Original Article

Qualitative research of nurses' psychological experience in treating COVID-19 corona virus disease 2019 (COVID-19) patients: a systematic review and meta-synthesis

Xiaoming Tang, Haimeng Zhao, Bo Li

Beijing Hospital of Traditional Chinese Medicine, Capital Medical University, Beijing, China

Contributions: (I) Conception and design: X Tang; (II) Administrative support: H Zhao; (III) Provision of study materials or patients: X Tang, H Zhao, B Li; (IV) Collection and assembly of data: H Zhao; (V) Data analysis and interpretation: B Li; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Bo Li. Beijing Hospital of Traditional Chinese Medicine, Capital Medical University, No. 23 Art Gallery Back Street, Dongcheng District, Beijing 100010, China. Email: libo@bjzhongyi.com.

Background: This article is intended to conduct a qualitative research on systematic review of frontline nurses' psychological experience in the treatment of corona virus disease 2019 (COVID-19) patients.

Methods: Cochrane Library, PubMed, Embase, the Cochrane library Web of Science, Medline, EBSCO, CINAHL, Scopus, SinoMed, CNKI, Wanfang Data and CQVIP were used to search for papers of qualitative research on the psychological experience of nurses in the treatment of COVID-19 patients. The retrieval time limit was from the establishment of the database to July 2020. The quality of the literature was evaluated by the quality evaluation standard of JBI evidence-based health care center in Australia, and the results were analyzed by meta-synthesis method.

Results: A total of 12 studies were included and 68 results were extracted, which were classified into 9 new categories and synthesized into 4 integrated results. The first synthesis result was that the nurses' psychological experience in the fight against COVID-19 was dominated by negative emotions in the early stage. The second synthesis result was the sense of responsibility to serve the society and the sense of professional mission, and the sense of self-worth satisfaction. The third synthesis result was difficulties and challenges in work, which was lack of professional qualification, heavy workload, lack of experience in dealing with public emergencies. The fourth synthesis result was grateful for the support of the outside, who can feel the strength of the team, the warmth of family and social support, and future career thinking and expectations.

Discussion: The society and hospital managers should pay attention to the inner changes and real needs of front-line nurses, provide necessary support and guarantee, and promote front-line nurses to better devote into the work of public health emergencies, improve the quality of nursing, and realize professional value. However, due to limited number of documents included, this study may need further more related researches to verify the results.

Keywords: Corona virus disease 2019 (COVID-19); nurse; psychological experience; qualitative research; meta-synthesis

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Introduction

Corona virus disease 2019 (COVID-19) is a new and sudden infectious disease that appeared at the end of 2019. It is mainly infected by a new type of coronavirus. The virus is a β-type coronavirus, whose genetic characteristics are clearly different from SARSr-Cov and MERSr-Cover. Spread through respiratory droplets and close contact are the main routes of transmission. Prolonged exposure to high-concentration aerosols in a relatively closed environment may spread through aerosols. Since the novel coronavirus can be isolated in feces and urine, attention should be paid to the environmental pollution caused by feces and urine to cause aerosol or contact transmission (1). In the face of a public health emergency with a strong spread, nursing staff are faced with huge psychological pressure and arduous treatment work. The psychological experience is worthy of understanding and attention. At present, many studies at home and abroad used qualitative research methods to analyze the psychological experience of nurses in the treatment of patients with COVID-19, but there is a lack of systematic reviews and meta-synthesis of qualitative research on related topics. Therefore, this study adopted evidence-based medicine research methods and integrated relevant qualitative research to provide a more comprehensive interpretation of the psychological experience of nurses, and to provide suggestions and basis for improving the psychological experience of nurses during public health emergencies in the future. We present the following article in accordance with the PRISMA reporting checklist (available at https://dx.doi.org/10.21037/lcm-21-4).

