BMJ Open

Occupational safety and health of nurses during the COVID-19 pandemic, the missing part of quality care: a qualitative study

Farkhondeh Mehboodi ,[1] Vahid Zamanzadeh,[2,3] Azad Rahmani,[1] Iman Dianat,[4] Reza Shabanloie[1]

To cite: Mehboodi F, Zamanzadeh V, Rahmani A, *et al*. Occupational safety and health of nurses during the COVID-19 pandemic, the missing part of quality care: a qualitative study. *BMJ Open* 2024;**14**:e083863. doi:10.1136/bmjopen-2024-083863

► Prepublication history for this paper is available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2024-083863).

Received 01 January 2024
Accepted 24 May 2024

[1]Medical-Surgical Nursing, Tabriz University of Medical Sciences, Tabriz, Iran (the Islamic Republic of)
[2]Medical-Surgical Nursing, Tabriz University of Medical Sciences, Faculty of Nursing and Midwifery, Tabriz, Iran (the Islamic Republic of)
[3]Medical-Surgical, Shahid Beheshti University of Medical Sciences School of Nursing and Midwifery, Tehran, Iran (the Islamic Republic of)
[4]Occupational Health, Tabriz University of Medical Sciences Faculty of Medicine, Tabriz, Iran (the Islamic Republic of)

Correspondence to
Dr Vahid Zamanzadeh; vzamanzadeh@gmail.com

ABSTRACT

Objective This study explored the consequences of COVID-19 on the occupational safety and health of nurses.

Design Qualitative conventional content analysis.

Participants 14 nurses selected by purposeful sampling method.

Setting Five educational and non-educational hospitals in the Northwest of Iran.

Data collection and analysis Semistructured interviews were used for data collection and analysed using conventional content analysis.

Results Two main categories have emerged from the data: reduced quality of professional life and post-traumatic growth. Reduced quality of professional life, which has two subcategories including job dissatisfaction and burnout, has a negative nature, and has had many negative effects on the physical, mental and well-being of nursing personnel during the coronavirus era. On the other hand, post-traumatic growth, with two subcategories that include promoting safe behaviour and gaining a positive self-concept, has a positive nature.

Conclusions Maintaining the occupational health and safety of nurses plays an important role in providing quality services to patients. Therefore, it is necessary for managers and policymakers to use the experiences related to the COVID-19 crisis, to prevent negative factors and strengthen positive factors, to maintain the safety and occupational health of nurses, and increase the quality of care.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ In this study, a qualitative approach was used, recognised as one of the most effective research methods for gaining insight and interpretation in nursing.
⇒ The expression of similar experiences by the nursing managers and nursing personnel participating in this study confirms the severity of consequences extracted in this research.
⇒ This study revealed the true state of unpreparedness of the nation's healthcare system.
⇒ Since the data collection was at the peak of the COVID-19 outbreak, the weight of negative consequences may be higher due to extreme fear.
⇒ We explored Iranian nurses' experiences during the COVID-19 epidemic and the findings may differ from those of nurses in other geographical locations and cultures.

INTRODUCTION

The quality of healthcare is the achievement of the most desirable health outcomes; thus, the services provided are effective, efficient and economical.[1] One of the factors affecting the quality of healthcare is the human workforce.[2–4] Among the human forces available in hospitals, nurses are more important than other groups, due to the provision of medical care to patients and more and closer communication with them,[3] to the extent that the clients often consider the level of desirability or lack of desirability of the provided services exclusively towards the nurses.[2]

Nursing is a stressful profession that faces increasing pressures in a changing social and ethical context.[5] These pressures can lead to moral distress, emotional exhaustion and burnout, which negatively affect nurses and the quality of care for patients under their care.[6] The results of a cross-sectional study conducted by Kabunga and Okalo in Uganda to investigate the prevalence and predictors of burnout among nurses during the COVID-19 era showed the experience of high levels of burnout among nurses. They have considered two important predictors of burnout to be workload and personal protective equipment (PPE).[7] Besides this, physical and psychological needs, work schedules, environmental hazards and exposure to pathogenic agents[5 8 9] can lead to acute or chronic health problems (such as cardiovascular disorders and musculoskeletal and gastrointestinal symptoms) and safety consequences (such as needle injuries, slips and falls, workplace violence and sleepiness while driving) in nurses.[8 9]

Occupational safety and health (OSH) is a broad and multidisciplinary concept that includes the mental, emotional and physical health of employees in relation to their job performance and the safety, health and well-being of people at work.[10] In the common definition of 'occupational health', which is given by the International Labor Organization and the WHO, both health and safety aspects are considered, and there is a strong focus on the primary prevention of occupational hazards.[11–13]

