LAB University of Applied Sciences

Necessities and Strategies for Improving Nurses' Emotional Well-being During COVID-19

Abstract

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Title of the thesis
Necessities and Strategies for Improving Nurses' Emotional Well-being During COVID-19

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Organisation of the client.

Abstract
The purpose of this thesis is to guide nurses and healthcare system decision-makers in understanding work stress and challenges faced by nurses during the COVID-19 outbreak, and the impact on nurses' mental health and occupational health resilience. This study examines nurses' general perceptions of their work during the COVID-19 outbreak, with information limited by regional culture.
The goal of this thesis is to examine issues of nurse job safety, psychological stress, and ethical dilemmas that have affected health systems around the world since the outbreak of COVID-19 to date. And discuss the ways and necessity to solve these problems.
The literature review is part of the thesis. The data search and collection process mainly came from electronic databases such as Cochrane Library and Google Scholar. In this thesis, the method of inductive content analysis is used to organize and analyze the collected literature, and summarize the content for data analysis. In order to meet the accuracy and timeliness requirements of the literature, the publication year of the literature is between 2018-2022.
The findings of this thesis show that during the COVID-19 period, nurses have to face greater work and psychological pressure and challenges than usual, and the professional well-being of nurses is seriously affected. Improving nurses' job security and reducing psychological stress is necessary, and a multifaceted approach is needed to improve nurses' emotional health and resilience.

Keywords
Nursing, COVID-19, Job Security, Psychological Stress, Ethical Dilemma, Improve, Emotional, Well-being, Resilience

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ABBREVIATIONS

WHO	World Health Organization
THL	Department of Health and Welfare (FINLAND)
PPE	Protective Personal Equipment
PTSD	Post Traumatic Stress Disorder

1   Introduction

Beginning in 2019, an infectious disease caused by the severe acute respiratory syndrome coronavirus SARS-CoV-2 virus spread rapidly across the globe. The new coronavirus swept across Asia, Europe, the United States and countries around the world. More than 2 million people in Europe have died from COVID-19 since the start of the COVID-19 pandemic. This has also put enormous pressure on the medical community. (WHO 2021a.)

Studies have shown that SARS-CoV-2 disrupts normal immune responses, leading to compromised immune systems and uncontrolled inflammatory responses in severe and critically ill patients with COVID-19, and that viral infection can induce severe shock and organ failure syndrome cytokine release, resulting in lymphopenia, lymphocyte dysfunction, and abnormalities in granulocytes and monocytes. (Li et al. 2020.)

The COVID-19 pandemic is considered the largest community health event in more than a century (Amal 2021). To prevent the spread of the virus in Finland and the rest of the world, everyone's daily routine has changed in some way, with some turning to remote work. However, not everyone can work remotely. Most people who con-tract the virus do not need special care and develop mild to moderate disease that resolves on its own. However, some people who are seriously ill require medical attention. (WHO 2020b.)

As primary health care services are the first line of defense in healthcare, caregivers are at greater risk of exposure to the virus. At the same time, most caregivers are at high risk of infection and even death due to insufficient personal protective equipment. Even uninfected caregivers still suffer from severe stress and psychological barriers, and even with protective equipment, they are still afraid of being infected and even trigger Post Traumatic Stress Disorder, not to mention nurses who are not adequately protected. (THL 2020d.)

At the same time, nursing staff face ethical dilemmas, caring for clients as nurses, and if they fail to perform their duties due to fear of being infected, they experience moral condemnation and generate more negative emotions (Prestia 2020).

A series of health care-related issues caused by the Covid-19 pandemic have forced nurses to work in challenging environments that threaten their health. Employers or nurse managers need to provide more support for nurses to enhance nurses' resilience and professional well-being. (Ivana et al. 2021.)

The purpose of this thesis is to explore the need to improve job security and reduce psychological stress among nursing staff during the pandemic, as well as ways to improve the emotional well-being of nurses.

2 The Need to Improve Nurses' emotional Well-being

2.1 COVID-19 Virus

SARS-CoV-2, a positive-stranded single-stranded 29.9 kb RNA beta coronavirus enveloped in a spiked shell resembling a corona (Lotfi et al. 2020; Salian et al. 2021).

Relative to other positive RNA viruses, SARS-CoV-2 belongs to the orthocoronavirus sub-family with the largest RNA genome. These structurally complex accessory proteins enter host cells and replicate and transcribe genes for assembly and release of the virus itself. (Salian et al. 2021; Hillen et al. 2020.)

SARS-CoV-2 can be transmitted directly through droplets between infected and uninfected individuals. Airborne transmission is the main route, and when an infected person coughs, sneezes, or even talks, the virus can spread. It is also worth noting that indirect contact with contaminated objects, such as the personal protective equipment of nurses or patients, can also be a source of infection. (Lotfi et al. 2020.)

As the pandemic continues, the variant strains of the new coronavirus are still changing. In particular, the viral spike protein was mutated. Mutations in this protein lead to changes in viral infectivity and antigenicity, leading to increased viral infectivity and reducing the protection of the human body from existing vaccines. It makes the prevention and control of the COVID-19 pandemic more complex and full of uncertainty. (Wang et al. 2020; Yurko-vetskiy et al. 2020.)

2.2 The Current State of the Healthcare System Affected by the COVID-19

Epidemiologically, a disease outbreak is an emergency. It is characterized by a sudden surge in disease in a given area over a period of time. The coronavirus disease pandemic that began in 2019 has had a devastating impact on already fragile nursing homes and other care organizations, especially long-term care facilities. (WHO 2022c.)

If the situation is not effectively controlled, it can quickly spread to large populations and become a pandemic. The spread of SARS-CoV-2 is more complex than previous pandemics. (Salian et al. 2021; Lotfi et al. 2020.)

In Finland, The COVID-19 outbreak is still reportedly causing problems in these primary healthcare wards. A total of 1,271,516 cases of the disease have been detected in Finland throughout the coronavirus epidemic. (THL 2022a.)

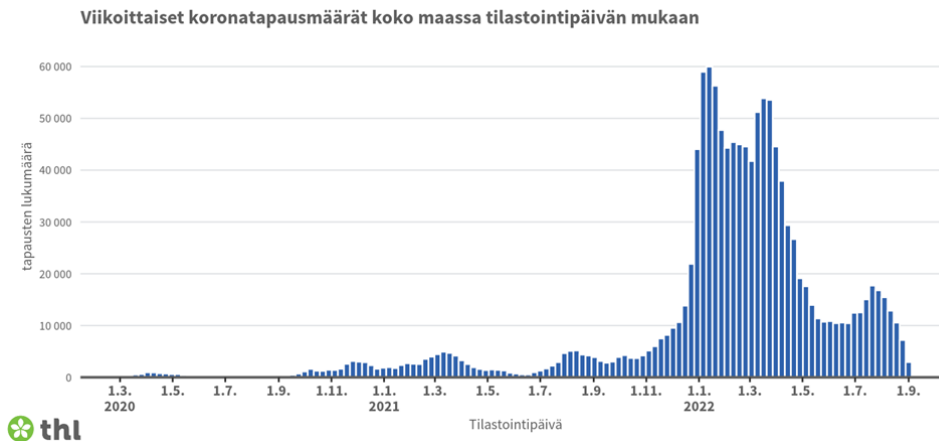**Viikoittaiset koronatapausmäärät koko maassa tilastointipäivän mukaan**

Image 1 Statistics of Weekly Cases in Finland so Far (THL 2022a)

In Finland, total coronavirus infections are high despite more than 87% of people over 18 receiving at least two doses of the COVID-19 vaccine (Ministry of Social Affairs and Health 2022).