Methods

Literature search strategy

Computer search databases of Cochrane Library, PubMed, Embase, Web of Science, Medline, EBSCO, CINAHL, Scopus, SinoMed, CNKI, Wanfang, and CQVIP database were used collect qualitative researches on the psychological experience of first-line nurses in treating patients with COVID-19. The retrieval time limit was from the establishment of the database to July 2020. In addition, in order to ensure the comprehensiveness of the literature included, the tracing method was used to trace the reference list of the included research (2). The search adopted the method of subject words and free words. The Chinese search terms included nurses, nursing staff, novel coronavirus pneumonia, COVID-19, psychological experience, sense, feelings, needs, qualitative research, grounded theory, qualitative study. English search terms included Nurse, Nursing care, Coronavirus disease 2019, COVID-19, psycholog*, experience, emotion*, feeling*, needs, phenomenon, ground theory, qualitative research.

Literature inclusion and exclusion criteria

A model was constructed based on qualitative research questions (3,4). The inclusion criteria were: (I) research population: first-line nurses who participated in the treatment of patients with COVID-19 for more than one week; volunteered to participate in this research and signed an informed consent; with normal thinking and language skills, and can fully express the true inner experience; (II) research content or interest of phenomena: the real psychological experience of nurses when treating patients with COVID-19; (III) context: relevant departments for the treatment of patients with COVID-19; (IV) study design: qualitative research included various types of qualitative research literature with phenomenology, grounded theory, ethnography and descriptive analysis as research methods. Exclusion criteria: literature with full text not available; literature published in languages other than Chinese and English; literature with repeated publications or incomplete information.

Literature screening and data extraction

Two researchers independently carried out literature screening and data extraction according to the literature inclusion and exclusion criteria, and finally cross-checked. If the opinions are not uniform, the third researcher will determine. The content of the data extraction included the author, publication year, country or region, qualitative research method, research object, phenomenon of interest, contextual factors, and main results.

Literature quality evaluation

The 2016 version of the Australian JBI Evidence-based Health Care Center's qualitative research quality evaluation criteria (5) were used to evaluate the quality of the literature. Each item was evaluated as "yes", "no", and "unclear". The standards were fully met as grade A, partially met as grade B, and not met as grade C. The two researchers encountered disagreements in the quality evaluation process, and the third researcher was invited for determination. The results were shown in *Table 1*.

Table 1 Methodological quality evaluation results of the included studies

Included studies	Evaluation criteria										Overall evaluation
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	
Liu *et al.* (6)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	B
Yang *et al.* (7)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Lin *et al.* (8)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Qu *et al.* (9)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Zhang *et al.* (10)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Du *et al.* (11)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Liu *et al.* (12)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Tu *et al.* (13)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	A
Li *et al.* (14)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	B
Zhang *et al.* (15)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	B
Sun *et al.* (16)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	A
Zhang *et al.* (17)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	B

Notes: (I) Whether the philosophical basis is consistent with the methodology; (II) whether the methodology is consistent with the research question or research objective; (III) whether the methodology is consistent with the data collection method; (IV) whether the methodology is consistent with the research object and data analysis method; (V) whether the methodology is consistent with the way of interpreting the results; (VI) whether the researcher's own situation is explained from the perspective of cultural background and values; (VII) whether the researcher's influence on the research and the research's influence on the researcher are explained; (VIII) whether the research object is typical, and whether it fully reflects the research objects and their views; (IX) whether the research meets the current ethical norms; (X) whether the conclusions drawn are derived from the analysis and interpretation of the data. Grade A: the standards were fully met; Grade B: the standards were partially met; Grade C: the standards were not met.

Statistical analysis

The collective synthesis method was used to collect the results of the original research, including themes, implicit meanings, classifications, etc., and further integrated and summarized according to their meanings, and presented the synthesis results in a structured form (18).

Results

Literature search results

The initial search obtained 106 relevant literatures, and 48 were obtained after eliminating duplicate papers. By reading the title, abstract and key words, the papers of review, inconsistent with the research theme, quantitative research were removed. And 31 literatures were initially screened. After reading the full text, 12 studies were finally included. The literature screening process and results were shown in *Figure 1*.

Basic characteristics of the included studies

The basic characteristics of the included studies were shown in *Table 2*.

Meta-synthesis results

The researchers extracted 68 research results through repeated reading, comparison and interpretation of the included 12 articles, combined similar results into 9 new categories, and further integrated 4 synthesis results, as shown in *Table 3*.