Unsafe and unhealthy working conditions affect the quality of service delivery as well as the survival and productivity of employees. However, reports confirm that the OSH of nurses are at risk.[4] Some articles state that despite knowing the dangers of the work environment and its impact on health, nurses do not intend to take effective protective and preventive measures.[14] Among more than 1000 risk factors threatening health in hospitals,[15 16] the outbreak of infectious diseases is one of the most imminent threats. In recent years, it has appeared many times and without prior warning and awareness worldwide.[17]

The recent outbreak of COVID-19 is an example of these infectious diseases, which, as a major occupational challenge, has had negative physical, psychological and social effects on all people worldwide, especially nurses faced with many problems.[18 19] According to the International Council of Nurses (ICN), while health workers make up less than 3% of the world's population, they account for approximately 14% of the cases of COVID-19; in some countries, this ratio even reaches 35%.[20]

During this period, healthcare workers, especially nursing workers, have been exposed to insulting behaviours more than other occupations. In the USA, the rate of client violence against healthcare workers was estimated to be 16 times greater than other service occupations.[20] The results of Kabunga and Okalo's study in Uganda highlight the impact of COVID-19 on the mental health of frontline nurses, as well as the role of the two factors of lack of social support and heavy workload in the occurrence of post-traumatic depression syndrome.[21]

Iran is also one of the countries experiencing many conflicts during the COVID-19 pandemic. According to the findings of the study by Hazbavi *et al*, who investigated the prevalence of COVID-19 in 31 provinces of Iran during seven periods, more than 536 181 infected cases and 29 403 deaths were reported during the first 250 days of the outbreak of COVID-19 in Iran. Also, East Azerbaijan, along with Tehran, Qom, Mazandaran and West Azerbaijan, had the highest number of COVID-19 infection cases.[22] On the other hand, due to the lack of sufficient preparation to face occupational biological risks, the average infection rate of its healthcare workers was higher than the world standard.[23] According to the ICN research, more than 60 000 nurses in Iran have been infected with COVID-19 as of 26 December 2020, accounting for 45% of the country's nursing workforce.[20]

Nurses are professionally committed to serving patients and society, but occupational hazards and their impact on various dimensions of personal and social life are of concern to them.[24 25] Additionally, the impacts of these hazards on the quality of professional life, satisfaction and mental well-being, the physical and mental health of nurses, and the quality of patient care have been stated in various studies,[18 26–28] because such exposures often require more time and resources than usual, and this causes pressure on the health system.[28]

Exposure to endemic or pandemic infectious agents can have negative effects on both healthcare personnel and patients.[28] Some evidence indicates that nurses' adherence to the usual infection control instructions, including hand washing and the use of PPE, during outbreaks of infectious diseases is not at an optimal level.[17]

Considering the rapid and destructive nature of the spread of infectious diseases and the critical role of nurses in the management and prevention of epidemics,[15 17] it is crucial for any country to protect its healthcare personnel, who are its most critical resources at the time of a pandemic, and put them at the top of their priorities.[29] Since studies in different fields and cultures, with the analysis of social and economic differences, can lead to different findings,[30] and the outbreak of infectious disease is a potential threat in all societies, exploring the experiences of nurses, in addition to discovering the consequences of facing this biological risk, can open the way for managers to prepare the necessary facilities and infrastructure to prepare for future outbreaks, and effectively protect healthcare workers. So the purpose of the present research is to explain the experiences of nurses from the consequences affecting the OSH of nurses during the COVID-19 epidemic.

METHODS

Design

The present study is a descriptive qualitative study with a conventional content analysis approach. Qualitative research is considered one of the best research approaches for developing insight and interpretation in the field of nursing.[31]

Participants and setting

The research environment included five teaching and non-teaching hospitals in East Azerbaijan Province, located in the Northwest of Iran. These 5 hospitals among the 23 existing hospitals in the city were designated by the Ministry of Health as admission centres for patients suffering from COVID-19 during the outbreak.

All participants were selected using purposive sampling with maximum variance, in order to access a broad range of perspectives from different participants.[32] The criteria for entering the study were: at least 1 year of clinical work experience and at least 6 months of experience caring for COVID-19 patients, willingness to participate in the study and the ability to fully express the experiences. The exclusion criterion was the non-cooperation of the participants

at any stage of the research. Sampling and data collection continued until data saturation was achieved.

