients. Consequently, this exposure has led to physical, psychological, and mental issues, such as burnout. Burnout not only affects nurses' general well-being but also negatively impacts the quality of care patients receive during the current pandemic. This study aims to describe the causes of burnout among nurses during COVID-19 and explore their coping strategies, with the research questions: What are the causes of burnout in nurses during COVID-19? What are the coping strategies for burnout among nurses during COVID-19?

The research method used in this study was a scoping review that resulted in 8 articles that were analyzed. The results reveal that nurses suffered significant levels of burnout during COVID-19 that was triggered by many reasons, and explored coping mechanisms that can be applied by both nurses and hospital administrations to mitigate on burnout. Formulating and implementing evidence-based interventions for burnout is recommended as it ensures that nurses have confidence and are motivated in the provision quality care.

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Language: English   Keywords: Burnout, Nurses, Covid-19, pandemic

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Table of Contents

List of Tables and Figures

Appendices

1 Introduction

The current spread of Covid-19 (Corona virus) has affected many people globally. There have been 742,206,169 cases of covid-19 infections and 6,893,190 deaths reported worldwide and in Finland 1,466,778 cases and 9,054 deaths according to WHO (World Health Organization) dashboard (WHO, World Heath Organization, 2023). Covid-19 is a respiratory infection caused by SARS-COV-2 virus and its first infection was first detected in December, 2019. There was a rapid spread throughout the world and therefore its declaration as a Public Health Emergency of international concern. Precaution such as wearing masks and keeping social distance were developed to prevent the spread of Covid-19 (WHO, 2023).

The Covid-19 pandemic has resulted in great disruptions and unprecedented transformation in the normal lifestyle, working and social functioning of communities and societies. The executions of new policies like maintaining of social distance, barn on social gathering and social places like the parks and schools this resulted into negative outcome. The economic and psychological changes caused by the pandemic affected families as it resulted into a rise in domestic abuse, child abuse and disability abuse that the United Nations (UN) raised concerns about (Hosseinzadeh et al., 2022). Health care providers especially the nurses have been in the frontline in providing care during the pandemic. They provide care for covid-19 patients and also experience the suffering and death of their patients exposing them to psychological and mental issues (Amir & Okalo, 2022). The COVID-19 pandemic has resulted into significant disruptions to healthcare services worldwide, resulting in significant shortages of healthcare workers and increased workload for those who remain. International Council of Nurses (ICN) raised a red flag due to escalating rise in burnout and stress related conditions among nurses. The extended working periods under unmatched pressure and possible exposure has put nursing working force at the verge of collapsing (ICN, 2021).

The prospective impact of Covid-19 could lead to rise in nurse burnout, resulting to absenteeism and a higher probability of nurses quitting the profession. This could contribute to 14 Million nurses leaving the career in the future. 60% of healthcare workers are nurses and therefore inadequate number of nurses who are well supported to accomplish their duties presents a problem in accomplishing Health for all (ICN, 2021).

Burnout among nurses can result to serious implications on the quality of patient care (Shanafelt, et al., 2012) and has exposed them to high levels of burnout that had negative effects on nurses' quality of life (Babamohamadi et al., 2023) .Therefore, understanding the factors contributing to burnout among nurses during the pandemic can help structure strategies to prevent and manage burnout, improve the quality of care provided by nurses, and hence promote the general wellbeing of nurses.

2 Background

This chapter sets the foundation for this study; this section is meant to describe the nature and the root of the research problem and to put it into comprehensive context. Therefore, this section seeks to define the terminologies to get a deeper understanding of what Covid-19 and burn-out are, describe the different roles of nurses during Covid-19 pandemic, the causes of burn-out among nurses during the pandemic.

2.1 Definition of burnout

According to WHO, burnout is a syndrome incorporated in the international classification of diseases (ICD-11) but not grouped as a medical condition. It is conceptualized as developing from persistent work stress that has not been managed successfully and is characterized by: feelings of exhaustion, psychological distance from work, and decreased professional effectiveness (WHO, 2019). Burnout characterizes the outcome of severe stress and high ideal in professions that are involved in helping others. Workers like doctors and nurses, who are dedicated in the wellbeing of others frequently experience burnout which results in exhaustion, lethargy and inability to cope (IQWIG, 2020).

2.2 Definition of COVID-19

Covid-19 is a viral infection that affects the respiratory system. Majority of the people who get infected experience mild to moderate symptoms recover without medical treatment while those who get serious respiratory symptoms require treatment. Anyone at any age can be infected with covid-19; however, those with underlying conditions such as diabetes, cardiovascular diseases, cancer and chronic diseases are more vulnerable to the virus. Corona virus is spread through liquid droplets when an infected person coughs sneezes or

breaths and therefore, it is essential to cover the mouth when coughing and sneezing, staying home and self-isolating when infected. In 2021, Covid-19 vaccination was invented (WHO, 2022). Covid-19 vaccination is administered to all healthy people and it can also be administered to people with underlying conditions, however those with serious autoimmune deficiencies have not been included in the studies for vaccination (THL, 2022)

2.3   Roles of nurses during covid-19

Nurses have the role of promoting health, preventing illness, restoring health, and alleviating suffering (ICN, 2021). During COVID 19 pandemic nurses have played a role in controlling the infection by assessing patients in order to identify those that are infected. This is mostly done at the hospital entrance. Covid-19 prevention and control policies have been a subject to continuous change and nurses have exhibited professional awareness throughout this period. They have also kept up to date on new information on what phase the pandemic is at. Teamwork has been shown by nurses by ensuring that patients are given care (Hsu, Chou, & Tseng, 2021).

Nurses make up the majority of healthcare professionals and therefore have an essential place in the healthcare system. They provide treatment to Covid-19 patients by providing initial assessments to the patients and detecting cases with infections. They also provide emergency treatment to patients suspected of Covid-19 and together with other healthcare professionals they help in the decontamination of surfaces, thus preventing the spread of Covid-19. The pandemic has led to anxiety in patients and their relatives, and in this case, nurses play a role in providing support and giving assurance (Thobaity & Alshammarib, 2020).

Although providing care for Covid-19 patients has a high risk of infection, nurses have to continue saving lives. Incubating patient, airway management and transporting extremely ill patients are part of their roles and while doing all these, they have to wear personal protective equipment (PPE). They are expected to provide a personalized, exceptional and safe nursing care regardless of the stage and level of infection (Kumar, 2022). Furthermore, nurses take part in Covid-19 interventions and are the main players in the effort to stop the pandemic with sufficient help. This therefore, means that there is a need

to provide them with a favorable and conducive environment in order to get motivated in the control and management of Covid-19 outbreak (Fawaz, Anshasi, & Samaha, 2020).

