

# Analysis of the Management Strategies in Caring for Patients with COVID-19: Chinese Nurses' Experience

## Abstract

**Background:** In order to improve the quality of nursing care and patient outcomes during the future pandemics, understanding the details of strategies used for the management of patients with COVID-19 and its outcomes are crucial. The present study was conducted to reveal the management strategies that Chinese nurses utilized for COVID-19 patients. **Materials and Methods:** Graneheim and Lundman's approach of conventional content analysis was used in this study and participants included nine nurses caring the patients with COVID-19 along with supervisors or matrons. Data were collected by semi-structured interviews and were analyzed via MAXQDA 10. **Results:** Six main categories emerged in this study including "overcoming challenges of COVID-19 pandemic", "continuous online training of nurses", "psychological support", "cooperative behavior of the public and government based on the previous pandemic experience", "protecting medical staff from infection" and "application of smartphone technology". **Conclusions:** The optimal management of emerging diseases depends on the cooperation of the people, the efforts of the healthcare team, and the measures of the managers. Hospital managers could create equipped units to be designated for probable health care emergencies, preparing educated team for quick training of staff, streamlining the expansion of standard work, and providing the necessary infrastructure for possible future pandemics.

**Keywords:** COVID-19, disease management, nursing care, patient care management

## Introduction

World Health Organization (WHO) assigned Coronavirus Disease 2019 (COVID-19) to coronavirus disease in 2020.<sup>[1]</sup> On March 11, 2020, WHO declared COVID-19 as a pandemic.<sup>[2]</sup> As of September 10, 2022, it is reported that 613,032,223 cases were infected and 6,514,558 were dead in China.<sup>[3]</sup> Emphasis has been on precautionary measures to control and prevent infection.<sup>[4]</sup> Although precise precautionary measures were taken by people, a large number of people were infected.<sup>[5]</sup>

WHO broadcasted guidelines to behave with the COVID-19 and they included keeping patients under observation, testing suspicious cases, having infection control unit at COVID-19 centers, providing essential resources, and educating the public about the virus.<sup>[6]</sup> It is clear that these measures can be implemented by the medical staff, especially nurses.<sup>[7,8]</sup> Nurses are at the forefront of fight against

disease, and they have to care for patients with severe conditions. The nurses used several strategies in close contact with patients to handle challenges related to the COVID-19 pandemic. Hence, they are the main source of valuable experiences of advantages and disadvantages of used strategies. On the other hand, nurses may have the fear of spreading the virus among their family and friends.<sup>[8]</sup> Furthermore, studies have shown that health care personnel experienced problems such as anxiety, depression, fear and hopelessness.<sup>[9]</sup> Nurses felt ethical pressure in the dilemma of their commitment to their profession and providing care regardless of the dangers to their own safety.<sup>[10]</sup> Moreover, nurses were exposed to stress of patients who passed away.<sup>[11]</sup> In Saudi Arabia, nurses of patients with MERS-CoV felt scared of lack of awareness about MERS-CoV and suffered from psychological trauma owing to the infection of their colleagues and deaths of their patients.<sup>[12]</sup>

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In order to gain experience and have deep appreciation of nurses' experience with regard to caring for patients with COVID-19, no document could be found concerning the strategies they used to manage patients with COVID-19. Qualitative methods shed light on the awareness of the participants from a specific phenomenon, and provided insights into how awareness affected their actions.<sup>[13]</sup> Qualitative research helps to understand the human condition in different contexts and perceived situations.<sup>[14]</sup> Nonetheless, various nurses' experiences are observable among nations, because nursing resources, equipment, substructures, healthcare systems, and public culture vary dramatically. Thus, this study was conducted to identify what strategies were used to manage patients with COVID-19 by Chinese nurses.