Finally, 14 participants with the determined criteria, an average age of 36.42 years and an average work experience of 10.5 years, entered the study.

Data collection

Face-to- face, semistructured interviews were conducted by the first researcher (FM), who is a nurse and teacher of nursing with previous experience in conducting qualitative interview, from May to October 2021. The time and place of the interviews were agreed upon with the participants before each interview. All the interviews were conducted with participants in private and quiet environments at their workplaces. During the interview process, to reduce the participants' stress and create a friendly environment, two general questions were asked about their work history. Then, the main interview question: 'What are your experiences in caring for patients with COVID-19?' was asked. Next, based on the answers of the participants, other questions were asked, the most important of which were 'How did you try to protect yourself in this situation?' and 'What was the consequence of using these measures?'

Attention was gradually focused on the specific issues expressed by the participants, and probing questions such as 'Why?', 'How?', 'Who?', 'Can you explain more?' or 'Give an example' were asked.

The interviews were recorded using a digital recorder. The average duration of the interviews was 45 min (range 30–60 min). Some participants (two participants) were interviewed more than once and in multiple sessions. The interviews were conducted in the Persian language, and some quotes have been translated into English in order to write this article.

Data analysis

Data analysis was performed simultaneously with the data collection and using conventional qualitative content analysis provided by Graneheim and Lundman. Qualitative content analysis in nursing research and education has been applied to a variety of data and to various depths of interpretation.[33] In this way, first, the audio file of each interview was turned into written text word by word, and it was reviewed several times by the researcher with the aim of being immersed in the study data to obtain a general idea of the interviews. The text of the interviews was subsequently read line by line, and the primary codes representing the words, sentences and paragraphs of the interviews were determined. These initial codes (936) became more abstract during the process of continuous comparison in terms of similarities and differences, then subgroups and groups were formed.

Trustworthiness

To validate the research data, four criteria of credibility, transferability, dependability and conformability, introduced by Lincoln and Guba, were used.[34 35] Credibility was obtained by the continuous presence of the researcher in the research environment and the continuous review and discussion of the findings. After extracting the initial codes, the extracted codes were returned to the participants. In case of differences between the opinions of the researcher and the participants, the codes were modified. By choosing participants with different characteristics in terms of age, gender, job position, work experience and experience of caring for patients with COVID-19, we tried to consider the transferability of the study results. Dependability was maintained through the presence of more than one researcher during the data analysis process. In this way, the initial data analysis was done by the first author (FM) and controlled and corrected step by step by the supervisors and the research team. Conformability was done through the detailed documentation of all research activities for external supervision. The research process was also recorded in such a way that other people could follow it by reading the texts.

Table 1 Demographic characteristics of the participants

Number of participants	14
Gender	
Male	3
Female	11
Age	25–47 (avg: 36.42)
Work experience	2–18 (avg: 10.50)
Position	
Staff nurse	9
Head nurse	3
Supervisor	1
Nurse manager	1

Patient and public involvement

Patients or the public ewre not involved in the design,conduct,reporting or dissemination plans of our research.

Findings

A total of 14 nurses were recruited in the study. The demographic characteristics of the participants are reported in table 1.

Data analysis led to emergence of two main categories: 'reduced quality of professional life' and 'post-traumatic growth' and four subcategories: 'job dissatisfaction', 'burnout', 'promote safe behaviour' and 'gaining positive self-concept' (table 2).

Reduced quality of professional life

The quality of professional life refers to the negative and positive feelings that a person experiences while providing a service. The three main dimensions of professional quality of life that are measured are compassionate satisfaction (a sense of pleasure that is obtained in exchange for the ability to do a good job), burnout (including fatigue, erosion, anger and depression related

Table 2 Categories, subcategories and selective coding derived from the study

Main category	Subcategories	Selective coding
Reduced quality of professional life	Job dissatisfaction	► Reducing voluntary accountability in future crises ► Reducing the quality of nursing care ► Desire to leave the profession
	Burnout	► Negative attitude toward the profession ► Physical discomfort ► Social isolation ► Feeling guilty ► Anxiety ► Conflict in values
Post-traumatic growth	Promote safe behaviour	► Understanding the importance of observing precautions ► Taking precautions in all work situations ► More adherence to hand hygiene ► Paying attention to health status follow-up
	Gaining positive self-concept	► Valuing view of society toward profession ► Feeling proud of being in a certain job situation ► Sense of usefulness

Table 2 shows the main groups including the reduced rquality of professional life and post-traumatic growth, as well as the subgroups related to each one and the selected codes.

to work) and secondary traumatic stress.[36] In this study, the quality of professional life includes two subcategories: job dissatisfaction and burnout. The characteristics of each subcategory are presented with quotes from the participants.