2.4   Impacts of Covid-19 on nurses

The COVID-19 pandemic has exposed health workers to covid-19 infection, work related risk, discomfort from continuous use of PPE, fatigue and emotional distress. Nurses make up the majority of health workers and have been on the frontlines of the pandemic, working tirelessly to care for patients and support their communities. The pandemic has been linked to significant levels of anxiety, depression; poor sleep quality, excessive work demand and emotion distress on nurses (Serra et al., 2022).

An increase in the number of patients being admitted in hospitals has been experienced during the pandemic. Taking care of acute patients, testing for Covid-19 and administration of vaccinations against Covid-19 and offering psychological support has increased the need for more nurses. As a result nurses have been forced to work for extended shifts and take additional roles and thus mental health effects characterized by psychological stress, emotional exhaustion and frustration. Furthermore, nurses are also leaving the profession due to burnout influence caused by covid-19 (Lopez et al., 2022).

Nurses felt dissatisfied about the quality of care they have provided during the pandemic due to stressful working environment, Covid-19 testing and new hygiene protocols. Nurses also felt a decline in their own quality of life attributed by working closely with covid-19 and being at a risk of getting infected. Increased workload is a significant contributor of high levels of stress among nurses. The intense workload, difficulty in providing care in emergency situations, and fatigue experienced by nurses have contributed to increased burnout levels, particularly emotional burnout. The overworked nurses experience burnout, which has led to diminished job satisfaction and reduced productivity (Bartzik, Aust, & Peifer, 2021).

Nurses have faced increased risks of exposure to the virus, heightened stress and anxiety, burnout, moral injury, trauma, and stigma. The pandemic's impact on nurses underscores the need for effective strategies to support healthcare workers nurses included during pandemics, including sufficient personal protective equipment, access to mental health services, and support for ethical decision-making. Until the 31st of December 2020, 2262

covid-19 related had been reported among nurses in 59 countries and 1.6 million health workers had been infected in 34 countries. Nurses were the majority group among the health workers to have been infected (ICN, 2021).

2.5   Causes of burnout in nurses during Covid-19

Nurses experience different challenges while performing their daily work duties such as interaction with the patients, performing clinical process, treating patients in critical conditions and handling emergency situations making them vulnerable high work pressure levels. Studies have shown nurses in different countries display symptoms of depression and anxiety and combination of the two amplifies burnout levels. However, during Covid-19 anxiety substantially contributed to burnout (Zareei et al., 2022). Additionally, an increase in working hours and workload has led to burnout in nurses during the COVID-19. The pandemic has resulted in an increased demand for nurses, which has placed a big burden on the existing nurses. Nurses have had to work longer hours, with limited resources and supplies, which has resulted in exhaustion and burnout (Saravanan et al., 2023).

 The lack of personal protective equipment (PPE) has also contributed to the burnout among nurses. Many nurses have had to work with inadequate PPE, which has put them at risk of contracting COVID-19. The fear of getting infected and spreading the virus to their families has added to the mental burden on nurses. The lack of PPE has also resulted in a sense of helplessness and frustration among nurses, which has led to burnout (ICN, 2021).

Social isolation has also contributed to burnout among nurses as they have been working long hours and have had limited social interaction outside of work. They felt isolated from their loved ones. The lack of social support has also made it difficult for nurses to cope with the stress and demands of their job. Nurses also experiences stress and anxiety hence burnout (ICN, 2021).

The lack of recognition and support from their leaders and healthcare organizations has also contributed to burnout among nurses. Many nurses feel unrecognized underappreciated and their effort not valued by their organization, which has added to their stress and frustration. The lack of recognition and support has also resulted into demotivation among nurses, which has led to burnout (Shah et al., 2021).

2.6 Burnout Assessment scales

These are tools that are used to measure the level of burnout in an individual. They are as follows:

Malachi Burnout Inventory (MBI) is a widely applied assessment scale used for measuring burnout in an individual. It is evaluates burnout in three dimensions: emotional exhaustion, depersonalization and personal accomplishment. Emotional exhaustion dimension measures the feeling of being drained, depersonalization associates with negative, cynical and distant attitude towards work and personal accomplishment reflects on individual feeling of personal accomplishment (Malach & Jackson, 1981).

Copenhagen Burnout Inventory (CBI) measures burnout in a work setting and involves questions in three scales; person burnout, work related burnout and client related burnout. The personal burnout scale measures the level to which respondent feels emotionally exhausted, physically exhausted, and detached from other people in their personal life. The work-related burnout scale measures the degree to which respondents feel emotionally exhausted, physically exhausted, and pessimistic about their job. The client-related burnout scale assesses the level to which respondents feel emotionally exhausted, physically exhausted, and cynical about their workmates (Tudorovic, et al., 2021).

3 Aim and Research question

Globally, nurses are working hard to save lives in the face of a deadly pandemic. The aim of this study is to describe the causes of burnout among nurses during Covid-19 and explore their coping strategies.

This study strives to answer the following research questions:

1. What are the causes of burn-out in nurses during covid-19?

2. What are the coping strategies for burn-out among nurses during Covid-19 pandemic?

4 Theoretical Framework

In the early past years, the care provided by nurses was good but much of what was done had not been evaluated or applied equally in practices or in education. Therefore, in the 20th century a goal was set to put together nursing leaders to advance nursing knowledge that would serve as a basis for nursing practice, enhancing the quality of life and establishing nursing as a recognized profession (Alligood, 2018, pg.2).

4.1 Betty Neuman system model

Neuman's system model constitutes the nursing conceptual models; which are a group of concepts that convey principle aspects of nursing and describe how they relate to each other (Alligood, 2018, pg.1). They give an inderstanding and organize concepts that are important to the discipline, foccusing on four concepts: Human beings, health, nursing and enviroment (Alligood, 2018, pg.164).

The Neuman's sysytem model is an approach that acknowledges living organisms as open systems and that indivituals interract with each other and with the enviroment.It combines knowledge from various disciplines and integrates Neuman's personal beliefs and her personal knowledge in mental nursing (Alligood, Nursing Theorists and their work, 2018).