### Materials and Methods

This paper used the conventional content analysis approach of the Graneheim and Lundman method.<sup>[15]</sup> This international project was started at the end of 2020 and this study is a part of that large project. The participants were selected from nurses caring for the patients with COVID-19, supervisors or matrons in Haikou hospital in Hainan who would like to talk about their experience. Participants worked in ophthalmology, emergency, traditional Chinese medicine, internal medicine clinic and endocrinology department. Purposive sampling method was used in this study. Inclusion criteria was having at least a 1-month experience of caring for patients with COVID-19 for nurses, having at least a 1-month experience of management for supervisors and matrons and intending to participate in the study. Sampling was carried out based on constant comparative analysis, results of analysis and observation of maximum variation. Interviews continued until data saturation was reached so that no new category was obtained. Demographic information of nine nurses who participated in the study was presented in Table 1.

Data were collected through face-to-face semi-structured interviews. The main research questions included "What kind of strategies were used for caring for and managing patients with COVID-19?" and "Kindly describe the one-day experience of caring for patients with COVID-19". Moreover, complementary probing questions were asked to obtain further explanation. For instance, "Kindly explain more?" [Table 2]. All interviews were recorded and the researchers first came to the health care centres trying to get to know the participants so they would feel comfortable with the researcher before the interview session. Interviews were then conducted with the permission of the participants at the desired location and time. The interview time was between 30 and 90 minutes and on average 40 minutes, which were recorded using a digital device.

Each interview was considered as a unit of analysis. The interviews were conducted in English which were recorded and transcribed verbatim and read repeatedly to achieve a sense of the whole. Then, the data were broken down into

**Table 1: Demographic characteristics of participants**

Participant	professional titles	position	Age	Gender
1	Chief superintendent	Head nurse	47	Female
2	Chief superintendent	Chief of all nurses	50	Female
3	supervisor	supervisor	35	Female
4	Senior	Clinical Nurse	27	Female
5	Vice chief superintendent	Clinical Nurse	53	Female
6	Supervisor	Clinical Nurse	38	Female
7	Supervisor	Clinical Nurse	31	Female
8	Supervisor	Leader of teaching group	41	Female
9	Chief superintendent	Head nurse	38	Female

**Table 2: General questions which were asked of participants during interviews**

No	Questions
1	what kind of strategies were used for caring and managing of patients with COVID-19?
2	What was the specific work that the managers (nurses) of hospital undertook in response to COVID-19?
3	have you encountered any difficulties or challenges in managing human resources?
4	did you have a training program for nursing staff and how was it undertaken?
5	What evidence did you refer to make the emergency plans?
6	tell me the story of one day of your experience in COVID-19 department or management department.

meaningful units and labelled with conceptual names (code). After specifying open codes, the codes were grouped according to similarities and differences into subcategories. Each subcategory was grouped with similar meanings and considered as a category.<sup>[10]</sup> MAXQDA 10 was used for data management. This study applied the criteria suggested by Guba and Lincoln to evaluate the credibility of the data.<sup>[16]</sup> The prolonged engagement with the participants during the interview period and member check helped to establish credibility. Moreover, analytic categories, interpretations, and conclusions were tested using member checks. Inquiry audits were used to establish dependability. Detailed descriptions of contexts and participants were used for transferability. Triangulation were used to establish confirmability.

### Ethical considerations

Written consent was obtained from participants. Data confidentiality, the feasibility of exclusion from the study, voluntary participation, and anonymous interviews using the code were explained to all participants. Ethic codes were obtained on 22-11-2020 (ethical code = HYLL-2020-031 from China).

### Results

Interviews of Chinese nurses were analyzed and the main category of "Holistic insight into a chain of patients,

nurses, and healthcare infrastructure” was extracted. On the whole, six categories and 13 main subcategories were extracted [Table 3].

### Overcoming the challenges of the COVID-19 pandemic

This category included three subcategories: “overcoming human resources challenges”, “overcoming medical equipment challenges” and “overcoming hospital challenges”.