Job dissatisfaction

Participants stated that there was not enough preparation in Iran to face this crisis; therefore, the health and safety of healthcare workers have not received enough attention. The inability of the system to provide PPE and instructions for dealing with outbreaks, lack of financial and emotional support from managers, tight work schedules, and family and work conflicts were some of the reasons for the nurses' dissatisfaction, which was expressed by characteristics such as a decrease in voluntary response in future crises, a decrease in the quality of nursing care and a desire to leave the profession.

> When we witness all this discrimination and see that there is no difference between what we receive and those who are in the non-coronavirus sector, even if they sometimes receive more, we become demotivated. (Participant number 3)

> … The future is definitely something vague, and if something like this happens again, to what extent we can motivate the personnel to come to work like the first time of corona. Of course, I admit that it is unlikely that we have created such love and interest in the personnel. (Participant number 14)

> We don't have any amenities or comfort; we also have a lack of equipment, and sometimes even the supervisor cannot provide it, so obviously, the lack of equipment hurts us and the care of the patient. (Participant number 7)

Burnout

Burnout is a state of physical and emotional exhaustion. It can occur when individuals experience long-term stress, for example, working a stressful job. Burnout is a significant consequence that can be expected with characteristics such as negative attitudes toward the profession, physical discomfort and social isolation. Additionally, being in a dangerous and ambiguous situation and adopting protective strategies such as extreme sensitivity over time impose secondary stress on nurses, which can be identified by features such as guilt, anxiety and conflict in values

> I can honestly say that I truly hated nursing. As you know, I really like nursing and how much I love it, it was completely the opposite… What is this job? What did I come here for? Let us go. I should resign. We all said that we should go and resign. (Participant number 4)

> I was annoyed because I had to delay my work due to fatigue; work pressure also hurts nurses; well, nurses themselves have a series of problems in their lives, not all of them are single and without children; when the nurse is mentally and emotionally damaged, if it is not healthy, it will harm the safety of the nurse. (Participant number 9)

> Just the stress that my children would get. I am not a person who is afraid of such things. I can work much easier in the workplace and adapt myself. However, I was very afraid for my children. I used to say if something happens, I will not be able to for the rest of my life… (Participant number 8)

Post-traumatic growth

Post-traumatic growth is a concept of positive psychological changes experienced as a result of struggling with

very challenging and stressful life situations. The nurses stated that along with all the negative consequences of COVID-19, there were also significant positive points, which were mentioned in most of the interviews, and were named in the form of two subcategories: 'promoting safe behaviour' and 'gaining positive self-concept'.

Promoting safe behaviour

The participants expressed that under normal conditions and before the occurrence of this phenomenon, they did not fully understand the importance of observing standard precautions and precautions based on transmission. However, with the outbreak of COVID-19 and observation of the cases and the severity and deterioration of the condition of the patients, they have better understood the health threats. In this way, in this period, compliance with standard precautions was a major part of self-protection strategies. Other characteristics included understanding the importance of observing precautions, using precautions in all work situations, more adherence to hand hygiene and paying attention to health status follow-up.

> Yes, we were taking precautions, but its sensitivity to this disease increased. For example, the staff who maybe before did not care much, and it did not matter to them; however, in this disease, the fear and stress of dealing with the disease made them follow more principles. (Participant number 5)

> I can say that during the COVID era, hand washing has gained a lot of priority, even it might be more important than gowns and masks. (Participant number 4)

Gaining positive self-concept

Beliefs and attitudes that a person has about himself form the first part of self-concept. In this case, under different conditions and situations, a person looks inside himself to see how he should behave and act in that particular situation. This part of self-concept is very powerful and plays an essential role in people's decisions. Exposure to the coronavirus situation had positive consequences for medical personnel, which was expressed in the subcategory of acquiring a positive self-concept with the characteristics of valuing view of society toward the profession, feeling proud of being in a special job situation and having a sense of usefulness.

> It was during the Corona era that people referred to us as 'health defenders', and this made us feel very good; otherwise, we were only known by the same job title as nursing. (Participant number 7)

> Well, it is a good feeling to be able to say in the future that we nursed patients under these special conditions, like those who are now recounting their memories of the plague period or other strange diseases like smallpox. (Participant number 10)

> I can say that Corona was able to draw the eyes of society and even the eyes of the world toward nursing; in fact, nursing and its special services were recognized during this period. Even the New Year was named the Year of Nurses because of the birth of Florence Nightingale, and it was an honor for me. (Participant number 9)

DISCUSSION

As stated, the results include two main categories: reduced quality of professional life, with two subcategories (job dissatisfaction and burnout), and post-traumatic growth with two subcategories (promoting safe behaviour and gaining positive self-concept); as seen, the nature of some of these subcategories is negative, and some are positive.