According to Neuman, a person is considered as a holistic system that involves physiological, psychological, sociocultural, developmental, and spiritual dimensions (Alligood, 2018, pg.236). The model highlights the significance of keep a steady and balanced internal state, reffered to as a state of wellness. Neuman explains adjustement as a process in which organisms meet their necessities and that there are several necesities and each has an effect on the clients equilibrium. When stability is not achieved or when disharmony is prolonged within an organism, can potentially lead to onset of illness (Alligood, 2018, pg.232).
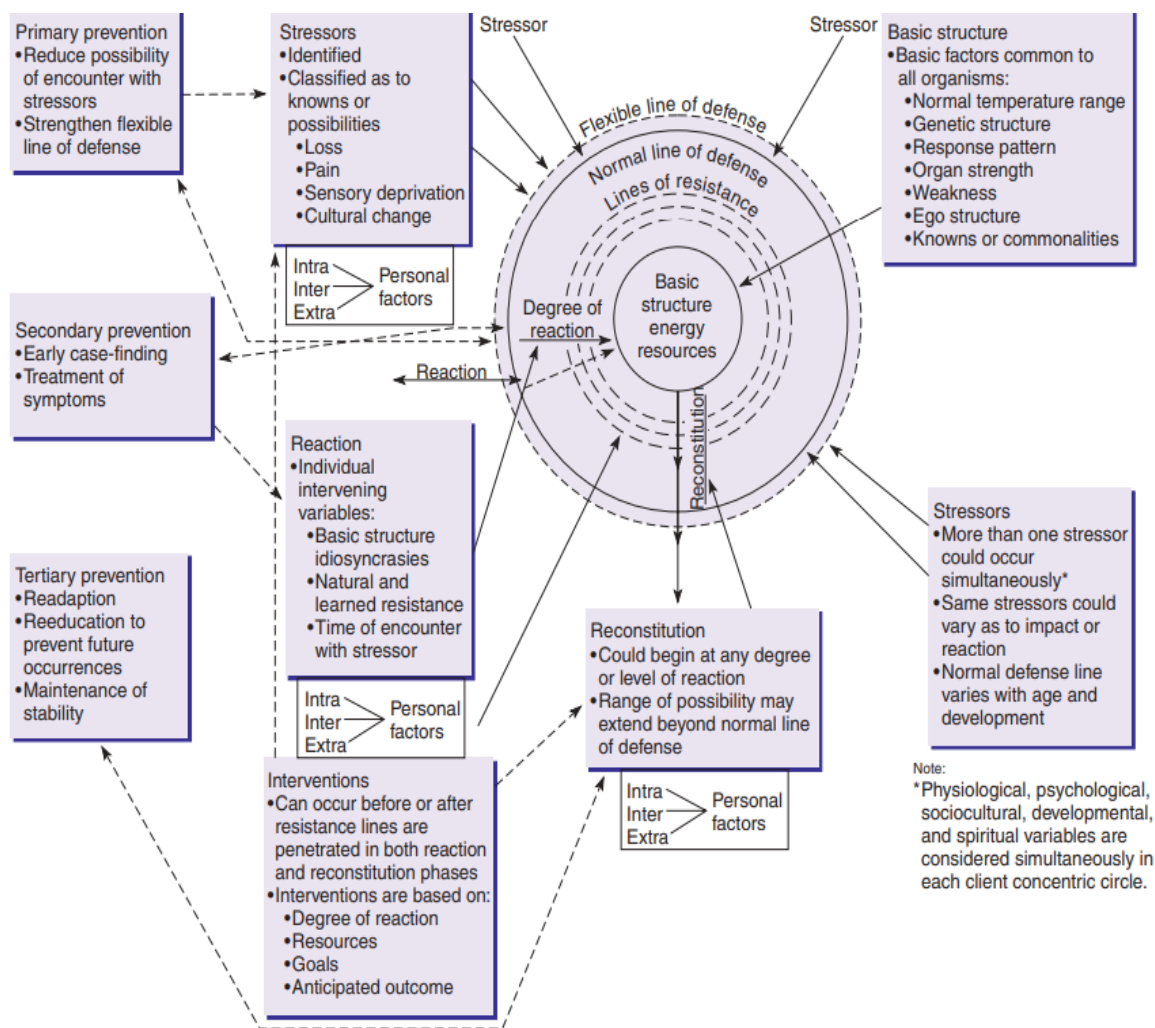
Figure 1 The Neuman system model **(Alligood, 2018, pg. 235)**

The Neuman Systems Model represented **in Figure 1** entails three concentric rings: the central core, the flexible lines of defense, and the outer lines of resistance. The central core represents the fundamental necessities of survival and resources of the individual, while the flexible lines of defense and the outer lines of resistance act as protective mechanisms against the stressors that help to maintain stability and response to stressors (Alligood, 2018 pg. 235).

Levels of prevention that are associated with nursing from Caplan's conceptual model are incorparated in the model. Primary prevention targets to safeguard the organism from harm by implementing measures before it comes into contact with a stressor. Both secondary and tertiary prevention are imlemented after the client has come into contact with a harmful stressor. Secondary prevention aims to minimize the impacts or potential impacts of stressors by early diagnosis and symptom treatment, while tertiary prevention is the efforts

used to minimize the impacts of stressor and to restore a client to the state of wellness after they have received treatment (Alligood, 2018).

The Neuman's system model serves as both a model and a grand nursing theory. As a model it serves as a theoretical framework for nursing education, research and practice, while as a grand theory, it provides a means for understanding nursing phenomena and measure that are considered true can be examined and validated (Alligood, 2018, pg.236). It is significant in nursing practice as it gives a goal-oriented, unified and holistic approach to patient care and the models holistic nature also gives a foundation for nursing education at all levels (Alligood, 2018, pg.237).

This theory is suitable for this study as it provide a holistic perspective, by providing interrelation of physical, psychological, social, and environmental factors impacting nurses' general well-being during the pandemic termed as the stressors. It enables the identification of various stressors experienced by nurses also exploring the coping mechanisms and adaptation strategies they apply in response. The Model also focuses on the importance of preventive measures and interventions to maintain nurses' stability and balance during the Covid-19 pandemic and also future challenges.

5 Methodology

With the ever-growing evidenced based healthcare and an increase in accessibility of first-hand research, there has been a rise and development of reviews. There are varieties of grounds for conducting a scoping review. This review unlike other reviews has broader inclusion criteria, is flexible, has different type of questions and inform on policy and practice. Scoping review can be conducted to plan the main concepts on particular research and also give an explanation of definitions and concepts of a topic. This review is conducted for the purposes of identifying what type of information and studies are available for the topic selected, find missing gaps on the topic or study being researched, looking into how other researches have done before bout the topic, and when looking for important elements that are associated with the topic that have been done in the prior knowledge (Peters et al.., 2022).

In conducting this research on the causes of burn out among nurses during covid-19, it is crucial to select a methodology that aligns with the research question. The chosen approach

aims to provide a comprehensive understanding of the topic as an emerging field and facilitate the extraction of relevant information from the literature. This approach will explore the extent of the previous studies done and provide valuable insights into the causes of burnout, as well as the coping strategies to the burnout.

