

ORIGINAL ARTICLE

The experiences of cooperation among healthcare workers who participated in COVID-19 aid mission in China: A qualitative study

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Abstract

Aims and objectives: To assist future offsite planning for pandemics, we documented lived experiences of cooperation among healthcare workers (HCWs) during the coronavirus disease (COVID-19) pandemic.

Background: The COVID-19 pandemic poses a global health crisis. Most recent studies on the COVID-19 focus on frontline HCWs' physio-psychological experiences, with few studies examining their experiences of cooperation.

Design: A descriptive phenomenological design reported based on COREQ checklist.

Methods: 25 HCWs (17 nurses and eight physicians) were interviewed, selected through convenience and purposive sampling, who participated in a medical aid mission in China during the COVID-19 pandemic. Data were collected via semi-structured online video interviews, and the transcripts were analysed using Colaizzi's phenomenological method.

Results: The HCWs experienced stressed and anxious, but rated their overall cooperation experience as positive. We categorised the reported experiences in five themes: (1) a multi-level management structure; (2) nurse managers as internal and external team coordinators; (3) high morale and a mutual supportive context; (4) a continuous streamlined workflow; and (5) the value of multidisciplinary collaboration in care. Reasonable management structure and division of work were the basis for successful aid mission. High morale and a mutual supportive context were foundational for growth and stress mitigation. The HCWs continuously streamlined workflow through communication and met patients' individual need through multidisciplinary collaboration.

Conclusions: Planning for a pandemic aid mission is challenging, given the unpredictable nature of the working circumstances. Our results underline the importance of supportive strategies for COVID-19 aid mission.

Relevance to clinical practice: Recommendations for future pandemic planning: (1) positive morale and supportive working text should be paid prioritised attention; (2) sufficient experienced and ancillary staff should be recruited; (3) multiple

communication channels such as regular handover meetings, online chat applications and electronic recording devices are essential, and (4) multidisciplinary cooperation are necessary in COVID-19 wards.

KEYWORDS

cooperation, COVID-19, experience, healthcare workers, qualitative research

1 | INTRODUCTION

The coronavirus disease (COVID-19) pandemic poses a global health crisis. At the time of writing on 7 July 2020, the current and accumulated numbers of confirmed COVID-19 cases in mainland China were 526 and 85,366, respectively (National Health Commission of People's Republic of China, 2020). Moreover, 11,500,302 COVID-19 infections and 535,759 deaths have been reported worldwide on the same day (World Health Organization, 2020).

At an early stage of the COVID-19 pandemic in Hubei Province, China, the government shut down transportation channels given evidence of human-to-human transmission of COVID-19 through close contact (Li et al., 2020). The central government modified general hospitals, established new mobile hospitals and remodelled the Wuhan city's sports stadium and two convention centres into three makeshift mobile hospitals offering a total of 3,400 beds to treat patients with mild symptoms. In addition, the central government introduced a 'one province to aid one city' medical aid model, in which one city in Hubei Province was matched with another province that dispatched medical teams to ease the pressure on overwhelmed local healthcare systems. By March 2020, when public transportation channels were reopened in Hubei Province, 42,000 healthcare workers (HCWs) from 31 provinces, of whom 28,600 were nurses, had participated in this national medical aid mission (Liu et al., 2020). Medical teams were either integrated or mixed. The integrated teams composed of most HCWs from the same hospital or province, with a temporarily appointed team leader (usually a doctor), and took charge of particular hospitals or wards. However, because they were from different departments, the team members were not well acquainted (Liu et al., 2020). The mixed team entailed dispersed medical staff who cooperated with existing medical staff within a local hospital or ward and who were generally not familiar with the workflow and environment (Liu et al., 2020). Cooperation within a medical care team is critical for the delivery of high-quality health care to patients (Holmgren et al., 2019). Under these circumstance, HCWs—whether working in an integrated or mixed team—must become acquainted and collaborate effectively with new team members. Therefore, the experience of cooperation in COVID-19 aid missions warrants consideration.

2 | BACKGROUND

In the last two decades, there have been continual global or regional outbreaks of infectious diseases such as severe acute respiratory syndrome (SARS), ebola, Middle East respiratory syndrome (MERS),

What does this paper contribute to the wider global clinical community?