The emergence of the COVID-19 phenomenon in a context where there was no similar experience, in addition to creating collective confusion for nurses, also surprised the healthcare system and nursing managers in the field of providing PPE, providing welfare facilities, and providing supportive and financial services. The adoption of some individual and team protection strategies, the bad faith of the managers and the understanding of the system's shortcomings in the long term caused nurses' dissatisfaction, which, among the consequences that were extracted from the text of the interviews, was a decrease in the willingness of people to perform voluntary actions in the future, as well as a decrease in the quality of nursing care and the desire to leave the profession.

The results of a qualitative study conducted by Gee and Skovdal in 2017 investigating the willingness of personnel to respond to the Ebola outbreak in Africa with the participation of international medical personnel showed that due to factors such as a negative view of healthcare staff, the influence of the media and confusing public health regulations regarding quarantine, people's professional response to subsequent outbreaks will be influenced by their perception of the risk of infectious disease. Therefore, it is necessary to take effective measures through policymakers and effective people in public health to reduce public fear and create a supportive environment for medical workers.[11]

Burnout was the dominant outcome as a result of various factors, such as increased workload, observation of patient discomfort, severe fear of contracting the disease and stress related to its transmission to the family and relatives, conflict in the family due to role interference, and increased expectations of managers and clients. In a qualitative study conducted in 2015, with the aim of investigating the work experiences of South Korean nurses caring for patients with Middle East respiratory syndrome, the experience of burnout due to heavy workload was one of the factors experienced by nurses. Studies have shown that in addition to having a high risk of being infected, healthcare personnel also experience the occupational risk of fear and anxiety of contact and transmission of the disease during the H1N1, SARS and Ebola epidemics.[37]

The results of Kabunga and Okalo's study conducted to determine the prevalence of occupational burnout and its related factors among nurses in Uganda showed that out of a total of 395 participating nurses, 40% experienced moderate level and more than 77% experienced high levels of burnout. PPE and increased workload were also identified as predictors of burnout.[7]

Guilt is an emotional and psychological condition that nurses experience in exchange for adopting protective strategies such as refraining from performing high-risk patient care, not examining and spending time with patients, and cutting off relationships with those around them, as well as due to being in a situation where they may transmit the disease to their family and relatives and be blamed by family members. Caring for sick patients with bad and unpredictable conditions and difficulty managing between work and life are among the factors that can lead to anxiety in nurses. The adoption of some self-protection strategies by personnel may be in conflict with professional standards and moral and even cultural values of individuals, which can cause double stress for them.

The results of Rezaee *et al*'s study also showed that nurses face many ethical challenges in caring for patients with COVID-19, including threats to professional values and the lack of a comprehensive approach to caring for patients with COVID-19. According to the nurses participating in this study, the professional values of governing nursing have been threatened by reducing the quality of patient care. The low level of responsibility and accountability in the care of COVID-19 patients, which is caused by the lack of nurses and their fatigue from work pressure, has led to a lack of attention and timely attendance at patients' bedside. In addition, hiring less experienced and unskilled people leads to poor quality, inadequate, unsafe and error-prone care for these patients. Finally, this may cause a violation of the patient's rights and even their death.[38]

According to the literature, nurses' work environment affects the quality of nursing care, the consequences related to nurses' jobs and the consequences related to patients. The results of the meta-analysis by Lake *et al* showed that a better work environment is directly related to a reduction in negative consequences such as job dissatisfaction in nurses and patient mortality. Therefore, in a good working environment, the chance of job dissatisfaction, burnout and the desire to leave the service decreases by 28–32%. Also, there is a 23–51% lower chance of rating the safety and quality of the nursing unit as moderate or poor. The level of patient satisfaction in this environment is 16% higher, the rate of experiencing unwanted complications or death in patients is 8% lower and nurses admit 22% less uncertainty about the ability of patients to manage care after discharge.[39]

Considering that based on the available texts and the statements of the participants, under normal conditions, the level of standard precautions and hand washing was not desirable. However, among the negative consequences arising from these critical conditions, the promotion of safe behaviour, which includes increasing employees' adherence to standard precautions and attention given to hand hygiene in all work matters, was a positive phenomenon in which nursing managers should provide adequate equipment, continuation of training programmes related to personal protection as well as the updating of instructions for dealing with outbreaks that will maintain this positive outcome at the desired level so that in the event of future outbreaks, the amount of damage to medical personnel will be as low as possible.