5.1 Data Collection

Data collection is a procedure in which the researcher gathers information that is relevant to the topic of their study that which provides answers the research questions. In undertaking this particular study the researcher began by deciding upon the topic or the title of the study, then developing research questions. The articles used in this study were searched using the databases: Online Wiley Library, CINAHL, pub med central and Pub med. A process of information retrieval was performed by utilizing appropriate words or phrases relevant to the study that convey the intended meaning of the topic of interest, these were: Burnout OR burn-out OR Occupational fatigue, nursing OR nurses and Covid-19 OR Corona virus.

The articles that are suitable and answer the research question were carefully selected. Each article was closely examined to make sure it really related to the aim and question of the study. This careful selection resulted into 8 articles that work well together to address the research questions. These chosen articles in **Appendix 1** not only provide important information but also help build a strong basis for the research study.

5.2 Selection Criteria

The selection criteria for a scoping review have to be clear and transparent. The researcher has to report a detailed search process and time frame for the articles. A wider range of sources are considered in this type of review (Peters et al., 2022). In the process of gathering data, there are sources that are not applicable or useful to the research due to various reasons and determine which sources should be included or excluded; specific criteria for selection need to be established. For this study, certain criteria were established to determine which articles would be included. These criteria included that the articles; that explained what caused burnout in nurses during COVID 19, written in English and those available in full text. Articles selection was then done by reading the titles, abstracts, those

in full texts were considered. Additionally, the articles had to have been published between the years 2020- 2023. Using this criterion, a total of 320 articles were initially identified before undergoing a rigorous filtering process. The exclusion criteria for this study included articles that were written in any language other than English, articles that were not available in full text. The 8 selected articles for the study were presented in a table in **Appendix 1,** showing their titles, aims of the study and aim used in the study.

The procedure of data retrieval from the first hits to the articles chosen for this study is represented in the Prisma chart in **Figure 2.**
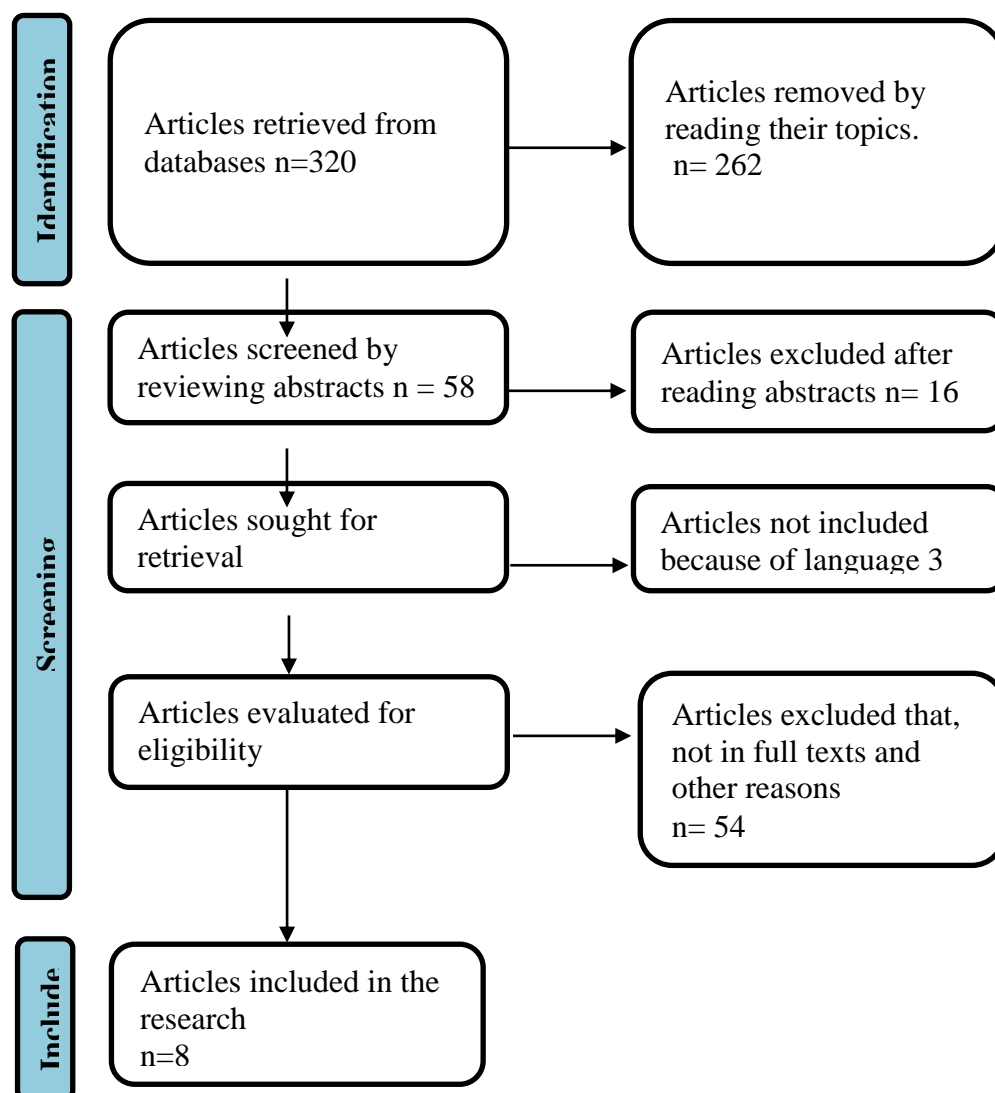

Figure 2 PRSMA chart (AJE, 2023)

5.3   Data Analysis

Data analysis organizes, gives a structure and brings out a meaning from the data collected (Polet & Beck, 2010 p.463). The focus of this particular chapter is on analyzing the articles that was used as a primary source for the study. Data analysis has different steps; it starts with identifying patterns and themes and categories that reveal similarities and differences between subjects being studied and the themes are them validated by making sure that the ideas identified truly represents the ideas of the participants being studied (Polet & Beck, 2010 pg. 469-471).

In the analysis and presentation of results in a scoping review, the researcher should effectively report the method used in the presentation of results. The results can be presented in a diagrammatic or tabular design and or in a descriptive format. The format chosen is dependent on the study questions (Peters et al., 2022). This study will utilize a descriptive format as this design is important in mapping and provide an in-depth understanding on factors that contributed to burnout in nurses during COVID 19 and the coping mechanisms.