#### Overcoming human resource challenges

One of the challenges faced by the nurses participating in this study was the lack of nursing staff. Hence, nurses helped each other in emergency conditions with more shifts and cooperated with other wards’ nurses. A nurses said: “when rescuing patients, there were insufficient staff. When we rescued a patient downstairs, we would ask one nurse from upstairs to come to help”. (P5)

#### Overcoming medical equipment challenges

In order to overcome the shortages, including Personal Protective Equipment (PPE) and equipment, a nurse was appointed in each department to count and deliver the equipment to other nurses. Hospitals creatively produced, purchased and stored products that were designed by them. A nurse said: “Yet our protecting suits were also made through our research. We filmed videos and they were spread throughout the province and even the whole country.” (P6)

#### Overcoming hospital challenges

During the COVID-19 crisis, hospitals had to request help from other non-COVID-19 hospitals or other cities in the country due to the shortage of nursing staff. Different approaches to diagnosing a patient with COVID-19, different hospital systems, the inefficiency of the health code system to identify suspicious cases, and the inefficiency of the hospital due to the large number

of patients, were among the challenges related to this era. After a while guidelines were used by all hospitals. A nurse stated: “At that time we went to the Traditional Chinese Medicine hospital. There were a lot of the hospital systems which were not the same as ours.” (P7)

### Continuous online training of nurses

Chinese managers decided to provide nurses with up-to-date care information before entering the wards where patients with COVID-19 were hospitalized.

#### Before the nurses enter quarantine wards

In order to select nurses qualified to care for patients with COVID-19, a group of nurses was trained online and then they were interviewed and tested through video call. Then, they were trained in groups in simulated wards. A nurse said in this regard: “We had training in the technology of wearing and taking off protective suits before we got there.” (P4)

#### In-service training

A booklet was designed by the quality control nurses of Hainan and was provided to the nurses of the quarantine wards. In the emergency department, the nurses were taught the protocols of how to transfer patients from the triage to the ward. In the inpatient wards of patients with COVID-19, the guidelines were installed in the form of posters on the walls, and any new protocol that was published in the world was provided to the nurses through the WeChat software. A nurse said in this regard:” after we went there, we all had such trainings. They all trained us like the regulations and guidelines, but there was no manual for that.” (P5)

### Psychological support

Patients and medical staff were not exempt from fear and anxiety. Therefore, they required tremendous psychological support to overcome this fear.

**Table 3: Category and subcategory extracted from the interviews of Chinese nurses**

Main Category	Category	Subcategory
Holistic insight into chain of patients, nurses, and healthcare infrastructure	1-Overcoming challenges of covid-19 epidemic	1-1 Overcoming human resources’ challenges
		1-2 Overcoming medical equipment challenges
		1-3 Overcoming hospitals’ challenges
	2-Continuous online training of nurses	2-1 Before the nurses’ entrance to quarantine wards
		2-2 In-service training
	3-Psychological support	3-1 More humanistic care of patients
		3-2 Psychological support of nurses
	4-Cooperative behavior of the public and government based on the previous pandemic experience	4-1 Using guideline to diagnosis of COVID-19
		4-2 Sending qualified nurses to help other province
		4-3 Cooperative manner of all departments of a hospital
		4-4 Good performance of people
		4-5 Good performance of administrators
		4-6 Previous experience of communicable diseases pandemic
5-Protecting medical staff from infection		
6-Application of smartphone technology		

### *More humanistic care of patients*

Nurses took numerous measures to assist a patient in overcoming his or her fear including staying with and talking with the patient, using the WECHAT software to maintain video contact of the patient with his family, encouraging the family of the critically ill patient to call them frequently, creating WECHAT group among patients to encourage each other, sitting next to the patients and listening to them and even preparing the patient's favorite food by the nurse from nurses' own home. A nurse said about this: *"A patient was sick and tired of eating the same repetitive food. Then, we would give the patient something else he wanted to eat something from our own room."* (P4)

### *Psychological support of nurses*

Due to direct contact with the COVID-19 patients and the high mortality rate, nurses of the quarantine wards were susceptible to mental illnesses. Therefore, supervisors and managers of the hospital and the nurses' families provided psychological support. Sleeping system, food and psychological dynamics of the nurses were monitored daily by the supervisors, and if the nurses had fever or symptoms, they were given sick leave. Psychiatric consultation was done through WeChat and video calls. A supervisor said in this regard: *"First of all, I was in charge of nurses, and one of my responsibilities was to pay attention to the changes in the psychological dynamics of each person. After a nurse came out, you also had to care for him or her, to say something to support him or her such as "well done"."* (P3)

### **Cooperative behavior of the public and government based on the previous pandemic experience**

Several factors such as "using guidelines to diagnose COVID-19", "sending skilled nurses to help other provinces", "cooperative manner of all departments of a hospital", "good performance of people", "good performance of managers" and "previous experience of infectious disease epidemic" led to the successful control of COVID-19 by the Chinese.