Even in the face of the new coronavirus, the Finnish society and the Ministry of Health have recently declared: The total number of patients treated in specialist care and primary care has remained high since the beginning of 2021-2022, and the coronavirus pandemic still shows no signs of abating in Finland. (Ministry of Social Affairs and Health 2022).

The COVID-19 pandemic has exposed a number of anomalies related to the nursing profession, including the lack of respect by the healthcare system for nursing staff, inadequate job security protections for nursing staff, forcing them to be exposed to the virus, and in life-threatening health conditions work under the premise. The number of nursing staff is positively correlated with the quality of service received by clients. The problem of attrition in the nursing profession is long-standing. Prior to this, the problems of globalization that the nursing industry has exposed include several inequities, a lack of protection in the working environment for nursing staff, their voices are not given enough attention, low-income and high-risk work contradictions, and even nursing The nature of this work itself has not been respected and recognized by the society, which makes professional nurses lack professional pride and reduce professional happiness at some times. Becoming a qualified nurse requires at least 3 to 4 years of study, followed by several years of working clinical experience. However, nurses' promotion paths intersect with other professions are narrower, and the limitations of career development opportunities also make many nurses lack motivation to work. (Judith et al. 2020; Garrett et al. 2021)

The complexities and challenges posed by the COVID-19 pandemic have exacerbated nursing staff attrition while reducing the confidence of prospective nurses, further hindering the growth of the nursing workforce. Backward employment relationships also hinder the staffing of nursing staff.

As a result, the nursing staff's trust in the medical system has been reduced, and conflicts with the medical system or employers have been exacerbated. Many nurses have chosen to leave, making the already tight labor problem worse before the pandemic. In the absence of an adequate supply of nurse labor, the decline in health care delivery will be exacerbated, the health system's ability to respond to emergencies will be affected, and patients will ultimately be at risk. Moreover, the COVID-19 pandemic has added pressure on an already fragile workforce in nursing homes and other long-term care facilities. (White & Rosa 2021; Tener 2022.)

In addition, the physical pain and emotional torment experienced by nurses has been especially evident during COVID-19.

In the future, possible scenarios include more and more nurses will consider leaving the profession. In addition, there will be more unions representing nurses to fight for more equitable rights.

2.3 Job Security and Understaffing Pressures

In the spring of 2020, the shortage of anti-epidemic medical protective equipment exists in many countries around the world. The price of personal protective equipment has skyrocketed and cannot be effectively supplied in a short period of time, causing panic buying around the world. (Talha 2021.)

Take the United States as an example. During COVID-19, especially in the early stage, there is a severe shortage of personal protective equipment needed by medical personnel. The urgent need for medical protective equipment and the imbalance in production have triggered a greater demand disaster. Despite warnings from organizations including the World Health Organization and a pandemic flu crisis, most governments are not fully prepared. Nurses expressed surprise and anger at the government's lack of preparedness for a pandemic. (Judith et al. 2020.)

The shortage of medical supplies quickly became a serious public health problem, and medical professionals on the front lines called on the government, especially the government, to deploy sufficient protective equipment, especially gloves, medical masks, face shields and medical protective clothing. (Judith et al. 2020.)

A study of Israeli nurses found that nearly half had received training on COVID-19 before caring for infected patients. Nurses appointed to care for people with covid-19 who generally consider themselves to be at high risk of infection. (Judith et al. 2020.)

At the top of the list of concerns for nurses is the lack of personal protective equipment. With the development of the pandemic, more and more nurses need to be quarantined due to infection. In the early days of COVID-19, high infection rates and high-risk environments, the protection of nurses relied on a large number of protective equipment, which included masks, respirators, face shields, as well as surgical gowns and disposable gloves. (Arnetz et al. 2020.)

Nurses and all health workers must be recognized for their vital contribution to global health, especially during a pandemic. Nurses have been at the forefront of the pandemic, supporting sick clients and their families with health care and helping them ease their fears of facing the virus. (WHO 2020d.)

Global shortage of 6 million nurses in early 2020 (Gulsah et al. 2022). Nursing shortages in healthcare systems around the world were already a chronic problem before the COVID-19 pandemic. During the pandemic, the problem of attrition in the healthcare system has become even more thorny. The most obvious staffing shortage is for nursing staff, Moreover, insufficient number of nursing staff will have a direct impact on the quality of nursing care. (Arnetz et al. 2020.)

The shortage of nurses' labor force increases the workload of nurses and directly affects the problem of burnout among nursing staff. The COVID-19 epidemic has increased the complexity and challenges of nurses' work environment, and the sudden increase in pressure and workload has made the already fragile nursing ecological environment more difficult. Nurses' burnout has increased the possibility of work mistakes and also Increased the risk of nurse infection. (White & Rosa 2021.)

PPE has been proven to be real and effective for COVID-19 protection. Personal protective measures for medical staff are the top priority in preventing and controlling infection. Ensuring the safety of medical staff at work is the key to stopping the further spread of the virus. Due to the nature of nursing jobs, they have to work face-to-face with patients. Virus-infected nurses will make the healthcare system more vulnerable and further reduce nurses' trust in the healthcare system. Due to this situation, many nurses choose to leave because of frustration with the health system, refusing to work in unprotected conditions. (Daniela et al. 2022; Judith et al. 2020.)

2.4 The Psychological Burden and Ethical Dilemma of Nurses

2.4.1 The Psychological Burden

Caregivers under the COVID-19 pandemic suffer from post-traumatic stress disorder, anxiety, stress, depression and moral dilemmas, some nurses feeling isolated and angry. (Kechi 2020.)

The medical crisis during the COVID-19 pandemic is exhausting nurses and other health professionals. Nurses have had to increase their workload due to a severe shortage of nursing staff. When facing the COVID-19 epidemic, nurses are not always working heroically on the battlefield of the hospital like "heroes" as reported by the media. On the contrary, many times, nurses will be demoralized due to the sudden huge pressure. (Arnetz et al. 2020.)

Moreover, under the condition of insufficient protective equipment, nurses fear infection. About a third of Israeli nurses are afraid of being infected, according to a study devoted to COVID-19 among Israeli nurses. More than half of the respondents identified themselves as being at high risk of being infected. (Kechi 2020.)

Frontline caregivers face the challenges of social distancing as they face their families. Unprotected caregivers can be a dangerous source of infection for family members. In a research project, a nurse who was experiencing COVID-19 recounted: "I feel lonely as more and more colleagues are infected with COVID-19, and I don't know how many of them are sick.". To make matters worse, sudden outbreaks of the disease still have a high mortality rate. A nurse had to deal with patients who died of infection one after another. The psychological pressure is undoubtedly huge. In another side, due to manpower pressure, nurses have to wear protective clothing for long periods of time. This leads to dizziness and hypoxia. (Arnetz et al. 2020.)

In 2020, a statistic on the sleep status of nursing staff showed that the prevalence of sleep disorders among nurses during the pandemic was 43%. Nurses' sleep problems are related to psychological burden of working at high risk of infection and high levels of work stress, lack of support from employers and stigma. At the same time, nurses' physical problems have a lot to do with work fatigue caused by increased workload since COVID-19. (Mohammed et al. 2021.)

Nurses who need to take care of patients with COVID-19 said that they would worry that once infected, the health of their family members would be directly threatened, especially

for the family members of nurses who have underlying diseases or whose health status is not good. (Arnetz et al. 2020.)

Adequate sleep has a significant impact on human performance. Sleep disturbances can lead to fatigue and reduced concentration, and in severe cases, nurse make mistakes or even accidents. (Mohammed et al. 2021.)