- The experience of cooperation of 25 HCWs during the COVID-19 aid mission in this study may help the other HCWs to cooperate with each other and care for the patients in similar clinical context.
- Planning for a pandemic aid mission is challenging, given the unpredictable nature of the working circumstances. Several recommendations were derived from this study for future pandemic planning.

hemagglutinin 1 neuraminidase 1 influenza (H1N1 flu) and hemagglutinin 7 neuraminidase 9 influenza (H7N9 flu). In contexts of disease prevalence, nurses and physicians often work as critical HCWs at the front line. Many studies have reported on the experiences of frontline HCWs during various epidemics. Outbreaks of infectious diseases could be regarded as bio-disasters, inducing high rates of psychiatric morbidity among HCWs (Chong et al., 2004). Working in high-risk units causes distress (Styra et al., 2008); anxiety, depression, hostility and somatisation (Chen et al., 2016); poor sleep quality (Chen et al., 2006); and long-term post-traumatic stress that may endure after some time has elapsed (Lee et al., 2018; Maunder et al., 2008). A recent qualitative study on the challenges of coping during the early phase of the COVID-19 outbreak found that HCWs who participated in the COVID-19 aid mission underwent similar experiences (Liu et al., 2020). Other quantitative studies have also reported high levels of anxiety, depression and poor sleep quality among HCWs during the COVID-19 pandemic (Lai et al., 2020; Sheng et al., 2020).

HCWs face particular challenges given their exposure risks during infectious disease outbreaks. Fear of infection, new and unknown tasks performed in unfamiliar and resource-limited settings, and unfamiliarity with team members may complicate the management of such outbreaks (Belfroid et al., 2018). The physical and psychological experiences of medical staff have attracted much scholarly attention, but their experiences of cooperation and teamwork when managing public health emergencies still constitute significant knowledge gaps. Therefore, we aimed to investigate experiences of cooperation among HCWs who participated in a medical aid mission during the COVID-19 pandemic in China. Our findings may offer guidelines on the organisation of current medical aid missions to tackle the COVID-19 pandemic in other countries and provide insights for future pandemic response planning and especially offsite medical aid.

3 | METHODS

3.1 | Design, setting and sample

We designed a descriptive phenomenological study and aimed at describing and exploring the meanings of respondents' lived experiences (Burns & Grove, 2005). The study was reported based on the guidelines for Consolidated Criteria for Reporting Qualitative Studies (COREQ checklist, Table S1). The participants were HCWs involved in medical aid missions in Hubei Province, China, where the initial outbreak of COVID-19 occurred. The participants were selected through convenience and purposive sampling. The principal investigator, who also participated in a provincial medical aid mission team, issued electronic invitations post via WeChat, a widely used cell phone chat application, to several head nurses in ward. HCWs who agreed to participate in the study contact the researcher by scanning the QR code shown in the invitation. Both integrated and mixed mission teams that worked in the five hospitals were contacted. We ended the e-invitation when date saturation and 134 HCWs were supposed to be reached. Those who did not participated were lack of interests or having no time as we asked our recruiters. The sample size was determined by data saturation, which was reached with the 24 participant. One more participant signed up right after the 24th, and we decided to include him. Finally, 25 HCWs were interviewed.

3.2 | Data collection

Data were primarily collected through a combination of in-depth video interviews during a 3-week period in April 2020. A semi-structured format with open-ended questions was used and developed by the research team based on relevant literature and own understanding. Illustrative questions were as follows: 'Can you describe your daily work as a member of the medical assistance team?' 'Why did you choose to be a member of the medical assistance team?' 'What was the situation like just after entering the site?' 'Were there any challenges? How did you cope with them?' 'How did this experience differ from your previous experience, especially regarding cooperation with other colleagues?' Probing questions, such as 'please elaborate on that' were used to elicit more information. The interviews were conducted in Chinese by two researchers, one of whom was the primary interviewer to ask questions and the other acted as assistant. Because the HCWs were quarantined after a shift at their designated dormitory room, so we conducted separate video interviews with them. Each interview was audio-recorded and lasted 30–45 min.

3.3 | Ethical considerations

The study was approved by the Institutional Review Board at the researchers' institute (IRB number: 202025). Participation was entirely voluntary as they proactively contacted the researchers by scanning

the QR code shown in the invitation post. Verbal and written consent were obtained prior to all interviews, and the informants were guaranteed anonymity and the right to withdraw from the study before the analysis. Interviews were conducted when they felt sufficiently energetic and well. Contact information for obtaining psychological assistance, if needed, was provided. All recordings and transcribed texts were anonymous and securely stored by the researchers.