### *Using guideline to diagnosis of COVID-19*

Quick diagnosis of patients in triage was done by two checklists. Then, as soon as the diagnosis was confirmed, in order to prevent the spread to others, the patient was admitted to the hospital, and the contacts of the infected person with others were followed up. A supervisor said in this regard: *"We set up checkpoints for whoever enters this area, which meant after we ruled out who could enter this area, there was another triage; like another checkpoint to protect our staff and patients as much safe as possible."* (P3)

### *Sending qualified nurses to help other provinces*

Having 5 years of work experience and the ability to work with a ventilator was one of the necessary conditions to

be allowed to work in the COVID-19 departments. To be able to work in other provinces, nurses had to pass an exam. A nurse said: *"The leader of the hospital texted in our hospital WeChat group that there was a need for ICU nurses and encouraged us to sign up. I signed up for support in Wuhan at that time."* (P4)

### *Cooperative manner of all departments of a hospital*

Any problem could be solved at any hour of the day or night with a phone call to the nursing supervisor or the shift manager. Sometimes, when code 99 was announced, nurses from other departments rushed to help their colleagues. Nurses would take on extra shifts if needed without protesting. A nurse said in this regard: *"There were always some coordination and communication problems between logistics and clinical ward with each other, but at that time, there was no problem at all"*. (P7)

### *Good performance of people*

Chinese people performed very well during the COVID-19 crisis. By wearing masks and following preventive protocols, almost all Chinese people were vaccinated. A nurse said about this: *"It seems that almost all have been vaccinated now. You see everyone is wearing masks in the streets."* (P5)

### *Good performance of administrators*

Managers took measures such as equipping hospitals before admitting a patient with COVID-19, holding weekly video conferences to solve problems, allocating more centres to take PCR samples to detect new cases, assigning a certain number of hospitals to COVID-19, detailed reporting of daily infection statistics, establishing new ICU departments to compensate for the shortage. A supervisor said: *"In administration level, we had video conference with these head nurses anytime in every week to see if they need something, or help them solve their problems"*. (P3)

### *Previous experience of communicable diseases pandemic*

The experience of Chinese nurses and managers from previous infectious diseases such as SARS made them use the related preventive and treatment protocols as a basis. The fear of nurses was more or less and older nurses prepared young nurses to enter the COVID-19 department. A nurse said: *"That is it; our hospital was designated as a hospital for SARS in 2003; every nurse in our hospital had a very deep impression on SARS, so they did not have much fear when faced with the staff transfer."* (P4)

### **Protecting medical staff from infection**

Chinese nursing managers took some measures to limit the number of medical personnel from getting COVID-19 including limiting the number of nurses who entered the COVID-19 ward, 8-hour shifts to 6 hours to reduce the risk of transmission, controlling the accuracy and sequence of wearing and removing PPE by supervisors, not involving

all the hospital personnel in the COVID-19 wards, providing a single room for the personnel to live in and not allowing them to meet each other. A nurse said: *“In the very early days, in our hospital, each shift was 8 hours. In order to reduce risk of infection during eating, shift was decreased to 6 hours by ministers”* (P6)

### Application of smartphone technology

The use of smartphones in order to improve the awareness of the medical staff and people was another strategy for managing the COVID-19 crisis. For example, the results of laboratory tests were prepared electronically and not through paper. A nurse said: *“We had set up a WeChat group. If there was any problem during work, we would send it to the WeChat group. The head nurse or other colleagues would respond in time.”* (P5)

### Discussion

In this content analysis study, experience of nurses during the pandemic crisis regarding management strategies in caring for patients with COVID-19 was explored. admittedly, through this pandemic, they faced challenges such as lack of nurses, lack of PPE and medical equipment. Some countries used nursing students to compensate for the lack of nurses.<sup>[17]</sup> On the other hand, during the COVID-19 crisis, hospitals had to make up for their lack of healthcare staff from other non-COVID-19 hospitals or other cities of the country through call-ups. Different approaches to diagnosing a patient with COVID-19, different hospital systems, the inefficiency of the health code system to identify suspicious cases due to hiding information of suspicious contacts by people and the collapse of the hospital due to overwhelming number of patients were among other challenges. Shortage of gloves, mask, beds, and ventilators were mentioned in the past studies.<sup>[18-20]</sup>