The 8 selected articles were then analyzed to determine their similarities, followed by the assignment of themes, sub themes and categories to the selected articles. The themes found were then validated to make sure that they truly align with the articled being studied. The results found were then represented in a tabular form as shown in the **Table 1** and **Table 2.**

5.4   Ethical Considerations

The Finnish Advisory Board on Research Integrity (TENK) which is appointed by the Ministry of Education and Culture in Finland provides a set of ethical requirements that recommends that every research should be conducted in honesty, diligently and with accuracy as this guarantees credible and reliable research. Findings of the research should be reported in an open and responsible manner and deserved credit awarded to the work of other researchers. Integrity and ethical considerations in the research process is encouraged by TENK, with the focus of ensuring that every research is performed within responsible conduct of research and action taken for the violation of the set conducts (TENK, 2023). The sources used for this scoping review are articles from verified sources. The

information used from other sources in the text is well cited, referenced in the reference list, and the recognition given as required.

6   Results

This chapter is based on the analyzed results obtained from 8 selected articles as shown in Appendix 1, which provide answers to the research questions. After a critical analysis, themes and sub themes were created as shown in **Table 1** and **Table 2**. Table 1 represents causes of burnout and Table 2 represents coping mechanisms for burnout.

Themes	Sub-Themes
Work-related causes	Lack of enough personal protective equipment (PPE) Long working hour Increased workload Experience working with COVID 19 patients Work experience
Socio-demographic factors	Age factor Gender factor
Psychological causes	Fear of the infection Perceived workload

Table 1 Thematic Analysis 1

Themes	Sub-themes
Coping strategies	Support
	Efficient communication
	Expanding nursing workforce
	Sufficient supply of protective equipment
	Adequate understanding of the disease

Table 2 Thematic Analysis 2

The causes of burnout were divided into themes work related causes, psychological causes and socio demographic causes. Work related causes were associated with work and they include lack of personal protective equipment (PPE), Long working hours, increased workload, experience working with Covd-19 patients and work experience Psychological cause was the fear of infection and perceived workload and socio demographic causes was age and gender factor in nurses and are as discussed below:

6.1   Work-related Causes

Work-related causes are factors or conditions in the workplace that contribute to or influence burnout among nurses' during Covid-19.

6.1.1   Lack of enough personal protective equipment (PPE)

Personal Protective Equipment (PPE) has been a significant element during the treatment and fight of COVID 19.This is a specific type of clothing and equipment that is intended to provide protection against infectious diseases such as Covid-19. The accessibility of PPE's was a major concern to the nurses working with the Covid-19 patient. The inadequacy

exposed nurses to a high risk of burnout (Khan, Bruyneel, & Smith, 2022). According to Cordova et al., 2022, registered nurses lack confidence that the hospital would provide adequate PPE. The PPE were not enough and therefore forcing them to conservely use them and reuse them. This therefore led to high physical exhausition hence burnout(Cordova, et al., 2022) . Patients confirmed to have been infected with covid 19 virus were confined in isolation wards and there were nurses who took care of them. Majority of these nurses had challenges in accessing PPE putting them in a risk of getting infected (Butera et al.,2021). Additionally, lack of enough PPE resulted to feelings of exhaustion, psychological distance from work, and decreased professional effectiveness therefore burnout in nurses (Bryneel et al., 2021)   (Toscano, Tommasi, & Giusino , 2022).

6.1.2 Long working hours

The physical requirement for working extended hours while taking care of very ill patients, that has been frequently associated with movement from one patient to the other, working through multiple tasks has led to a feeling of exhaustion. Long working hours not only affect the normal life balances but also affects the quality of life, rest and sleep. During COVID 19 pandemic nurses worked longer hours while taking care of COVID 19 patients in quarantine. These nurses experienced high levels of burnout which was characterized by depersonalization (Zhang et al., 2020). Furthermore, the never ending long working hours that nurse have been exposed to weekly, has had an effect on them leading to burnout (Khan, Bruyneel, & Smith, 2022).

6.1.3 Increased workload

The surge in the workload has been an influencing factor of burnout among nurse amid the pandemic. The increased working hours, patients surge and the challenges in the treatment of a new highly infectious disease that is deadly has been physically and emotionally exhaustive to nurses. Emotional exhaustion and depersonalization symptoms were observed in nurses with a higher nurse to patient ratio. Individual nurse was assigned more patients compared to before the pandemic due to the large number of COVID 19 patients being admitted in hospital. Nurses were therefore emotionally exhausted and had a distant attitude toward work hence burnout (Bryneel et al.,2021). Influx in the number of corona patients admtted in the ICU increased work demand from nurses (Butera et al., 2021). The significant increase in workload among nurses created a feeling that they were unable to

deliver adequate nursing care leading to ethical disstress and hence burnout (Toscano, Tommasi, & Giusino , 2022). Futhermore, increased work responsibilities led to a decline in the self confidence in regards to personal protection and a decrease in the safety of working enviroment when attending to covid 19 patients, this has been associated to development of burnout (Galanis et al., 2021).

6.1.4 Experience with working with COVID 19 patients

Nurse's continuous encounter with the patients in pain and loss made them vulnerable to burnout. Treating critically ill patients infected with COVID 19 and even witnessing patients suffer and die without the presence of their loved ones emotionally drained nurses and resulted to emotional exhaustion and a decline in the sense of personal accomplishment. Additionally, (Toscano et al., 2022) reported that, out of 100 ICU nurses 66% reported having high levels of burnout because of the direct treatment of infected patient. Exposure to the weekly high number of COVID 19 patients and deaths increased risks of burnout among nurses and also witnessing the impact of the virus on people led to burnout (Khan et al., 2022).

6.1.5 Work experience

Nurses' working experience has been a significant cause of burnout during the pandemic. The influx in COVID 19 patients in the hospitals accompanied with complicated care needs and emotional damage that comes with witnessing people suffer has been overwhelming to the novice nurses. They have been dedicated in saving lives, the lack sufficient coping mechanism, perseverance and resilience that is gained with years of experienced. The less experienced in working and the pandemic made them experience burnout as compared to the other nurses who had worked for a long time in this field. (Khan, Bruyneel, & Smith, 2022) (Zhang et al., 2020) (Murat, Köse, & Savaser, 2020).

6.2 Psychological causes

6.2.1 Fear of infection

Working with COVID 19 patients on a daily basis put nurses at a risk of getting infected. This feeling bring about anxiety, fear and stress promoting the risk of burnout. Throughout

the pandemic, nurses have been exposed to a high risk of COVID 19 infection and majority were concerned that they might get infected as they had workmates who had been infected and some had died due to the infection (Zhang , et al., 2020). The results showed that nurses who had a fear of getting infected with COVID 19 had high levels of burnout; they presented an average total score of burnout of 50.75 out of 70 (Toscano, Tommasi, & Giusino , 2022). Further results showed that nurses are a high risk group as they have been in a direct and continuous contact with COVID 19 infected patients and fear being infected and the repercussions of the infection (Galanis et al., 2021). Additionally, nurses had a fear of a getting infected and also infecting others with Covid-19 and this also contributed to burnout (Murat, Köse, & Savaser, 2020).