During COVID-19, burnout has been a threat to the physical and mental health of nurses, and nurses in particular are facing more complex pressures and challenges than usual in the healthcare system. Another real challenge that nurses face every day is that the work model proposed by the employer is not accepted by the nurse, including the arrangement of weekly working hours, the regulation of working time range, and the arrangement of over-time workload. Unfair workload and time allocation can also lead to dissatisfaction among professional nurses, increasing the risk of nurse burnout. Unreasonable scheduling will re-sult in unequal work distribution. Correspondingly, the mentality of professional nurses will be affected by the uneven distribution. Dissatisfaction with job assignments makes nurses negative and aggravates burnout in the nursing profession. Nurses working in high-risk en-vironments need early supportive interventions, and if necessary, appropriate organiza-tional counseling services, and adequate rest periods must also be considered. (Gulsah et al. 2022.)

2.4.2 Ethical Dilemma

The COVID-19 pandemic has made the ethical conflicts that nurses need to contend with even more apparent. Contradictions include that employers have a duty to provide adequate Protective Personal Equipment to their employees, but nurses are required to take signifi-cant and uncertain risks in the absence of adequate protection. In addition, the unbalanced allocation of nurses by employers may also exacerbate negative emotions in nurses' work. (Nasrin et al. 2020.)

A code of nursing ethics is a formal statement of professional values and beliefs that guide nurses in making ethical decision-making. The Nurse's Code of Ethics provides a frame-work and guidance for standards of practice in all nursing settings and outlines social and ethical standards of nursing. (Sheila et al. 2021.)

All nurses are required to take an oath before becoming a professional nurse. The oath includes "I will dedicate my life to the service of the welfare of mankind" and declares to help and put the sick first, regardless of nationality, gender or creed. At a time when there are insufficient protective equipment for Covid-19 and a large number of patients are in

urgent need of treatment. The contradiction and conflict between ethics and morality put nurses into a dilemma. (Deva 2021.)

A code of ethics in nursing encompasses issues of social justice, altruism, advocacy, and the right to care for nurses. As the workhorse of the healthcare system, nurses' voices are often ignored. Nurses have the right to work in a safe environment and it takes moral courage to refuse to work without personal protective equipment. It should be noted that when the voice is controlled and dominated by most groups, the voice of a single group is likely to be ignored, such as the role of the nurse group in the whole medical system. People call nurses "Heroes", but they ignore the fact that nurses are only a profession, and thousands of ordinary humans do this profession. This is undoubtedly a moral kidnapping, making nurses bear the cross of so-called "heroes" and guiding them to treat patients on the premise of selfsacrifice. Society generally believes that nurses should have higher ethical standards. Most of the hardships faced by nurses during the pandemic have their roots in the role of public health policy and implementation. (Sheila et al. 2021; Kashica et al. 2020.)

In terms of professional ethics regarding saving lives and relieving patients' suffering, nurses must face the potential reality that their patients suffer or even die under the influence of disease. However, sometimes it is difficult to make the move to delay or refuse treatment. Especially when scarce resources like ventilators are under-allocated. Another moral dilemma for nurses due to the scarcity of ventilator equipment is related to the age of patients. Different nurses hold different opinions. Nearly half of the nurses believe that it may be more reasonable not to provide ventilators to the elderly when resources are limited. More than half of the nurses also said that all patients should be treated equally and Treatment, even under the premise of shortage of resources. (Andrew 2020.)

Notably, the more confident certain nurses are about patient care, the fewer nurses feel empowered to refuse care for elective patients. In other words, nurses may feel intimidated by patients with COVID-19, and when nurses are more afraid to treat a patient or believe that they are not qualified to treat a patient, nurses will feel that they have the right to refuse to provide treatment Serve. How nurses can make the most fair and transparent decisions in accordance with the professional norms of nurses in situations of insufficient resources, insufficient manpower, or even emergencies is a great challenge to the professional ethics of nurses. (Andrew 2020.)

In addition, nurses also face extreme ethical challenges at the societal level. The situation facing nurses is complex. On the one hand, caring for and dealing with COVID-19 patients and dealing with their death can be exhausting for nurses. On the other hand, nurses are deprived of social support. Some nurses said that during the period of COVID-19, front-line

nurses must bear the high risk of infection. The professional dignity of nurses has been threatened by family, friends and even relatives. Nurses are facing injustice and marginalization. As nurses who were directly in contact with the virus and were on the front line, the outside world did not pay enough respect and attention to nurses. Instead, nurse managers were praised, resulting in a psychological gap in which nurses were not valued and their efforts were not recognized accordingly. (Nasrin et al. 2020.)

3 Thesis Aim, Purpose and Research Questions

The purpose of this thesis is to explore the need of improving job security and reducing psychological stress among nursing staff during the pandemic, as well as ways to improve nurses' emotional well-being.

The whole thesis aims to explore strategies to help nurses improve their job well-being by studying the challenges and pressures of work safety and stress in the healthcare system under the current threat of Covid-19.

The main research questions are:

1. **Why is it necessary to improve job security and reduce stress for caregivers during covid-19?**

2. **What are the strategies for improving nurses' emotional well-being during a pandemic?**

4 Research Method

4.1 Literature Review

This thesis used a literature review. When undertaking a research project, it is necessary to refer to previous sources and literature. The rationality of the research questions of the thesis can be demonstrated through literature review. A literature review is a research method that can address a research question. Problem-solving by extensively collecting and integrating perspectives and results relevant to the research question and conducting an effective review. (Snyder 2019.)

Among many research methods, literature review is the most suitable way to solve the research problem of this thesis. The research questions of the paper are further analyzed and reasoned by combing and describing old credible research. A literature review is a comprehensive overview of the literature that includes the topic, theoretical content, and methods of the paper, and summarizes and synthesizes previous research on the basis of generalizations. A typical literature review can be field based, theoretical and method based. Literature review integrates old ideas, theories, methods or measures with new research questions to inspire and promote possible future research. (Justin & Alex 2020.)

A proper literature review will not generally include all the searched information, it needs a set of screening criteria and procedures. Increase the reliability of the paper through inclusion and exclusion criteria. In addition, the purpose of the literature review method adopted by different papers is different. The research motivation of this thesis is related to the actual problem, so it is important to consider and prove why the research problem of this thesis is important and what practical methods can solve or improve the problem. For the selection of relevant literature, it is necessary to select literature under the same or maximally similar problems, conditions, and backgrounds. (Chris 2018, 34-38.)

This thesis aims to study the impact and challenges of the COVID-19 pandemic that broke out in 2019 on professional nurses worldwide, as well as the necessity and strategies to improve the well-being of professional nurses at work. By means of literature review, This thesis screened and collected the literature since the outbreak of COVID-19, the factors that COVID-19 affects the well-being of professional nurses in the global health care system, and the improvement strategies of health policy makers. At the same time, summarize and analyse through abstract review.

4.2 Data Collection

This thesis adopts the literature review method. Using a wealth of historical data and scientific literature, review caregivers' behavioral and emotional feedback during the COVID-19 pandemic and find out why they actually behaved. This research is purely academic. In order to ensure the rigor and timeliness of thesis, the selected literature only cites existing scientific publications, academic research reports and policies that have been and will be implemented by the public health department that have been published and used by the public health department.

The search for suitable materials and searches has begun in September 2022. Materials for all literature reviews were primarily sourced from Google Scholar, Pub-Med, and Cochrane Library searches. Overall, search terms included: nursing, COVID-19, job security, psychological stress, improvement, mood, well-being, resilience.