Chinese managers trained nurses before entering the quarantine wards and while providing services to these patients in simulated wards and through video conferences. This is while the results of some studies indicated the weakness of teaching nurses. Tune SNBK *et al.*<sup>[21]</sup> (2022) found that except for physicians, the FLWs did not receive any education on COVID-19. The websites or social media platforms were their source of knowledge. In this study, nurses tried to provide humanitarian and comprehensive care to the patients by sitting next to the patient and listening to him or her. This type of care led the patient who was quarantined and alone to overcome his or her fear. A study reported that nurses reduced the care time in order to reduce the risk of infection.<sup>[22]</sup> The results of various studies have shown that in dealing with the COVID-19 pandemic, it is required to make hard ethical and clinical decisions; these two parameters are essential entities in order to provide patient-oriented care services and greatly control the risk of harm to patients.<sup>[23]</sup>

Compliance with preventive protocols and vaccination by all Chinese people is one of the reasons for the rapid control

of this disease. Accordingly, a study in Iran stated that the biggest challenges in fighting against and controlling the COVID-19 disease included the fact that the general public not only did not take the disease seriously but also the quarantine regulations were not strictly implemented for contaminated cities.<sup>[24]</sup> The death of patients who were in good general condition or the lack of change in the recovery process of some patients and the death of patients without the presence of their families created a feeling of hopelessness and inability against this disease in the nurses. A similar study reported that nurses expressed grief regarding losing patients, becoming powerless when new-borns were separated from their COVID-19 positive mothers, and felt depressed when patient's bodies were packed without allowing their relatives to see their faces for cremation.<sup>[25]</sup>

Quarantine ward nurses were susceptible to mental illnesses due to direct contact with the pain and suffering of COVID-19 patients and their high mortality. Therefore, their psychological support was provided. Similarly, events that inflicted psychological stress or trauma included witnessing many patients die, performing futile care; being isolated from co-workers when their patient's condition was declining; and frequently hearing their patients' family members' heart-wrenching last words to their loved ones. d'Ettoire *et al.*<sup>[26]</sup> (2021) systematic review of healthcare workers caring for patients during the COVID-19 pandemic also found a high rate of post-traumatic stress in young healthcare workers with low work experience. Resolving conflicts and improving relationships between doctors and nurses during this pandemic made the hospital staffs behave like a family together. In this regard, a study reported that: This crisis of COVID-19 improved mutual trust and respectful environments with positive communication among doctors and nurses.<sup>[25]</sup> The results of this study showed that the nurses had the feeling of being in a fog or watching a horror movie due to the fear of transmitting the infection to their family and the unknown nature of this disease. Such a scenario means that nurses are faced with a significant increase in physical and psychological demands in their profession.<sup>[21]</sup> Limitations of this study included difficult accessibility to the nurses for interview due to the large number of their shifts and fatigue, and to conduct a face-to-face interview. In some cases, the interviews were not completed in one session and were conducted in two sessions. We tried to overcome these limitations by considering the free time of nurses for a long time and increasing the number of sessions in some cases.

Since this study was conducted during the COVID-19 pandemic, accessibility of the nurses for interview was difficult due to the large number of their shifts and fatigue, and to conduct a face-to-face interview. In some cases, the interviews were not completed in one session and were conducted in two sessions. We tried to overcome these

limitations by considering the free time of nurses for a long time and increasing the number of sessions in some cases.

## Conclusion

The results of this study indicated that the optimal management of Corona and any emerging disease depends on the cooperation of people, the efforts of nurses, and the measures of managers. Hospital managers could create equipped units to be designated for probable health care emergencies, preparing educating team for quick training of staff, streamlining the expansion of standard work, and providing the necessary infrastructure for possible future pandemics.

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## Conflicts of interest

Nothing to declare.

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