Jeleff *et al*'s study also showed that behaviours such as using masks, maintaining distance and using vaccination were among the behaviours adopted by personnel during the COVID-19 period; these behaviours should continue with the planning of managers during the post-COVID-19 period as well.[40]

Certain professions require a higher level of self-concept, and nursing holds a unique position in this aspect.[41 42] Within nurses' stressful work environments, self-concept can significantly contribute to improved adjustment to work conditions, decreased job stress and increased job satisfaction.[41–43]

In critical situations like the COVID-19 pandemic, research indicates that nurses' professional self-concept tends to enhance and leads to potential benefits such as increased retention of nurses in their profession even under high-risk conditions.[44 45]

A qualitative study using the phenomenological method was conducted in Poland by Aleksandra Kurta-Nowicka and Jaracz in 2022 with the aim of investigating the positive experiences of nurses during the coronavirus period. The results of this study showed that 10 thematic categories emerged, that is, remuneration, professional development, team integration, epidemiological principles and adaptation to new conditions; lack of visits; assistance; and improvement of work organisation, staff shortages and telemedicine.[46] In another study by Zhang *et al*, good social support and self-efficacy were mentioned as two important factors for increasing the post-traumatic growth score in clinical nurses.[47] As observed, the positive and negative consequences related to COVID-19 in this study are consistent with those of similar studies.

Limitations

- One of the limitations of this research was the collection of data during multiple coronavirus peaks, which could have affected the results due to fear, stress and double fatigue.
- We explored Iranian nurses' experiences of the consequences affecting the OSH of nurses during the COVID-19 epidemic and the findings may differ from those of nurses in other geographical locations and cultures.

Application

As it was mentioned, nurses in health service centres, especially in hospitals, face various occupational hazards,

which endanger their OSH. One of the consequences of these injuries is the loss of the workforce or the reduction of their productivity, which itself leads to a decrease in the quality of healthcare services. The results of this study show the consequences of COVID-19 in two positive and negative groups. Managers and policymakers can gain experience from the past crisis and use the results of studies like this, by predicting and eliminating negative consequences of COVID-19 (like planning appropriate work shifts, providing PPE, developing infection control guidelines for dealing with outbreaks, providing welfare facilities and finance), as well as by maintaining and strengthening positive consequences (such as promoting safe behaviour and positive self-concept), while maintaining the OSH of health workers and increasing the quality of care, which is the ultimate goal of the healthcare system.

CONCLUSION

One of the fundamental rights of patients in the healthcare systems of countries is to receive safe and high-quality care. Nurses, who play a vital role in delivering these services, often encounter various occupational hazards in their work environment. These hazards not only have a negative impact on their physical and mental health but also lead to adverse consequences such as dissatisfaction, fatigue and attrition among nurses, ultimately reducing the quality of care provided to patients. Therefore, ensuring the safety, well-being and occupational health of nurses is essential for the proper functioning of the healthcare system. To achieve this objective, it is necessary for nursing managers and policymakers to implement effective planning to maintain and enhance positive consequences and address shortcomings, using the experiences gained during the critical period of COVID-19.

Acknowledgements This article presents a portion of the results from a doctoral thesis conducted in the Faculty of Nursing affiliated with Tabriz University of Medical Sciences. We would like to express our gratitude to all the nurses who participated in this study.

Contributors Conceptualisation—FM and VZ. Designing the study and formulating the research question—FM, VZ, AR, RS and ID. Data collection—FM. Data analysis—FM, VZ and AR. Original draft preparation—FM, VZ, AR, RS and ID. Review and editing—FM, AR and ID. Supervision—VZ, AR, RS and ID.FM is accountable for all aspects of the work as the gurantor.

Funding This study was conducted with the financial support of the research deputy of Tabriz University of Medical Sciences (grant number 1399/11/28-66318).