Nursing and stress were the main search terms for the Cochrane Library, with one available out of 25 selections.

The search terms used exclusively in PubMed are Nursing, COVID-19, Stress, Job Security are limited to 2019 to 2022. A total of 56 results are displayed. From the results 3 articles in English and full-text free access were selected.

Using Google Scholar, key search topics revolve around job security, psychological stress and mood improvement, and resilience for nurses amid the COVID-19 pandemic. Years are 2019 to 2022. Table 1 summarizes the full search results for the search terms used in the database, the number of citations.

Data-bases	Key words	Delimitations	Results	Selected Articles
PubMed	Nursing AND COVID-19	2020-2022, Free full text, English	15	1
	Nursing AND Stress AND COVID-19,	2020-2022 Free full text, English	27	1

	Job Security AND Nursing AND COVID-19,	2019-2022, Free full text, English	14	1
Google Scholar	COVID-19	2019-2022, Free full text, English	118,000	2
	COVID-19, AND Job Security AND Nursing	2019-2022, Free full text, English	17,800	2
	Nursing AND COVID-19, AND Psychological Stress	2019-2022, Free full text, English	16,400	2
	Nursing AND Improve Emotional	2019-2022, Free full text, English	131,000	2
	Nursing AND Well-being AND COVID-19,	2019-2022, Free full text, English	38,200	2
	Nursing AND Resilience AND COVID-19,	2019-2022, Free full text, English	57	2
Cochrane Library	Nurse AND Stress	2019-2022, Free full text, English	25	1

Wiley Online Library	Nursing AND Resilience AND COVID-19,	2021-2022, Free full text, English	27	1
Total				17

Table 1 Searched Databases

In thesis research, appropriate inclusion and exclusion criteria are necessary. Effetive inclusion and exclusion criteria can maximize the availability of literature. (Patino & Ferreira. 2018). The literature inclusion criteria for this thesis include that the literature meets the full-text free literature from 2018 to 2022; the language choice is English. In total 17 articles were selected to this literature review. (see appendix 2.)

Inclusion and exclusion criteria are listed in Table 2:

Inclusion criteria	Exclusion criteria
Study published between 2018-2022	Study published before the year 2018
Language: English	Language: other than English
Free, full text available	Paid article, only abstract available
Research that solves a research problem	Search for words not related to the research question

Table 2 Inclusion and exclusion criteria

4.3 Data Analysis

Qualitative analysis can be descriptive or explanatory. Qualitative data analysis is capable of analyzing the complexities of human behavior. The data analysis of qualitative research is the systematic analysis of the text content and is the most important stage in the research process. As a researcher, you need to draw a sample from the overall sample for analysis. (Raskind et al. 2018; Lindgren et al, 2020.)

This thesis used inductive content analysis the data analysis at various stages of the process:
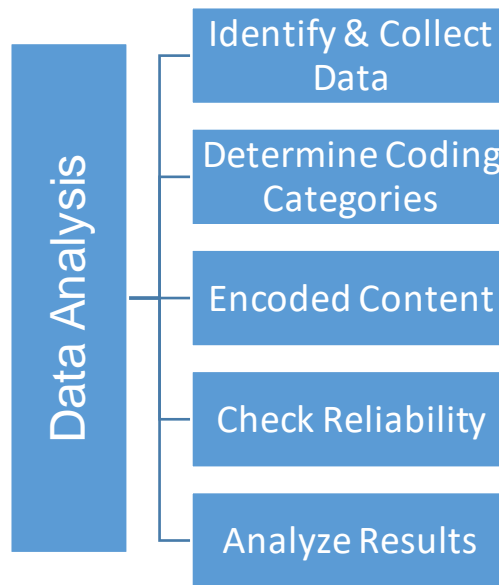
Figure 1 The summary of Data Analysis process

In the first stage, the academic literature related to the question and keywords is collected and familiarized by searching. In the second stage, all literature data is organized and preliminary codes are set. Stage 3, manual coding of qualitative data. The fourth stage examines the reliability of the literature and its applicability to the selected topic of the thesis. In the fifth stage, a logically clear and concise report is generated. For specific examples, please refer to the appendix 1.

5 Results

5.1 Improves Nurses' Emotional and Well-being

The professional well-being of nurses is considered to be an ideal professional experience in a virtuous circle of psychological satisfaction brought about by the sense of accomplishment in the profession of nurses, as well as the realization of one's own abilities and potentials. At the same time, occupational happiness is related to individuals, organizations, social environments, and work environments. (Lindsay et al. 2022.)

The COVID-19 outbreak occurred at the end of 2019. Historical data shows that a shortage of medical protective equipment turned into a global catastrophe in the spring of 2020, just months after COVID-19 was first detected. (Veenema et al. 2022.)

Nurses are contributing in many ways to the fight against COVID-19. First of all, nurses play the role of providing health education, screening risks, and support to the public. Second, nurses need to prevent and monitor the infection of COVID-19 virus in hospitals and any healthcare institutions. The third contribution includes the need for special protection for patients with immunodeficiency or underlying diseases such as chronic obstructive pulmonary disease, chronic diseases, and cancer in the special context of COVID-19. And, providing care for acute and severe COVID-19 patients. (Ching et al. 2020.)

At the same time, pandemic experts have made predictions about the virus's ability to spread and speed. These predictions still look very accurate today in 2022. In addition, Nursing shortages are chronic and exist in global health systems. However, it was not paid enough attention by the governments of various countries at that time. The outbreak a series of questions raised of the COVID-19 has increased the work pressure of nurses and sleep disorders and burnout in nurses exacerbated the loss of nursing staff, resulting in a huge employment gap which further accelerated the spread of the virus, and turned into a panic of health care system which further put pressure on medical staff, such a vicious circle situation. (Kunzler 2020.)

In the context of COVID-19, it is impossible to predict exactly how many nurses are likely to be infected, and infected nurses will not be able to care for patients. Such possibilities add more uncertainty to nurse staffing. (Morley et al, 2020.)

Nurses exhibit a mix of positive and negative emotions during the pandemic. When nurses must be in close contact with patients with infectious diseases, the negative emotions in the early stage are obvious. A nurse recounted, "I was very scared when I walked into the infections disease department." (Sun et al. 2020.)

Equipment shortages and lack of personnel are specific challenges facing healthcare systems during the pandemic, with some medical equipment having to be reused among patients, and even between uninfected and infected people. With the development of the pandemic, more and more nurses need to be quarantined due to infection. In Italy, medical workers have also been infected and died due to lack of effective protection. (Burki 2021; Sperling 2020.)

Nursing shortages are a long-standing problem, but surging demand for nursing care has made labor shortages even more pronounced. At the same time, nursing staff shortages are directly related to the quality and safety of patient care. To address this long-standing problem, Health system managers must confront the root causes of the nursing crisis, ameliorate the reality of nurse loss, and build confidence and cohesion among nursing staff. Therefore, reducing the turnover of nurses in the health system and ensuring the growth of the nursing team, such as stable nursing student resources, are the core issues that need to be faced. As the front-line nurses of the healthcare system, in order to retain this labor force and ensure a continuous and stable labor force injected into the healthcare system in the future, it is necessary to increase professional confidence so that the jobs of nurses are guaranteed. (Veenema et al. 2022.)

COVID-19 pandemic sparks government reflection on labour laws. The labor law establishes new rules and refines employment contracts. Guarantee employment with respect to combating non-compliant employment relationships. (Ferreira et al. 2022.)