6.2.2 Perceived workload

This is a personal assessment of the amount of work available and whether the work is doable or is overwhelming. It does not entail the exact amount of responsibilities available but how the nurses feel about them and their capability to adapt to them. Due to a range of factors experienced by nurses during the pandemic such as increased workload and emotional challenges of having to work during a deadly pandemic, nurses have had an increased perception about workload. Nurses felt like they had to work for long hours and they had to treat many patients, these perceptions led to burnout. The elevated perception of workload was linked to the three dimensions of burnout (Bryneel et al., 2021). ICU nurses reported emotional exhaustion due to perceived workload (Butera, et al., 2021). Additionally, flacuations in perceived workload among frontline workers has created high risk enviroment for burnout (Khan, Bruyneel, & Smith, 2022).

6.3 Socio-demographic causes

Socio-demographic causes are factors related to individuals' social and demographic characteristics that can influence various aspects of their lives, behaviors, experiences and work. The results of this study indicate that age and gender were determinants of burnout among nurses during COVID 19.

6.3.1 Age factor

Nurses of young age had high burnout levels than the older nurses. Younger nurses experienced emotional drainage by work and detached from the patients COVID-19 patients they took care of (Zhang et al., 2020). Nurses below the age of 30 experienced great levels of burn out as compared to the nurses who we 50 years and above. (Khan, Bruyneel, & Smith, 2022) (Butera et al., 2021).

6.3.2 Gender factor

Male nurses who treated COVID 19 patient experienced higher levels of burnout as compared to their female colleagues (Khan et al., 2022). Male nurses working in the ICU and Emergency room (ED) during the pandemic experienced high levels of depersonalization than female colleagues. Results showed that male nurses had high amounts of depersonalization with the relative ratios of 0.28 in ICU and 3.87 in the ER (Butera et al., 2021) (Bryneel et al., 2021). Male nurses who had less than ten work experience and provided care for infected patients were emotionally exhausted (Murat, Köse, & Savaser, 2020).

6.4 Coping mechanism

These are strategies that nurses can implement during the pandemic in order to prevent or decrease the chances of experiencing burnout. They include providing support, sufficient supply of protective equipment, efficient communication and expanding nursing workforce.

6.4.1 Support

This entails social, emotional, mental and psychological support. Social and psychological support is important in promoting nurses' and nurtures their general well-being. This gives them assurance that their feelings, frustrations, fears and their concerns are put into consideration. This therefore reduces nurses' burnout and improves patient care. Morale boosting intervention for nurses operating extremely demanding work setting such encouraging a positive attitude at work and also rewarding work well done (Zhang et al., 2020). A colleague- supported debriefing is recommended improving a safe environment

for discussions among the nurses. Here the nurses can share and reflect on their challenges and experiences of fighting the pandemic with the objective of reducing emotional exhaustion and reducing its build up. Furthermore, debriefing is a significant tool in the assurance of psychological support (Toscano, Tommasi, & Giusino , 2022). Debriefing is suggested as a cost effective intervention in promoting the well-being of nurses and alleviating burnout (Khan, Bruyneel, & Smith, 2022). The results have shown that ICU nurses and ER nurses who received a great social support from their co-workers and their managers experienced a decrease in chances of having burnout (Butera et al., 2021). Family and social support is a significant factor in dealing with burnout that has resulted from COVID 19 pandemic (Galanis et al., 2021). Correspondingly, providing nurses with a wellness and discussion workshops is a significant approach towards mitigation of burnout by reducing moral distress in nurses while providing care for corona patients (Cordova et al., 2022).

6.4.2   Adequate understanding of the disease

An adequate understanding of Covid-19 is a significant mechanism for combatting burnout among nurses. The good knowledge about the disease reduces the fear and concern that is associated with the unknown and also boost nurses' confidence while providing care to the patients and therefore mitigating burnout. A comprehensive knowledge about COVID 19 accompanied with adequate training can improve nurses' confidence in providing care through adequate training (Zhang et al., 2020). Prior education and management of COVID 19 patients help protect nurses against burnout (Galanis et al., 2021). According to (Cordova et al., 2022), the incorporation of COVID 19 patient care and resilliance in nursing school curriculum is reccommended as an intervention from occurrence of burnout.

6.4.3   Sufficient supply of personal protective equipment (PPE)

Ensuring a supply of sufficient Personal protective equipment is a significant coping mechanism in preventing the occurrence of burnout among nurses during Covid-19 pandemic. When the supply of PPE is adequate, it reduces the frequent worries and concerns in nurses about their health safety and the risk of being infected (Zhang et al., 2020). Providing sufficient PPE during the pandemic is a significant protective measure (Bryneel et al., 2021).It is reported that fifty percent of ICU and ER nurses reported

lacking enough PPE during the pandemic that resulted to burnout; provision of enough PPE can help mitigate burnout (Butera et al., 2021). It is recommended that measures to ensure adequate provision of PPE should be put in place (Khan, Bruyneel, & Smith, 2022).

6.4.4 Efficient Communication

Efficient and effective communication is a significant element in curbing burnout among nurses during COVID 19. A clear communication channel enables support, understanding and cooperation among the entire healthcare workforce including the hospital management. When communication flow is efficient nurses feel their needs are heard and guidance from the management also reach the nurses. With this nurses feel supported, care provision is improved and a safe working environment is created. Improving communication among nurses and the management is important intervention for mitigating burnout and its consequence (Toscano, Tommasi, & Giusino , 2022). Clear communication of guidelines is important intervention for prevention and alleviating nurse burnout during Covid-19 (Zhang et al., 2020). Studies advocate for nurse leaders to emphasize on communication and organization as an intervention for burnout (Khan, Bruyneel, & Smith, 2022).

6.4.5 Expanding Nursing work force

Hiring more nurses is an important strategy in the prevention of burnout in a hospital setting. Increased workload and long workers among others factors resulted to burnout among nurses during the pandemic. When nurse workforce is expanded, even allocation of workload and improved patient care is achieved lowering the amount of burnout and its chances. Due to the increased workload brought about by the pandemic, increasing the number of nurses decreases nurse patient ratio (Bryneel et al., 2021) (Khan, Bruyneel, & Smith, 2022) . Students in nursing should be taught and guided to provide care to Covid-19 patients and resiliency in their clinical practical resulting to expansion in the workforce hence preventing burnout related to inadequate nursing staff (Cordova et al., 2022).