Discussion

Caring and supporting the construction of emergency medical echelon, rectifying the layout of wards, establishing and improving long-term incentive mechanism

After the outbreak, the majority of nursing staff overcome

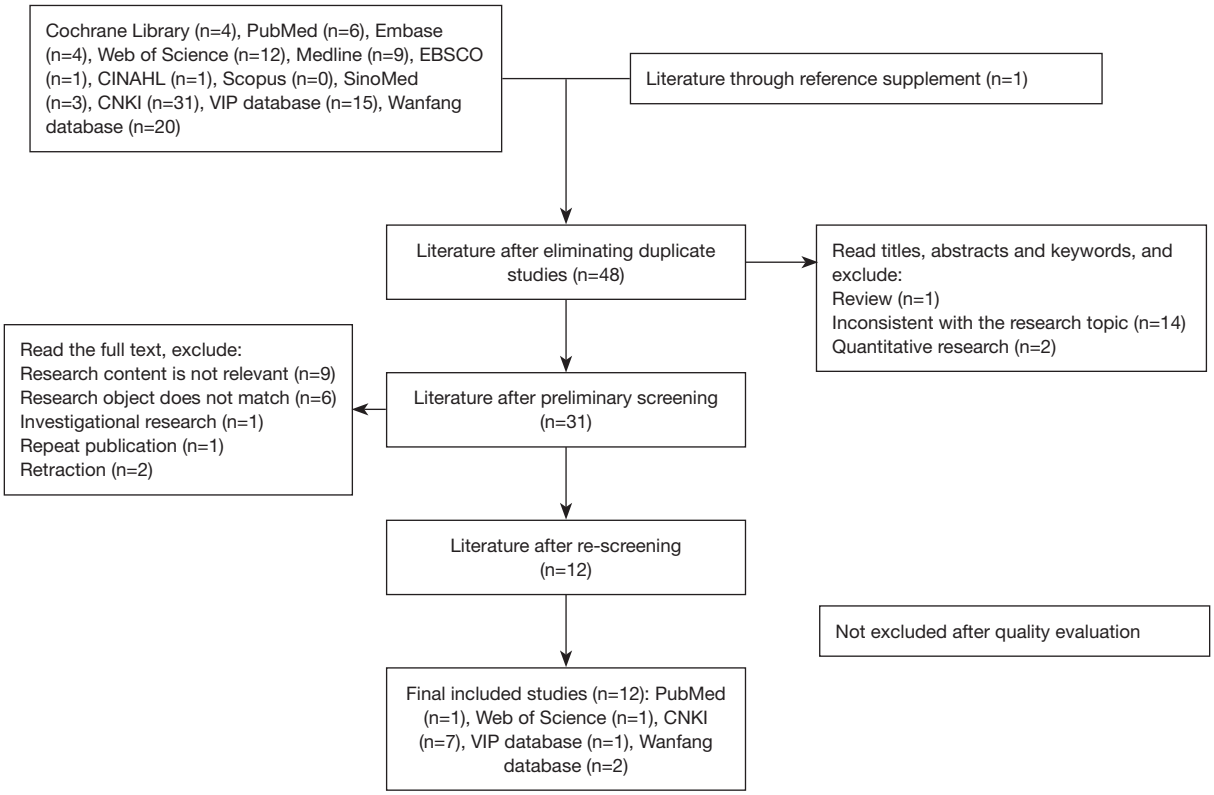

Figure 1 Flow chart of literature screening.

the difficulties of protective materials and manpower shortage, heavy workload, and unreasonable hospital layout at the initial stage, and spared no effort to treat patients. It is time to establish a sound long-term incentive mechanism. Based on the principles of fairness, justice, and openness, the first-line nursing staff should be given basic material rewards (19), with spiritual rewards as the core, and ensure that funds for grassroots first-line subsidies in place. Studies (20) have shown that positive social support can enhance the subjective well-being of nursing workers. Social support is positively correlated with nurses' work engagement, which can encourage nurses to have positive emotional experiences at work and stimulate work initiative (21). Multimedia and WeChat platforms should be used to increase publicity. Advanced individuals are set to stimulate and mobilize the enthusiasm and initiative of work, encourage advanced individuals, and spur the lag behind. Although most nurses voluntarily devote themselves to the front-line treatment out of a sense of mission, managers should improve the construction of the medical system and establish a professional emergency team, rectify the layout of the hospital, realize three districts and two channels, pay attention to nurses' career planning, so as to enhance nurses' sense of identity and belonging to the profession (22). Development channels should be broadened to enable nursing staff to realize personal and social values.