The outbreak of COVID-19 raises issues that require health system policy makers to consider and improve the following issues. It is worth noting that the suicide rate of nurses is not only higher than that of the general population, but the suicide rate of female nurses is higher. Among the demographic factors, gender affects the job burnout of nurses more obviously, especially women have a higher degree of emotional exhaustion. Among occupational factors, nurses working in high-risk settings such as COVID-19 wards or intensive care units had higher levels of burnout. (Veenema et al. 2022; Lindsay et al. 2022.)

Health policy makers need to think comprehensively from a higher perspective, how to balance and satisfy the interests of employers, medical staff and patients. (Jennifer & Yana van der Meulen 2020.)

The employers of public hospitals or private hospitals will control or minimize costs due to market competition. In the context of stable market supply and demand, controlling and reducing costs is the basic strategy to maintain the operation of employer companies. But this strategy means that the underlying economics of hospitals and other employers operate similarly. That is to say, hospitals rely more on immediate production, instant clearance and

pre-purchased inventory, such as protective equipment and ventilator equipment needed by hospitals. At this time, limited production and soaring demand will produce extremely prominent and obvious contradictions. At this time, it is even more necessary for health planners to take necessary measures to intervene in supply and demand. (Jennifer & Yana van der Meulen 2020.)

Hospital administrators should formulate nurses' work patterns, including weekly working hours, working hours, and overtime workloads. Unfair distribution of workload and time can lead to dissatisfaction among professional nurses. Therefore, how to manage the team of nurses is also a challenge to the leadership of the hospital. Work assignments were required to meet the individual preferences of the nurses as much as possible on the basis of compliance with laws and regulations. For example, under normal circumstances, there are three groups of nurses on duty every day. Hospitals need nurses on duty at all times. Some nurses may prefer to work at night, while others prefer to work during the day. This requires hospital managers to have the ability to integrate information and dispatch nurses in a timely manner. (He et al. 2019.)

Health planners want to stabilize the medical infrastructure and ensure the quality of care for patients. There must be enough nurse staff. However, unprotected caregivers greatly increase the chances of infection or serious illness. Infected nurses are not only unable to care for patients, but also have a series of negative effects, which will have the opposite effect on the increase in the number of nurses. Health management decision makers should have the ability and vision to deal with the shortage of personal protective equipment, as well as the rational allocation of protective equipment. (Jennifer & Yana van der Meulen 2020.)

In order to cope with the surge in patient demand, the long-term allocation and scheduling of nurses should be considered in a higher dimension and long-term perspective. Long-term staffing and mid-term scheduling need to be considered. (He et al. 2019.)

Autonomy, impartiality, benevolence and non-maliciousness are fundamental principles of biomedical ethics in clinical practice. Unfortunately, these guidelines do not fully apply to the moral and professional crisis and ethical challenges nurses face during the COVID-19 pandemic. (Gebreheat & Teame 2021)

The voice of nurses must be heard. In different eras, especially in times of crisis, nurses should be increased compensation allowances, and seek to reduce nurses' job safety risks. It is worth noting that sleep disturbance is a huge challenge for public health. Sleep deprivation or poor quality sleep increases the risk of depression and anxiety. The prevalence of sleep disturbances among nurses is significantly higher due to the stress of having to be

exposed to COVID-19. At the same time, health policy makers, in relation to it, need to develop solutions that can reduce the pressure on nurses as well as measures that can intervene in a timely manner. (Salari et al. 2020.)

During the early stages of COVID-19, the care of critically ill patients was characterized by rapid deterioration, pathogenicity, and a high rate of transmission, which is not often the case in health care systems. Nurses in the environment of caring for critically ill COVID-19 infected patients face fear and uncertainty about the future, and bear high levels of stress and difficult emotional burdens in physically and mentally exhausting psychological situations. (Danesh et al. 2021.)

It is recommended that employers give nurses more salary incentives in the context of more dangerous work environments. Improving or upgrading the payment structure of nurse salaries. In times of crisis, the most equitable distribution of labor. Expanding and funding career paths for nurses. Enhanced retirement security for nurses. (Veenema et al. 2022.)

Some data suggest that resilience interventions are effective for healthcare workers, including nurses, by helping to reduce levels of depression at work. Different from psychotherapy, resilience treatments include problem-solving therapy, cognitive behavioral therapy, and emergency vaccinations. (Kunzler 2020.）

5.2 Nurse's Resilience

The COVID-19 pandemic has forced nurses to work in a high-pressure environment, and employers or nurse managers need to provide nurses with more support. Resilience is considered to be a person's ability or tolerance to adapt and psychologically self-help and recover under stress. This could be due to a traumatic event, a complex and dangerous work environment, an important life challenge, or a serious physical illness. Nurses face a variety of work-related stressors, including patient care, time pressure, and administration, and are at increased risk for mental disorders. (Sperling 2020.)

During COVID-19, nurses' resilience exhibits several different degrees of possibility. Worst of all is the delayed resilience of the nurses, who show no signs of improving in their overall psychological state. The second serious thing is chronic recovery, which is manifested in the ability to recover at the beginning of the challenge. As the pressure increases, psychological problems appear, but the ability to recover still exists, and the psychology will return to the previous level over time. The other two kinds of resilience show a healthy mindset and good resilience. (Sandrine et al. 2022.)

Nurses can improve mental state, reduce depression levels and develop tolerance through resilience training as to achieve the ultimate goal of improving one's own ability. Leaders who manage nurses in a hospital should be sympathetic to the emotional burden nurses face with suffering or dying patients. (Sperling 2020; White et al. 2021.)

Easily overlooked, but important factors related to nurses' resilience include the effectiveness and harmony of nurses' communication with colleagues and leaders in the work environment. Among the personal factors, there are family nurses, their child-rearing education and responsibility needs linked to the job. For example, under the influence of COVID-19, if nurses have to face the threat of the virus, how can they ensure the health of their own family members, especially children, and prevent them from being in danger. Among the social and cultural factors, the labor of being a nurse is not recognized enough, even questioned and discredited, which will inevitably reduce the nurse's sense of professional happiness. (Lindsay et al. 2022.)

Resilience recommendations should not be limited to the individual level, and interventions to improve health and reduce burnout are also very necessary at the leading organizational level. Nurses' leaders have the responsibility and obligation to create a work environment that is inclusive and enables nurses to live and work in a safe and secure environment. (He et al. 2019.)

Especially in the context of COVID-19, nurses have to play more roles, not only to take care of infected patients to ensure the quality of care, but also to be the spiritual pillar that patients rely on, but also to take care of their families. Nurses can most intuitively understand the status of the infected population, and can most truly respond and record the status and needs of patients. Nurses' mental state will be affected while caring for patients, but how to self-regulate and improve resilience, the problem that needs to be faced directly is how to communicate effectively between nurses and management, how to verify and monitor these problems, and management It is an effective way to improve nurses' resilience by establishing one or more benign communication channels and responding to everything. (White et al. 2021.)

Nurses resilience requires giving nurses time and space to process their feelings. Therefore, the makers of medical and health policies have the responsibility to give nurses the corresponding time to recover themselves. Managers who directly manage nurses can detect or detect the bad psychological state of nurses in time, timely psychological intervention, ease the bad psychological state, and help nurses increase their own recovery. force. Finally, it is also very necessary for medical institutions to affirm and reward nurses' work

achievements. Improving professional pride is directly related to nurses' professional happiness. (Lindsay et al. 2022.)

The media also has an important impact on nurses' occupational health resilience. Improving nurses' resilience is not just a matter for nurses themselves. To achieve corresponding results in resilience measures, it must be the result of multi-party efforts and teamwork. Previously, some media reported that nursing homes with a large number of COVID-19 infections had become death pits, which not only suppressed the enthusiasm of nurses, but also caused psychological harm to professional nurses. (White et al. 2021.)