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study was approved by the Regional Research Ethics Committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1399.989). To consider ethical principles, the purpose of the study was explained to all participants, and written informed consent was obtained for each interview and voice recording. The participants were assured of the data confidentiality. In addition, the recorded interviews were kept in a safe place and were accessible only to the researcher.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

ORCID iD

Farkhondeh Mehboodi http://orcid.org/0000-0002-1791-2941

REFERENCES

1 Stavropoulou A, Rovithis M, Kelesi M, *et al*. What quality of care means? Exploring clinical nurses' perceptions on the concept of quality care: a qualitative study. *Clin Pract* 2022;12:468–81.
2 Mehrnoosh Pazargadi MZT, Abidsaeidi DrZ. The quality of nursing care from the point of view of nurses: a qualitative study. *Research in Medicine* 2007;31:147–53.
3 Arab M, HOSSEINI M, Panahi M, *et al*. *Occupational nursing hazards in the emergency department in training hospitals affiliated to tehran university of medical sciences*. 2015.
4 Manyele SV, Ngonyani HAM, Eliakimu E. The status of occupational safety among health service providers in hospitals in Tanzania. *Tanzan J Health Res* 2008;10:159–65.
5 Cooper AL, Brown JA, Rees CS, *et al*. Nurse resilience: a concept analysis. *Int J Ment Health Nurs* 2020;29:553–75.
6 Jun J, Ojemeni MM, Kalamani R, *et al*. Relationship between nurse burnout, patient and organizational outcomes: systematic review. *Int J Nurs Stud* 2021;119:103933.
7 Kabunga A, Okalo P. Prevalence and predictors of burnout among nurses during COVID-19: a cross-sectional study in hospitals in central Uganda. *BMJ Open* 2021;11:e054284.
8 Hosseini SS. Prioritize educational needs assessment of safety principles in preventing occupational risks of nursing staff in Taleghani hospital of Kermanshah in 2015. 2016.
9 Nazari R, Haji Ahmadi M, Dadashzade M, *et al*. Study of hand hygiene behavior among nurses in critical care units. *Iran J Crit Care Nurs* 2011;4:95–8.
10 Amponsah-Tawiah K, Dartey-Baah K. Occupational health and safety: key issues and concerns in Ghana. *Int J Bus Soc Sci Res* 2011;2.
11 Gee S, Skovdal M. The role of risk perception in willingness to respond to the 2014–2016 West African Ebola outbreak: a qualitative study of international health care workers. *Glob Health Res Policy* 2017;2:21.
12 Rana W, Mukhtar S, Mukhtar S. Mental health of medical workers in Pakistan during the pandemic COVID-19 outbreak. *Asian J Psychiatr* 2020;51:102080.
13 WHO. Coronavirus disease [COVID-19] outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health: interim guidance. 2020. Available: https://www.who.int/publications/i/item/coronavirus-disease-[covid-19]-outbreak-rights-roles-and-responsibilities-of-health-workers-including-key-considerations-for-occupational-safety-and-health
14 Yesilgul G, Cicek H, Avci M, *et al*. Nurses' knowledge levels and perceptions regarding occupational risks and hazards. *Int J Caring Sci* 2018;11:1117–24.
15 Bahcecik N, Ozturk H. The occupational safety and health in hospitals from the point of nurses. *Coll Antropol* 2009;33:1205–14.
16 Shahabinejad M, Ghiasi A, Ghaffari M, *et al*. Identify occupational hazards of each of the occupational groups in a military hospital. 2017.
17 Lam SKK, Kwong EWY, Hung MSY, *et al*. Nurses' preparedness for infectious disease outbreaks: a literature review and narrative synthesis of qualitative evidence. *J Clin Nurs* 2018;27:e1244–55.
18 Baysal E, Selçuk AK, Aktan GG, *et al*. An examination of the fear of COVID-19 and professional quality of life among nurses: a multicultural study. *J Nurs Manag* 2022;30:849–63.
19 Burdorf A, Porru F, Rugulies R. The COVID-19 (Coronavirus) pandemic: consequences for occupational health. *Scand J Work Environ Health* 2020;46:229–30.
20 International Conciel of Nurses. Covid-19-effect-worlds-nurses-facing-mass-trauma-immediate-danger-profession-and-future-our. 2021 Available: https://www.icn.ch/news/covid-19-effect-worlds-nurses-facing-mass-trauma-immediate-danger-profession-and-future-our