Paying attention to the negative emotions of frontline nurses, strengthening psychological crisis intervention and psychological counseling follow-up

The synthesis results of the study found that the positive emotions and negative emotions of the frontline nurses are intertwined and coexist, and negative emotions are dominate at early stage (16). The high-frequency negative psychological emotions shown in the work are fear, worry, tension, scare, exhaustion, anxiety. The main reasons are insufficient understanding of the disease, shortage of human resources, shortage of protective materials, lack of self-psychological construction and a series of post-traumatic stress reactions. It is very important to understand the inner needs of nurses and carry out targeted psychological crisis intervention and

Table 2 The basic characteristics of the included studies

Included studies	Country	Qualitative research methods	Research object	Phenomenon of interest	Context	Primary outcome
Liu *et al.* (6) 2020	China	Phenomenological research; in-depth individual interview	First-line nurses for support from tertiary A hospitals (n=10)	Psychological experience of frontline clinical support nurses in the epidemic	Quiet, relaxed atmosphere, and non-interference environment for easy conversation	Three themes were refined: negative psychological experience (fear, worry and exhaustion), insufficient ability to respond to public health emergencies (insufficient knowledge of disease and insufficient emergency rescue and nursing skills), and rational understanding of fighting the epidemic (a sense of mission and confidence)
Yang *et al.* (7) 2020	China	Phenomenological research; in-depth individual interview	Clinical nurses who participated in the first batch of fight against COVID-19 from tertiary B hospitals (n=10)	Psychological state of clinical nurses in an outbreak	A well-light, comfortable space, avoid disturbance	Three themes were refined: insufficient knowledge reserves, heavy workload; fluctuating mental state; gratitude to the team and social support
Lin *et al.* (8) 2020	China	Phenomenological research; in-depth individual interview	First-line clinical nurses of the sixth batch of medical teams in Guangxi Zhuang Autonomous Region (n=12)	Psychological experience and coping methods of nurses participating in the fight against the epidemic	Accommodation after work	Three themes were refined: negative psychological experience in rescue nurses' work, difficulties and challenges encountered in work, and coping skills
Qu *et al.* (9) 2020	China	Phenomenological research; in-depth individual interview	Frontline nurses in the rescue work against the COVID-19 (n=8)	Real experience in the rescue work	Not mentioned	Three themes were refined: feeling the pressure of treatment, heavy tasks, experiencing fear, helplessness, depression, seeing hope, etc., and having expectations to individuals, hospitals, and society
Zhang *et al.* (10) 2020	China	Phenomenological research; in-depth individual interview	Frontline nurses involved in the fight against COVID-19 (n=20)	Psychological reaction of frontline nurses	Quiet, undisturbed room	Three themes were refined: psychology (responsibility and mission, fear, anxiety, tension, helplessness, self-blame, etc.), physiology (exhaustion, discomfort), and society (response to the pressure of public opinion)
Du *et al.* (11) 2020	China	Phenomenological research; in-depth individual interview	The seventh batch of nurses assisting Hubei from Jiangsu Province (n=10)	Mental state of supporting nurses from different places	Quiet and private environment	Three themes were refined: psychological state fluctuations, support and influence of external forces, future career thinking
Liu *et al.* (12) 2020	China	Phenomenological research; in-depth individual interview; focus group interview	Rescue nurses participating in the fight against COVID-19 (n=15)	Psychological stress response of rescue nurses in epidemic area	Quiet, undisturbed room	Psychological stress has gone through three different psychological processes: psychological changes such as tension, anxiety, fear, excitement, physical and mental exhaustion, etc.; the response to rescue difficulties and the pressure of public opinion; the courage to face difficulties and pressure, and strive to find strategies for overcoming difficulties and relieving stress
Tu *et al.* (13) 2020	China	Phenomenological research; in-depth individual interview	ICU nurses who were in close contact with sever patients with COVID-19 (n=15)	Real experience of ICU nurses	Quiet environment, good light, comfortable and undisturbed	Eight themes were refined by three stages: before participating in treatment: fear of inadequate self-protection; anxiety due to incompetence for related treatment work; sense of professional mission; during participating in treatment: generally with nervous and uneasy emotional reactions; able to quickly adapt to isolation ward of severe cases, and enter into the state of treatment; the perception of lack of professional knowledge; after participating in the treatment: the symptoms of own physical discomfort are enlarged; the professional value is stimulated in the treatment and nursing work
Li *et al.* (14) 2020	China	Phenomenological research; in-depth individual interview	Clinical nurses who have direct contact with the frontline clinics from Shenzhen and Xi'an (n=15)	Physical and mental experience of frontline nurses in epidemic prevention and control	Private and independent space to avoid interference from others	Five themes were refined: panic, doubt and stress response; lack of knowledge, correct judgment and cognition; correct protection of individuals and others; united efforts to defend the homeland; prevention first, emphasis on education
Zhang *et al.* (15) 2020	China	Phenomenological research; in-depth individual interview	Nursing staff stationed in the Department of Infectious Diseases, Fever Clinics and assisting Wuhan and Qianjiang (n=7)	Psychological experience of frontline nursing staff	Residence	Two themes were refined: stress response (fear, anxiety, lack of self-confidence, and insomnia) and single interpersonal relationship (loneliness, missing family members)
Sun *et al.* (16) 2020	China	Phenomenological research; in-depth individual interview	Nurses caring for COVID-19 patients (n=20)	Psychological experience of nurses caring for COVID-19 patients	Perform in a separate room, quiet and uninterrupted	Four themes were refined: the early performance is fatigue, discomfort, helplessness and other negative emotions caused by high-intensity work, fear and anxiety, and caring for patients and family members. Self-coping methods: psychological life adaptation, altruistic behavior, team support and rational cognition. Growth under pressure: the increase of emotion and gratitude, the cultivation of professional responsibility, and self-reflection. Positive emotions and negative emotions occur simultaneously
Zhang *et al.* (17) 2020	China	Descriptive research; in-depth individual interview	Registered nurses at the COVID-19 Epidemic Center (n=23)	Psychological changes of registered nurses in epidemic areas	Not mentioned	The process of psychological change extracts 3 stages: conflict, energy exhaustion, and energy recovery