6 Conclusion

This Thesis uses a literature review method to study the impact of the global outbreak of COVID-19 in 2019 until now on the well-being of nurses in the global health system, and the relative strategies that health policymakers can adopt. The findings of this thesis demonstrate the need for and the relevance of coping strategies to improve nurses' emotional well-being during COVID-19.

In the health care system, professional nurses account for the largest professional group, and nurses are the cornerstone of this system. Professional nurses have a tremendous impact on the overall health and well-being of the population. Nurses play a key role in providing and ensuring the quality of care for patients and optimizing public health. During the COVID-19 outbreak, healthcare systems around the world are facing enormous challenges, especially in the early stages of the outbreak. Including lack of respect for nursing staff in the health care system, insufficient job safety protection for nursing staff, shortage of personal protective equipment and medical equipment, and a chronic shortage of nurses, forcing them to work under conditions that endanger life and health, and more and more Nurses will consider leaving the profession, exacerbating the already existing contradictions in the healthcare system. (He et al. 2019; Salari et al. 2020; White et al. 2021.)

The contradictions and problems highlighted by COVID-19 reduce the trust of nursing staff in the medical system and intensify the conflict between a nurse with the medical system or employers. Meanwhile, mutated strains of the novel coronavirus are still changing as the pandemic drags on. It makes the prevention and control of the COVID-19 pandemic more complicated and full of uncertainties.

What needs to be realized is that in the global healthcare system, some factors that affect the well-being of nurses at work have long existed. Huge manpower gap, loss of nurse workforce, uneven staffing, and miscommunication between nurses and leadership. These contradictions have all become more apparent with the outbreak of COVID-19.

In addition to the issues that the healthcare system needs to consider. Social influences cannot be ignored either, for example, the influence of the media on public attitudes cannot be ignored. To make the profession of nurses accepted and respected by society, to enhance the professional identity and sense of happiness of nurses, and to have a fair attitude from the media, so as not to exaggerate or smear, it will definitely have a positive effect. (White et al. 2021.)

Decision-makers and makers of health and hygiene need to face up to the root causes of the contradictions. What needs to be changed is not only how to deal with the difficulties

and intensified contradictions that nurses face under COVID-19, but should be based on the present, combined with old experiences and lessons, and use a long-term perspective to fundamentally change or improve such situations. Give tangible benefits to nurses, stimulate nurses' sense of professional happiness and identity, and increase their professional resilience. Only in this way, and only in this way, can nursing as a profession truly move towards a healthy development path. (Veenema et al. 2022.)

7   Discussion

This thesis was conducted during the COVID-19 outbreak background. Therefore, in order to maximally support the correct interpretation and validity of the findings of this thesis and reduce the potential bias of the conclusions, this paper proposes three restrictive goals (Ross et al. 2019). Firstly, the study only focuses on the healthcare setting in the context of the COVID-19 pandemic from 2019 to the present. Secondly, the group person being studied: Their occupation is limited to active duty registered nurses. Thirdly, the main focus of the study is the job security and stress faced by caregivers during the pandemic and corresponding coping strategies.

In addition, this thesis focuses on screening a total of 17 academic papers from different countries and different cultural backgrounds that are closely related to the research of this thesis from 2019 to the present. The conclusions deduced from the results of the literature review in the context of previous studies, combined with the research questions of the thesis, confirm the necessity of safeguarding the well-being of nursing staff during COVID-19, and measures that can increase nurse resilience.

The results of the study show that in the context of COVID-19, the main contradictions and difficulties faced by nurses include, first, insufficient job security, and the lack of PPE makes nurses passively exposed to the risk of infection. Second, moral contradictions. The long-term shortage of nurse labor and the surge in patient care demand have led to understaffing and a surge in nurses' workload. And, under the premise of lack of relief supplies, nurses cannot give every patient equal treatment. The moral contradiction. Professional nurses are neglected and even stigmatized by society because of their high risk of infection.

All these contradictions and difficulties. All let the nurse bear the heavier physical and psychological burden than before, and also endanger the quality of patient care at the same time. Negative emotional and physical stress displayed by nurses needs to be taken seriously and addressed accordingly. Specific measures should start from several aspects, including health policy makers and hospital employers' compensation for nurses' benefits, time, and work assignment changes and upgrades, as well as increasing the importance of nurses' mental health and intervening in a timely manner. Society, especially the media, needs to stop stigmatizing nurses,

This thesis uses the method of literature review. literature review takes a lot of time to screen and summarize the existing literature. Since this thesis adopts the method of literature review, the literature selection of the thesis should be fair and objective, but the researcher of the thesis may be influenced by his own ideas and viewpoints. It should be emphasized that

no matter what kind of academic thesis is, it has its limitations. The current research still has some limitations. First, although this paper focuses on nurses. However, the selected academic research comes from different countries around the world, and data differences caused by cultural differences cannot be completely ruled out. Second, this study started two years after COVID-19. The search of academic literature includes the time span from 2019 to 2022. In different time periods, the problems faced by nurses in different regions may not be synchronized. (Justin and Alex 2020; Ross et al. 2019.)

8 Suggestions for further studies

Based on the research results of this thesis, there are also unexpected problems related to the research results of this thesis. Due to the limitations of the thesis research questions, the scope of the study is limited to the field of healthcare from 2019 to the present, the need to improve nurses' job security and reduce psychological stress, and pathways to improve nurses' emotional health. Possible directions for future research questions include health system predictions of epidemic trends, immediate actions that governments and health planners can take, and nurse training for other possible future epidemics.

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APPENDICES

Appendix 1. An example of inductive analysis content.

Theme	Category	Sub-category	Article
Stressful reasons	Job security factors	Without or less PPE High infection risk of nurse and their family number Increased workload	Andel et al. 2021. Sperling 2020. Salari et al. 2020. White et al. 2021. Burki 2021. Ching et al. 2020.
	Health care system factors	Not providing adequate protection and support	He et al. 2019. Salari et al. 2020. White et al. 2021. Burki 2021. Xiong et al. 2020. Kunzler 2020.
	Social factors	Ethical issues Moral kidnapping as Nurses should be selfless like heroes	Morley et al. 2020. Sperling 2020. White et al. 2021. Gebreheat & Teame 2021 Kunzler 2020. Danesh et al. 2021.
	Other	Potential future scenarios for nurses under a pandemic include mass nurse	Veenema et al. 2022.

		resignations, union waves	
Strategy	Health care system policy	Workforce stabilization measures require prompt action, including increased compensation, reasonable staffing, and the development of relevant laws and regulations. nurses are properly compensated for their jobs	He et al. 2019. Salari et al. 2020. Veenema et al. 2022. Jennifer & Yana van der Meulen 2020. Kunzler 2020. Sandrine et al. 2022.
	Social attitudes changes	Society's attitudes to nurses' various moral dilemmas related to the pandemic	Morley et al. 2020. Sperling 2020.
	Self-support	Nurses' own emotion regulation Psychological intervention	Sperling 2020. Xiong et al. 2020 Sun et al. 2020. Kunzler 2020. Lindsay et al. 2022.

Appendix 2. Summary of collected articles for an integrative review

Author(s) Year	Publication	Aim	Research method	Main finding
Andel, S., Tedone, A., Shen, W. &	Safety implications of different forms of understaffing among	The aim of this study was to investigate the processes through which	Study hypotheses were tested with path analyses.	The U.S., in particular, has an alarming and disproportionate number of COVID-19 cases as of December 2020.