7   Discussion

This chapter discusses the methodology used, the findings, theoretical framework employed in this study and the limitations encountered by the researcher.

7.1   Discussion of the methodology

A scoping review methodology was chosen for this study because it clearly provides answers for the research objectives. This review allowed the researcher to widely and deeply explore the causes of burnout during the pandemic and examine coping mechanism by incorporating different types of research from quantitative research, qualitative research to non-traditional publications Data analysis in this method can be presented in a diagrammatic or tabular design and or in a descriptive format (Peters et al., 2022). The researcher chose a descriptive format of analysis because Covid-19 is an emerging topic in regards to influences on burnout in nurses and there is no adequate qualitative studies published on this to be able to carry out a systematic review.

7.2   Discussion of the results

Globally, nurses are working hard to save lives in the face of a deadly pandemic that has resulted to nurses' burnout. In 2020, International Council of Nurses (ICN) raised a red flag on the continuous rise in burnout among nurses during Covid-19 (ICN, 2021). The aim of this study is to describe the causes of burn-out among nurses during Covid-19 and explore their coping strategies. Based on the results from eight selected articles in this scoping review themes and sub-themes emerged as shown in **Table 1** and **Table 2**. The results reveal that nurses suffered significant levels of burnout during COVID 19 that were triggered by many causes. (Rivas, et al., 2021), reports that nurses who provided care for Covid-19 patients experienced great levels of burnout than the nurses who took care of patients who were not infected with the virus. By examining the results, the first question on; "What are the causes of burnout among nurses during Covid-19?" was answered. Themes that emerged were work-related factors of burnout (Lack of PPE, long working hours, increased workload, experience working with COVID 19 patients and work experience), Psychological factors (Fear of infection and perceived workload), socio demographic factors (age and gender factor) and coping mechanisms (Support, adequate

understanding of the disease, sufficient supply of PPE, efficient Communication and expanding nurse workforce). Lack of sufficient PPE and increased workload were the main causes of burnout among nurses during the pandemic (Khan, Bruyneel, & Smith, 2022).

PPE are important in the protection from contracting Covid-19 and therefore are a significant part among the frontline nurses as it ensures safety while providing care to the infected patients. Results in the study shows that there was a significant inadequacy in PPE among the nurses (Khan, Bruyneel, & Smith, 2022) while other nurses lacked confidence that the hospital had the ability to provide sufficient PPE (Cordova et al., 2022). This instigated anxiety and fear among nurses as they feared getting infected putting them at a risk of burnout. Increased workload, perceived work load,extended working hours due to high numbers of incoming patients to the hospitals led to burnout among nurses. These nurses lacked enough time to rest hence were burnt out

Increased workload and experience with working with covid-19 patients led to burnout among nurses during the pandemic (Bryneel et al., 2021).Overwhelming patients surge and the challenges in the treatment of a new highly infectious disease that is deadly has been physically and emotionally exhaustive to nurses. Treating and manging these patients combined with indequate time to rest and increased nurse patient ratio left them feeling exhausted. Experience working with covid-19 exposed nurses left nurses vulnerable to burnout. Moreover, having to witness infected patients suffer and others die without their loved ones emotionally drained nurses and were and resulted to emotional exhaustion and a decline in the sense of personal accomplishment (Khan, Bruyneel, & Smith, 2022).

Psychological causes that resulted to nurses burnout were fear of covid 19 and perceived workload. Perceived workload is personal assessment of the amount of work available and whether the work is doable or is overwhelming. The overwhelming feeling that had much work and that everyone in the world had a high expections of them during the fight of the pandemic led stress and anxiety.The elevated perception of workload was linked to the three dimensions of burnout. This is consistent with (Hur, Cinar, & Suzan, 2022), that perceived workload was associated with burnout. Due to the deadly nature of the virus nurses feared to be infected and also infecting their loved ones at home. The fear resulred into anxiety and stress hence burnout.

Among the socio demographic causes of burnout were gender and age. Younger nurses experienced higher levels of burnout as compared to older nurses. This therefore means

that younger nurses were more vulnerable to burnout attributed to the fact new to the challenges that came with the pandemic at their new. The results also showed that male nurses providing care to COVID 19 patients exhibited high burnout level than their female counterparts most probably due to society beliefs about gender roles which influence their ways of coping. Male nurses experienced depersonalization which is one of the characteristics of burnout, which is involves being detached from patients (Malach & Jackson, April 1981).

Burnout according to Malachi burnout inventory is characterized by emotional exhaustion, depersonalization and low personal accomplishment (Malach & Jackson, April 1981). Depersonalization can result into poor services to the patients by the healthcare provides as it encourages occurrence of clinical errors compromising patient safety (Lyndon, 2015). It is therefore important to explore coping mechanisms and strategies that can be applied by organizations and also nurses to prevent burnout. Emotional, social and psychological support is vital in reducing and prevention burnout in nurses in the pandemic. The findings show that support gives nurses assurance that the fear and concerns are put into consideration. Debriefing is recommended as a psychological tool in mitigating burnout (Toscano, Tommasi, & Giusino , 2022) and in other results debriefing is cost effective intervention tool for burnout (Khan, Bruyneel, & Smith, 2022). ICU and ER nurses who received social support from managers and colleagues had a decreased burnout (Butera, Brasseur , Filion, Bruyneel, & Smith, 2021) .Generally showing support to nurses especially during the Covid-19 era, improves their confidence in work, their quality of life and improved patient care and burnout is eventually.

Additionally, having a comprehensive knowledge of COVID 19 infection is a vital coping strategy in nurses experiencing burnout during the pandemic. This decreases anxiety by providing understanding into ways the virus is transmitted, prevented and treatment plan. This prepares nurses by boosting their confidence to effectively care for infected patients. Therefore, burnout is reduced. Furthermore, having knowledge of how the virus is transmitted enables nurses to take required precaution preventing the fear of infection, which was a contributor to burnout. Moreover, an accurate knowledge about a disease promotes effective decision making and helps nurses to adapt with the developing and unpredictable surrounding of the pandemic and therefore enabling them to cope with confidence to the ever changing circumstances. Prior education and management of Covid-19 patients help protect nurses against burnout (Galanis et al., 2021).

Expanding nurse workforce, adequate provision of PPE and effective communication flow and adequate knowledge about covid-19 were found to be the coping mechanisms for Covid-19 and therefore the second question on, "What are the coping strategies for nurse burnout during Covid-19?", was answered. Hiring more nurses decreases the workload and intervenes for extended working hours. Availability of enough nursing personnel is an intervention for burnout in nurses during the pandemic as it distributes the workload ensuring nurses are not emotionally exhausted and detached from work. The pandemic resulted into long working hours and increased workload that resulted into burnout. It is proposed that students in nursing should be taught and guided to provide care to Covid-19 patients and resiliency in their clinical practical resulting to expansion in the workforce hence preventing burnout related to inadequate nursing staff (Cordova et al., 2022).