Table 3 The synthesis results of included studies

Synthesis results	Categories	Results	Original literature
1. The nurses' psychological experience in the fight against COVID-19 was dominated by negative emotions in the early stage	Negative emotions	Feeling fear and anxiety after the epidemic broke out	*"I am very worried about whether I have been infected or not, maybe just without symptoms. I'm unsettled."* (6)
			"I pay attention to the epidemic data report every day, watching the number of infections, the number of critically ill patients, and the number of deaths continue to rise, and I am still a little scared." (15)
		Feeling helpless in the face of death	*"The condition of the critically ill patient has changed too quickly. It was fine yesterday, but dying today."* (10)
		Worrying about my family	*"The son who has just turned 5 months in the family and the father with the sequelae of cerebral infarction make me worried."* (14)
		The interpersonal relationship is simple, and I feel lonely	*"After returning to the residence after work every day, I am alone, and all communication can only be done through mobile phones."* (15)
		Insufficient manpower and shortage of protective materials resulted into anxiety	*"After working 12–16 hours a day, I feel very tired. My whole body is aching, and I can fall asleep while standing"* (16)
	Positive emotions	Seeing the hope of conquering the disease	*"Seeing that the doctors in our department who were infected at the time and who were so seriously ill gradually recovered ... I have more confidence in conquering the disease, and we can definitely do it."* (9)
		Receiving support from all walks of life, full of gratitude	*"Patients in Wuhan are very friendly. We gave any nursing operations for them. They will thank us repeatedly and urge us to strengthen our own protection and avoid contact with them. It moved me very much."* (11)
2. The sense of responsibility to serve the society and the sense of professional mission	Sense of professional mission	Sense of mission and responsibility to sacrifice oneself, save the dead and heal the wounded	*"There is nothing to say, I am a nurse, and it is my responsibility to save the dead and heal the wounded."* (10)
		Successfully accomplishing missions	*"COVID-19 is a national disaster that has gathered the strength of the people and the strength of the country. As the main force in the fight against the epidemic, nurses have the responsibility to care for others. They are honored as 'Anti-Epidemic Heroes' in China"* (17)
	Sense of self-worth satisfaction	Stimulating professional pride and satisfaction	*"I am more and more familiar with the working environment, and I have become accustomed to this working model. We are all quite proud of seeing patients cured and discharged from the hospital."* (7)
		Full of a sense of accomplishment	*"I saw the patient breathe smoothly, the oxygen concentration value of the ventilator was adjusted down, the oxygen saturation was still stable within the target value, and the body temperature did not rise anymore. I am really happy for them, and there was a sense of accomplishment in my heart."* (13)
3. Difficulties and challenges in work	Lack of professional qualification	Fully armed and wearing "armor", resulting in increased difficulty in operation	*"I wear glasses for myopia, and sweat when I walk too much. The clothes are also wet, goggles are prone to fogging, which makes it difficult to operate the indwelling needle."* (8)
		Not proficient in the use of the instrument	*"The transnasal high-flow humidification oxygen therapy instrument has not been used in our ICU usually, so I can only ask the teacher next to me to teach me temporarily."* (13)
	Heavy workload	Social pressure	*"The state, society, and hospital leaders attach great importance to the prevention and control of this epidemic, coupled with the large number of patients, which has brought us a lot of pressure."* (9)