Arvan, W. 2021.	nurses during the COVID-19 pandemic.	personnel understaffing and expertise understaffing jointly shape near misses among nurses during the COVID-19 pandemic.		The most pressing occupational pressures nurses face during the pandemic, in addition to (PPE) shortages, are understaffing. Negative impact on the safety and health of nurses and patients.
He, F., Chaussalet, T. & Qu, R. 2019.	Controlling understaffing with conditional Value-at-Risk constraint for an integrated nurse scheduling problem under patient demand uncertainty	The purpose of this study was to investigate the problem of nurse scheduling under uncertainty about patient needs and strategic long-term staffing decisions to cope with this uncertainty	Literature Review	Nurse labor costs often make up a significant portion of a hospital's overall budget, so hospitals need to manage and deploy their human resources efficiently. Overtime workload, unpopular work patterns and low satisfaction are common problems among nurses. A potential way to address these issues is to develop and analyze models and decision support systems to gain insight into the outcomes and consequences of various nurse workforce management strategies.
Morley, G., Grady, C., McCarthy, J. & Ulrich, C. 2020.	Covid-19: Ethical Challenges for Nurses	The COVID-19 pandemic has highlighted ethical issues for nurses, this article discusses three overarching ethical issues, nurse safety, allocation of scarce resources, relationship with patients and their families.	Article	Inadequate protection of nurses in all health care settings raises professional and ethical questions about the scope of a nurse's role, including the limits of that role. Ethical issues involve the allocation of scarce resources and inconsistent decision-making that requires nurse participation. Nurses need to transition from a patient-centered practice and care model to a community-centered model during the pandemic.
Sperling, D. 2020.	Ethical dilemmas, perceived risk, and motivation among nurses during	This article investigates how Israeli nurses cope with ethical dilemmas and	The study implemented a descriptive correlative study using	Assessing nurses' perceived risk and work motivation during the COVID-19 outbreak Explore nurses' attitudes to various ethical dilemmas related to the pandemic

	the COVID-19 pandemic	tensions during the COVID-19 outbreak, and the relationship between their perceived risk and motivation to provide care.	a 53-section online questionnaire, including 4 open-ended questions.	Examining motivational factors for work during a pandemic and its impact on nursing careers Nurses express strong dedication to providing care while experiencing significant personal risk and emotional burden
Salari, N., Khazaie, H., Far, A., Ghasemi, H., Mohammadi, M., Shoha-imi, S., Danesh-khah, A., Paveh, B. & Far, M. 2020.	The prevalence of sleep disturbances among physicians and nurses facing the COVID-19 patients: a systematic review and meta-analysis.	The purpose of this study was to investigate the prevalence of sleep disturbances among hospital nurses facing patients with Covid-19.	A systematic review and meta-analysis was conducted in accordance with the PRISMA criteria	Increased stress from exposure to COVID-19 increases rates of sleep disturbance in nurses Health policymakers must provide solutions and interventions to reduce stress in the workplace and stress on healthcare workers
Veenema, T., Meyer, D., Rushton, C., Bruns, R., Watson, M., Firestone, S. & Wiseman, R. 2022.	The COVID-19 Nursing Workforce Crisis: Implications for National Health Security.	This article addresses the impact of the paramedic crisis on national health security in U.S. healthcare in the context of the Covid-19 pandemic	Article	Potential future scenarios for nurses under a pandemic include mass nurse resignations, union waves, rewards and recovery (if nurses are properly compensated for their jobs, they will be more reason to stay) Workforce stabilization measures require prompt action, including increased compensation, reasonable staffing, and the development of relevant laws and regulations.
White, E., Wetle, T. & Rosa, A. 2021.	Journal of the American Medical Directors Association	The goal of this report is to document the experiences of these frontline healthcare professionals during the pandemic.	Qualitative data for open-ended questions.	Continued reliance on crisis standards is an important factor affecting their ability to work in challenging environments Nursing staff expressed fear of infecting themselves and their families, and expressed sincere sympathy and concern for their residents

				Nursing staff also described burnout due to increased workloads, staffing shortages and the emotional burden of caring for residents facing severe isolation, illness and death
Burki, T. 2021.	Global shortage of personal protective equipment	This article exploring the COVID-19 pandemic reveals a lack of coordinated and equitable access to personal protective equipment around the world	Article	PPE Shortages and Rising Prices in the Early Stage of the COVID-19 Pandemic, Tight Supplies, Shortages of Protective Gear Needed to Protect Frontline Healthcare Workers
Ching, C., Hur, L. & Luan, T. 2020.	Nursing Perspectives on the Impacts of COVID-19	Impact of COVID-19 as a global crisis, including routes of transmission, crisis, nurses' contribution to key challenges	Article	Infection prevention and control in the care setting faces enormous challenges for nursing professionals during COVID-19
Jennifer, C. & Yana van der Meulen, R. 2020.	Contributing factors to personal protective equipment shortages during the COVID-19 pandemic	This study examines factors contributing to severe shortages of personal protective equipment in the U.S. during the COVID-19 crisis	Quantitative Study	In the United States during the COVID-19 crisis, a very large demand shock was triggered by panicked market behavior for hospital PPE stocks. Healthcare workers are more likely to get sick without proper PPE. The government could have taken some corrective measures to harmonize domestic production and distribution
Kunzler, A., Helmreich, I., Chmitorz, A., König,	Psychological interventions to foster resilience in healthcare professionals	To assess the effects of interventions to foster resilience in healthcare	literature review	Healthcare Professionals Face Numerous Environmental and Psychosocial Pressures.

		professionals, that is, healthcare staff delivering direct medical care (e.g. nurses, physicians, hospital personnel) and allied healthcare staff		Numerous stressors associated with the patient include, for example, physical or verbal aggression from the patient or relatives or both, (daily) exposure to illness, pain and death, and even patient suicide. Work-related stressors may include time pressure, responsibility for medical decision-making, and social expectations of health professionals.
Lindsay, T. Munn, S., Huffman, C., Danielle C., Maureen, S., Suzanne, C. & Danhauer, M. 2022.	A qualitative exploration of the National Academy of medicine model of well-being and resilience among healthcare workers during COVID-19	The aim of this research was to explore factors affecting the well-being and resilience of healthcare workers during COVID-19	Qualitative research	Health system leaders can address healthcare worker well-being and resilience by implementing solutions that address health system factors such as the practice environment and the organization's policies and procedures. Researchers should not only focus on individual factors related to occupational well-being, but must also expand research and intervention studies to include systemic and environmental factors that have a significant impact on clinicians.
Gebreheat, G. & Teame, H. 2021.	Ethical Challenges of Nurses in COVID-19 Pandemic: Integrative Review	This review aims to identify the main ethical challenges nurses face during the COVID-19 pandemic	Comprehensive review method	Ethical challenges for nurses are grouped into three topic areas: nurse safety, roles and ethical dilemmas, resource allocation, and client-nurse relationships. The lack of comprehensive protection for nurses across the health profession raises ethical issues such as scope of duties, scarcity of resources, and failure of personal protective equipment.