21 Kabunga A, Okalo P. Frontline nurses' post-traumatic stress disorder and associated predictive factors during the second wave of COVID-19 in central, Uganda. *Neuropsychiatr Dis Treat* 2021;17:3627–33.
22 Hazbavi Z, Mostfazadeh R, Alaei N, *et al*. Spatial and temporal analysis of the COVID-19 incidence pattern in Iran. *Environ Sci Pollut Res Int* 2021;28:13605–15.
23 Raoofi A, Takian A, Akbari Sari A, *et al*. COVID-19 pandemic and comparative health policy learning in Iran. *Arch Iran Med* 2020;23:220–34.
24 Ruiz-Fernández MD, Ramos-Pichardo JD, Ibáñez-Masero O, *et al*. Compassion fatigue, burnout, compassion satisfaction and perceived stress in healthcare professionals during the COVID-19 health crisis in Spain. *J Clin Nurs* 2020;29:4321–30.
25 Tavakoli A, Vahdat K, Keshavarz M, *et al*. Novel Coronavirus disease 2019 (COVID-19): an emerging infectious disease in the 21st century. *Iran South Med J* 2020;22:432–50.
26 Tayyib NA, Alsolami FJ. Measuring the extent of stress and fear among registered nurses in KSA during the COVID-19 outbreak. *J Taibah Univ Med Sci* 2020;15:410–6.
27 Lin C-Y. Social reaction toward the 2019 novel Coronavirus [COVID-19]. *Soc Health Behav* 2020;3:1.
28 Hessels AJ, Kelly AM, Chen L, *et al*. Impact of infectious exposures and outbreaks on nurse and infection preventionist workload. *Am J Infect Control* 2019;47:623–7.
29 Behera D, Praveen D, Behera MR. Protecting Indian health workforce during the COVID-19 pandemic. *J Family Med Prim Care* 2020;9:4541–6.
30 De Kock JH, Latham HA, Leslie SJ, *et al*. A rapid review of the impact of COVID-19 on the mental health of Healthcare workers: implications for supporting psychological well-being. *BMC Public Health* 2021;21.
31 Polit D, Beck C. *Essentials of nursing research: appraising evidence for nursing practice*. Lippincott Williams & Wilkins, 2020.
32 Holloway I, Galvin K. *Qualitative research in nursing and healthcare*. John Wiley & Sons, 2023.
33 Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today* 2004;24:105–12.
34 Team WT, Lincoln YS, Guba EG. *[1985]. Naturalistic inquiry*. Beverley Hills, CA: Sage, Maarschalk, HJ, 2003.
35 Speziale HS, Streubert HJ, Carpenter DR. *Qualitative research in nursing: advancing the humanistic imperative*. Lippincott Williams & Wilkins, 2011.
36 Gerami Nejad N, Hosseini M, Mousavi Mirzaei S, *et al*. Association between resilience and professional quality of life among nurses working in intensive care units. *Iran J Nurs* 2019;31:49–60.
37 Kang HS, Son YD, Chae SM, *et al*. Working experiences of nurses during the Middle East respiratory syndrome outbreak. *Int J Nurs Pract* 2018;24:e12664.
38 Rezaee N, Mardani-Hamooleh M, Seraji M. Nurses' perception of ethical challenges in caring for patients with COVID-19: a qualitative analysis. *J Med Ethics Hist Med* 2020;13.
39 Lake ET, Sanders J, Duan R, *et al*. A meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. *Med Care* 2019;57:353–61.
40 Jeleff M, Traugott M, Jirovsky-Platter E, *et al*. Occupational challenges of healthcare workers during the COVID-19 pandemic: a qualitative study. *BMJ Open* 2022;12:e054516.
41 Cowin LS, Johnson M, Craven RG, *et al*. Causal modeling of self-concept, job satisfaction, and retention of nurses. *Int J Nurs Stud* 2008;45:1449–59.
42 Mosayebi M, Alaee Karahroudy F, Rassouli M, *et al*. Correlation of occupational stress with professional self-concept in pediatric nurses. *J Health Promot Manag* 2018;6:23–9.
43 Nwafor CE, Immanel EU, Obi-Nwosu H. Does nurses' self-concept mediate the relationship between job satisfaction and burnout among Nigerian nurses. *Int J Afr Nurs Sci* 2015;3:71–5.
44 Li Z, Zuo Q, Cheng J, *et al*. Coronavirus disease 2019 pandemic promotes the sense of professional identity among nurses. *Nurs Outlook* 2021;69:389–98.
45 Sheng Q, Zhang X, Wang X, *et al*. The influence of experiences of involvement in the COVID-19 rescue task on the professional identity among Chinese nurses: a qualitative study. *J Nurs Manag* 2020;28:1662–9.
46 Kurta-Nowicka A, Jaracz K. Positive experiences of nurses working during the COVID-19 pandemic. *PNIN* 2022;11:99–104.
47 Zhang XT, Shi SS, Qin Ren Y, *et al*. The traumatic experience of clinical nurses during the COVID-19 pandemic: which factors are related to post-traumatic growth? *Risk Manag Healthc Policy* 2021;14:2145–51.