		Strained nurse-patient relationship	*"Some patients are very sick when they come. Plus old age and many basic diseases, their prognosis is very poor or even die. The family members cannot accept it ... It has brought huge obstacles to our treatment work. We not only treat illnesses and save people, but also take into account the psychological problems of patients and their families..."* (9)
		Heavy task	*"36 patients were admitted in 4 hours, and there was no time to breathe."* (10)
		Heavy workload	*"The ICU is too busy. Feeding, turning patients over, inhaling oxygen, sucking sputum, injecting, changing dressings, and drawing blood. I am keeps spinning like a top. After get off work, I cannot feel my legs."* (10)
	Lack of experience in dealing with public emergencies	Insufficient understanding of sudden diseases	*"I have only heard of SARS before, and I have never really been exposed to such sudden infectious diseases, and I don't know anything about this new type of coronavirus."* (6)
		Insufficient emergency rescue and nursing skills	*"I have been working in general wards all year round. Facing such large-scale emergencies in public health, my nursing skills are obviously insufficient. I don't know how to efficiently puncture, infusion, and collect specimens safely with gloves ..."* (6)
		Lack of new knowledge and skills in the protection and rescue of infectious diseases	*"The handling of such sudden public health incidents is very different from normal work. Even the steps of putting on and taking off the isolation clothes are different and need to be relearned."* (6)
4. Grateful for the support of the outside	Feeling the strength of the team, the warmth of family and social support	Concerns from all walks of life	*"During the fight against the epidemic, all walks of life donated various materials to us, making us feel that we are not fighting alone, thank them very much."* (11)
		Spirit of teamwork	*"After arriving here, the hospital has sufficient supplies, and the teachers in this hospital also carefully teach us to put on and take off protective clothing."* (11)
		Family support	*"One day before going to work, I was having video call with my husband... When my son babbled and said 'love you Mum', and I was immediately full of strength and was able to withstand the pressure. My rear was stable, and I can win the battle on the front line."* (12)
			"This experience made me feel that life is precious and family is important." (16)
		Patient's understanding	*"The patients bowed to us when he was discharged from the hospital. This behavior touched me and made me feel very fulfilled."* (17)
	Future career thinking and expectations	Relevant public emergency treatment skills are insufficient, so we must strengthen learning and sum up experience	*"Although I have been working for 5 years, I haven't come into contact with so many critically ill patients and equipment. It is still a bit difficult to care for critically ill patients, and rescue skills need more learning and training."* (6)
			"Through this anti-epidemic support operation, I found that my knowledge is too narrow, especially for the nursing of severely infected patients. I still need to strengthen learning." (11)
		Pay attention to the psychological construction of front-line nurses	*"I hope that professionals will give us psychological counseling and pay attention to our psychological issues."* (9)
		Give nursing staff a sense of security	*"I hope that the media can report the situation of medical staff more. We want to treat every patient, including suspected patients, but the number of beds is limited. In the end, we still need the government to allocate resources to solve the problem of resource allocation and not to intensify the conflict between doctors and patients. We just want to concentrate on treating the disease."* (9)