Danesh, M., Garosi, E. & Golmohamadpour, H. 2021.	The COVID-19 Pandemic and nursing challenges: A review of the early literature	The current paper presented a review of the early literature concerning emerging nursing challenges during the early stages of the COVID-19 pandemic.	Literature search	The dissertation has four overarching themes, including "Personal and Physical Exhaustion in the Face of Fear and Uncertainty", "Personal Protective Equipment Shortages and Availability Issues", "Nurses' Psychosomatic Disability" and "Nurses' Stress-Reducing Regulators" Challenges. " Nurses have endured a grueling job providing care to demanding COVID-19 patients, during which time they have suffered tremendous psychological and physical suffering. However, getting proper support from their organizations and society can greatly improve the situation. The limitations of the paper are mostly survey studies from China.
Xiong, H., Yi, S. & Lin, Y. 2020.	The Psychological Status and Self-Efficacy of Nurses During COVID-19 Outbreak: A Cross-Sectional Survey	The study aims to investigate the psychological status of nurses in public hospitals during the COVID-19 outbreak from February 16 to 25, 2020	This study was a descriptive cross-sectional survey.	During the period of the novel coronavirus, nurses are under enormous occupational pressure and psychological pressure, and the prevalence of anxiety and depressive symptoms increases.
Sandrine, C., Typhaine, M.; Lamyae, B., Sara, C., Claude, A., Gregory, M., Alice, N., Claude,S., Laure, V., Hannah, W., Jacques	How things changed during the COVID-19 pandemic's first year: A longitudinal, mixed-methods study of organisational resilience processes among healthcare workers	This article explores the real-world problems experienced by healthcare workers during the first year of the COVID-19 pandemic.	Survey of longitudinal mixed methods research	The study investigated a large sample of employees of healthcare facilities in Switzerland. The organizational resilience process was assessed by identifying problematic real-world situations and assessing how these were managed during the three phases of the first year of the pandemic. Results highlight differences between recovery processes in different types of problem situations

A., Rafaël, W., Pauline, R. 2022.				experienced by healthcare workers
Sun, N., Wei, L., Shi, S., Jiao, D., Song, R., Ma, L., Wang, H., Wang, C., Wang, Z., You, Y., Liu, S. & Wang, H. 2020.	A qualitative study on the psychological experience of caregivers of COVID-19 patients	To explore the psychology of nurses caring for COVID-19 patients.	Using a phenomenological approach	During an epidemic outbreak, positive and negative emotions of the front-line nurses interweaved and co-existed. In the early stage, negative emotions were dominant and positive emotions appeared gradually. Self-coping styles and psychological growth played an important role in maintaining mental health of nurses.

Appendix 3. JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses

JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses

Reviewer _ Date _ _ _ _ _ _ _ _ _ _ _ _ _

Author _ Year _ _ _ _ _ _ Record Number

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	☐	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	☐	☐	☐	☐
3.	Was the search strategy appropriate?	☐	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	☐	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	☐	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	☐	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	☐	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	☐	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	☐	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	☐	☐	☐	☐
11.	Were the specific directives for new research appropriate?	☐	☐	☐	☐

Overall appraisal: Include ☐   Exclude ☐   Seek further info ☐

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Appendix 4. Evaluation of the JBI Critical Appraisal Checklist for Systematic Reviews

Study		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	To-tal
Andel et al. 2021	@	Y	Y	Y	Y	Y	Y	Y	Y	?	?	?	8/11
He et al. 2019.	@	Y	Y	Y	Y	Y	Y	Y	?	?	?	?	7/11
Moley et al. 2020.	#	Y	Y	Y	N	Y	Y	Y	?	?	?	?	6/11
Sperling. 2020.	@	Y	Y	Y	Y	Y	N	N	?	?	?	?	5/11
Salari et al. 2020.	@	Y	Y	Y	Y	Y	Y	N	?	?	?	?	6/11
Veenema et al. 2022.	#	Y	Y	Y	Y	Y	Y	Y	?	?	?	?	7/11
White et al. 2021.	⌂	Y	Y	Y	Y	Y	Y	Y	?	?	?	?	7/11
Burki 2020.	#	Y	Y	Y	N	Y	N	N	?	?	?	?	4/11
Ching et al. 2020.	#	Y	Y	Y	N	Y	Y	N	?	?	?	?	5/11
Jennifer. & Yana van der Meulen. 2020..	@	Y	Y	Y	N	Y	Y	Y	?	?	?	?	6/11
Kunzler 2020.	#	Y	Y	Y	N	Y	N	Y	?	?	?	?	5/11
Gebreheat,& Teame. 2021.	@	Y	Y	Y	?	Y	Y	?	?	?	?	?	5/11
Danesh et al. 2021.	#	Y	Y	Y	Y	Y	Y	?	?	?	?	?	6/11
Xiong et al. 2020	%	Y	Y	Y	Y	?	Y	Y	?	?	?	?	6/11
Sun et al. 2020.	@	Y	Y	Y	Y	Y	Y	?	?	?	?	?	6/11

Lindsay et al. 2022.	#	Y	Y	Y	Y	Y	Y	?	?	?	?	?	6/11
Sandrine et al. 2022.	@	Y	Y	Y	Y	Y	Y	Y	?	?	?	?	7/11

Q = question, Y = yes, N = no, ? = Unclear, ！=not applicable, JBI critical appraisal checklist for qualitative research (¤) / text and opinion papers (#) / analytical cross-sectional studies (%) / systematic reviews and research syntheses (@)

Appendix 5. JBI Critical Appraisal Checklist for Text and Opinion Papers

JBI Critical Appraisal Checklist for Text and Opinion Papers

Reviewer_ Date_ _

Author_ _Year_ _ _ _ _ _ _ _ _ _ _Record Number
_ _ _ _

	Yes	No	Unclear	Not applicable
1. Is the source of the opinion clearly identified?	☐	☐	☐	☐
2. Does the source of opinion have standing in the field of expertise?	☐	☐	☐	☐
3. Are the interests of the relevant population the central focus of the opinion?	☐	☐	☐	☐
4. Is the stated position the result of an analytical process, and is there logic in the opinion expressed?	☐	☐	☐	☐
5. Is there reference to the extant literature?	☐	☐	☐	☐
6. Is any incongruence with the literature/sources logically defended?	☐	☐	☐	☐

Overall appraisal:　　Include ☐　　Exclude　　☐　　Seek further info ☐

Comments (Including reason for exclusion)

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Appendix 6. Evaluation of the JBI Critical Appraisal Checklist for Text and Opinion Papers

Study	Q1	Q2	Q3	Q4	Q5	Q6	Total
Andel et al. 2021	Y	Y	Y	Y	Y	N	5/6
He et al. 2019.	Y	Y	Y	Y	Y	N	5/6
Moley et al. 2020.	Y	Y	Y	Y	Y	N	5/6
Sperling. 2020.	Y	Y	Y	Y	Y	N	5/6
Salari et al. 2020.	Y	Y	Y	Y	Y	N	5/6
Veenema et al. 2022.	Y	Y	Y	Y	Y	N	5/6
White et al. 2021.	Y	Y	Y	Y	Y	N	5/6
Burki 2020.	Y	Y	Y	Y	Y	N	5/6
Ching et al. 2020.	Y	Y	Y	Y	Y	N	5/6
Jennifer. & Yana van der Meulen. 2020.	Y	Y	Y	Y	Y	N	5/6
Kunzler 2020.	Y	Y	Y	Y	Y	N	5/6
Gebreheat, & Teame. 2021.	Y	Y	Y	Y	Y	N	5/6
Danesh et al. 2021.	Y	Y	Y	Y	Y	N	5/6
Xiong et al. 2020	Y	Y	Y	Y	Y	N	5/6
Sun et al. 2020.	Y	Y	Y	Y	Y	N	5/6
Lindsay et al. 2022.	Y	Y	Y	Y	Y	N	5/6
Sandrine et al. 2022.	Y	Y	Y	Y	Y	N	5/6

Q = question, Y = yes, N = no, ? = Unclear, ！=not applicable