Adequate provision of PPE by hospital management ensures safety and reduces the fear and anxiety of getting infected hence reducing and preventing burnout since insufficient PPE was among the main causes of nurses' burnout. Efficient communication flow between management and nurses, among nurses and other hospital staff encourages teamwork, efficient conflict resolution, improved decision making and enhanced productivity. A good communication help nurses air out their grievance and gives room for resolving and arrival at good decision making. Through good communication nurses are able to feel included, heard and trusted eventually fostering believe in themselves hence burnout is curbed. Nurse leaders should emphasize on communication and organization as an intervention for burnout (Khan, Bruyneel, & Smith, 2022).In cooperation of efficient communication together with other strategies can create a supportive and safe working environment encouraging nurses' improved patient care and resilience during covid-19 pandemic.

7.3   Discussion of the theoretical framework

This study was developed based on Neuman's system model as its foundational framework. This theory is significant to the study as it offers a holistic perspective. It is brings out interdependence of physical, psychological, social, and environmental factors influencing nurses' risk of experiencing burnout during the pandemic. It enables the identification of various stressors experienced by nurses, such as lack of insufficient PPE, increased workload, exposure to infectious patients, perceived workload, and emotional

and the fear of getting infected and also explores the coping mechanisms that can be applied. This model contains levels of prevention; Primary prevention targets to safeguard the organism from harm by implementing measures before it comes into contact with a stressor. Both secondary and tertiary prevention are implemented after the client has come into contact with a harmful stressor. Secondary prevention aims to minimize the impacts or potential impacts of stressors by early diagnosis and symptom treatment, while tertiary prevention is the efforts used to minimize the impacts of stressor and to restore a client to the state of wellness after they have received treatment (Alligood, 2018).The Model acknowledges the significance of preventive measures and interventions at different levels in order to maintain nurses' stability and balance during challenging times. This study found providing support which entailed social, psychological and emotional to the nurses, adequate provision of PPE, Effective commutation flow and increase nurse workforce. All the coping mechanisms found by the researcher can be used in all levels of prevention according

7.4   Limitation of the study

Limitations of a study are the weakness or challenge the researcher encounters during the process of the study. It is significant as it gives a meaning to the reader (Ross & Zaidi, 2019). While doing this study, the researcher had intended to use a systematic literature review but in the process of data collection, the research had challenge finding enough quality articles for this review. In the middle of the research the methodology had to be changed to a scoping review due the emergent nature of this research title. The researcher worked hard to make sure that the articles in this study were chosen and analyzed without biasness even though the type of review used has a risk of bias. The chosen review does not have a mandatory use of only peer reviewed articles but incorporates unpublished and articles that are not peer reviewed, and therefore can lower the quality of the findings. Nevertheless, the researcher used all peer reviewed articles to analyze the results. Finally, there is a limited research done that only focus on only burnout in nurses during Covid-19 pandemic and the researcher recommends that more research should be done.

8 Conclusion

In conclusion, nurses experienced high levels of burnout during the pandemic caused by various factors such as lack of PPE, increased work, perceived workload, fear of infection among others. This study therefore provided important insights into the essential factors that influence burnout among frontline nurses during covid-19 pandemic and provides coping strategies that can be done to mitigate burnout. Burnout not only affects nurses' general well-being but further negatively affects the quality of care the patients receive during the current pandemic. Formulating and implementing evidence based interventions for burnout ensures that nurses have confidence and are motivated in the provision quality care.

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Appendices

Appendix 1 Articles Analyzed

Databases	Article	Country	Aim	Method
Pubmed	Stress, Burnout, and Coping Strategies of Frontline Nurses During the COVID-19 Epidemic in Wuhan and Shanghai, China (Zhang , et al., 2020)	China	The aim of the study was to identify causes of stress and burnout among nurses during Covid-19 and investigate how nurses cope (Zhang et al.., 2020).	A Cross-sectional survey
Wiley online Library	Determinants of the risk of burnout among nurses during the first wave of the COVID-19 pandemic in Belgium: A cross-sectional study (Khan, Bruyneel, & Smith, 2022)	Belgium	The aim of this research is to determine the probability of burnout among nurses during covid-19 pandemic and to identify specific groups at higher risk of burnout and factors that could either protect or increase the risk of burnout (Khan, Bruyneel, & Smith, 2022).	A cross-sectional study
Online Wiley Library	Determination of stress, depression and burnout levels of frontline nurses during the COVID 19 pandemic (Murat, Köse, & Savaser, 2020)	Turkey	The aim of the study is to investigate stress, depression and burnout levels in nurses during pandemic (Murat, Köse,	A cross-sectional study

			& Savaser, 2020)	
Pub med	Prevalence of burnout risks and factors associated with burnout risk among ICU nurses during the COVID 19 outbreak (Bryneel , Smith, Tack, & Pirson, 2021)	Belgium	This study aimed to assess burnout prevalence and to identify risk factors of burnout among ICU nurses during COVID 19 pandemic (Bryneel , Smith, Tack, & Pirson, 2021)	Quantitative method
Pub med central	Burnout in Intensive Care Unit Nurses During COVID 19 (Toscano, Tommasi, & Giusino , 2022)	Italy	This study aims at assessing burnout symptoms and prevalence and its protective factors among ICU nurses during COVID 19.	A Scoping Review
Pub med central	Prevalence and associated factors of burnout risk among intensive care and emergency nurses before and during the corona virus 2019 pandemic (Butera, Brasseur , Filion, Bruyneel, & Smith, 2021).	Belgium	This study aimed at assessing burnout associated factors in emergency and ICU nurses before and during COVID 19 pandemic (Butera, Brasseur , Filion, Bruyneel, & Smith, 2021)	Quantitative Method
Wiley	Nurses' Burnout and associated factors during COVID 19 pandemic (Galanis, Vraka, Fragkou, Bilali, & Kaitelidou,	Greece	The study aims to investigate burnout and its associated factors.	A systematic review and meta-analysis

	2021)		
Pub med Centra l	Burnout and intent to leave during COVID 19 (Cordova, Johansen, Grafova, Crincoli, Prado, & Pogorzelska-Maziarz, 2022)	USA	The aim of the this study is to investigate staffing, PPE availability and physical exhaustion that resulted to burnout and intent to leave among nurses during COVID 19 (Cordova, Johansen, Grafova, Crincoli, Prado, & Pogorzelska-Maziarz, 2022) A cross sectional survey