psychological counseling at early. Studies (23) have shown that the first-line nurses have heavy work tasks, high risk of infection, high psychological pressure, and increased mental health risks. The mental health level of nursing staff affects the quality of nursing (24). Nursing workload is an important basis for measuring the work intensity of nursing staff and determining the allocation of nursing manpower (25).

Insufficient knowledge of diseases

In order to ensure the professionalism of knowledge acquisition, it is recommended to carry out continuing education training for all employees and include required credits. The Department of Infectious Diseases is responsible for the training of relevant infectious diseases once a month. The department sets up liaison specialists to learn disaster treatment and the prevention and control of common infectious diseases, and timely reports new suspected infectious diseases to the department, provides corresponding protection guidance, so as to ensure the safety of medical staff.

Shortage of human resources

Research (26) has shown that the training of 700 nurses in disaster rescue ability can effectively improve the actual combat rescue ability, first aid awareness and comprehensive quality, and ensure the quality and efficiency of disaster rescue. In the synthesis of this study, it was found that nurses with specialist experience can skillfully perform transnasal high-flow humidification oxygen therapy instrument, closed sputum suction, quickly eliminate ventilator alarms, and work pressure is lower than inexperienced nurses. Some scholars (6) have studied that young nurses and those who lack nursing work experience in critically ill patients will have negative psychological experience, which may be related to insufficient work experience, insufficient various operating skills and response measures when facing sudden and infectious critically ill patients. It is recommended that all medical staff in the hospital rotate to the emergency department and intensive care unit (ICU) for standardized training; carry out full-staff training for public health emergencies and infectious disease emergency drills, and select personnel with strong psychological resistance to set up an epidemic emergency talent pool (27) to ensure human resources deployment, shorten the working hours, so as to reduce the psychological load of nurses. the construction of emergency echelon should be improved, and implement corresponding bonus incentive policies for emergency drills with courage and outstanding members to stimulate the enthusiasm of nurses.

Strengthening emergency material management

A refined artificial intelligence material management system for hospitals should be established (28). Departments report emergency material inventory every month, establish a ledger, and uniformly deploy when necessary, so that emergency protection materials are adequately guaranteed.

Insufficient psychological construction

The psychological intervention should be strengthened by setting up a psychological relief fund, hiring professional psychological counselors to conduct psychological counseling every month, and use the professional symptom self-rating scale (SCL-90) for evaluation (29) to shorten the evaluation cycle, so as to realize normalization. For nurses with more serious psychological problems, they should be transferred from work when necessary, and give psychological assistance. Psychological counselors will conduct psychological treatment in the psychological consulting room (30) to effectively improve their mental health, ensure the physical and mental health of nursing staff, so that they can better engage in front-line work.

Limitations of the study

Except for the two articles included in this study were grade A, the others were grade B, with certain selection bias. Secondly, due to limitations of the researcher's ability and language limitations, only Chinese and English literature were retrieved, which may bias the results. In the future, research should continue to pay attention to and value this group, and explore plans to provide information support and psychological counseling to frontline nurses who respond to public health emergencies.

Conclusions

The results systematically interpret the first-line nurses has generated negative emotions in the face of public health emergencies, especially the psychological needs shown in financial subsidies, human resources, protective materials, and emergency training. It is recommended

that managers should pay attention to and establish the construction of emergency medical teams, set up material ledger, and increase disaster relief exercises, as well as carry out targeted psychological crisis intervention and psychological counseling early. Because COVID-19 is a new type of virus, there are few related studies. Although the number of included documents is limited, the overall scope covers the research results under different medical cultural backgrounds, which truly reflects the true inner experience of frontline nurses across the country, which provides a reference for the development of nursing care and the fight against public health emergencies.

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Footnote

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