3.4 | Data analysis and rigour

We used the NVivo 11.0 software to manage and analyse the data to identify themes. There four criteria of trustworthiness in qualitative research are credibility, dependability, transferability and confirmability (Lincoln & Guba, 1986). In this study, credibility was established by the methods through which the interview questions were developed based on previous literature. To ensure the rigour of the data collection process, all interviews were conducted using a semi-structured interview guide. The same interviewer (BXL) conducted all the interviews primarily, ensuring the authenticity through prolonged engagement and to ensure data saturation. Purposive sampling of participants recruited from diverse teams and hospitals. We clarified participants' statements during interviews, and the data were audio-recorded, verbatim transcribed, cross-checked and returned to participants for correction.

Dependability was achieved by keeping a clear audit trail that supported decision-making at each stage of the analysis. This was enacted through the linking of memos to other pieces of data to confirm findings such as categories and themes. The interviews and data analysis were undertaken in the source language (Chinese), and themes were subsequently translated into the target language (English) to enhance dependability (Al-Amer et al., 2015). More specifically, following cross-checking and a discussion of codes and themes, each transcript was independently coded by two researchers and the final codes of the transcript were determined by combing the two values. The codes were then grouped based on similarities and differences, which was independently performed by the first and corresponding authors. The codes were further verified in relation to the semantic content, and the themes were adjusted to cover the entire data set by the first and corresponding authors working together. The themes were refined and definitively named through group discussion involving all of the investigators. The analysis is presented in this paper with the themes highlighted through quotes selected from the data set. Finally, a bilingual investigator translated the themes and their supporting quotes into English, while another other bilingual investigator checked the English version against the Chinese version sentence by sentence. Disagreements were resolved through discussion with a third bilingual investigator.

Transferability was reflected in thick description of the aid mission background and the working circumstances of HCWs in the results. Once credibility, transferability and auditability are established, confirmability is achieved (Lincoln & Guba, 1986).

4 | RESULTS

A total of 25 HCWs, comprising 17 nurses and eight physicians (17 females and 8 males), aged between 26 and 42 years (mean = 33 years; $SD = 5$), participated in the study. Their professional tenures ranged between 2 and 19 years (mean = 9.72; $SD = 4.98$). The duration of aid was 27–58 days (mean = 36.08; $SD = 8.71$). The respondents, whose home departments included the respiratory and gastroenterology departments and intensive care units (ICU), were assigned to various hospitals and held different positions. Table 1 presents their specific socio-demographic characteristics.

The HCWs experienced stressed and anxious, but rated their overall cooperation experience as positive. We identified five themes that described the lived experiences of cooperation during the COVID-19 aid mission: (1) a multi-level management structure; (2) nurse managers as internal and external team coordinators; (3) high morale and a mutual supportive context; (4) a continuous streamlined workflow; and (5) the value of multidisciplinary collaboration in care. Reasonable management structure and division of work were the basis for successful aid mission. High morale and a mutual supportive context were foundational for growth and stress mitigation. The HCWs continuously streamlined workflow through communication and met patients' individual need through multidisciplinary collaboration. Example of the data analysis presented in data extracts, codes and themes is shown in Table 2.

4.1 | Theme 1: A multi-level management structure

The first theme which described the overall organisational structure of the aid mission. The military deployment characteristics of the overall medical aid plan's management structure were 'powerful, structured deployed by the government'. Participant 5 (P5) noted:

The entire action plan is deployed under the unified command of the central government to make it clear that large-scale medical aid teams from each province were needed. When medical aid teams in other provinces are ready to be deployed, Hubei's local provincial headquarters arranged for their entry into modified local hospitals, makeshift stadium hospitals, or new, rapidly built hospitals.

(P5)

Timely multi-level information exchange was highlighted. Linkages up and down were very good in the multi-level structure, extending from a small hospital, to a large province, or even the entire country.

In the initial stage, we often faced shortages of supplies, or inappropriate sizes of the gear and gloves. We reported this to the hospital command centre, and the information was conveyed to the provincial

headquarters. Appropriately sized supplies were later transported from other hospitals and provinces.

(P8)

The national-level aid mission evidently required the cooperation of multiple departments, thus 'magnetic multi-departmental coordination' was vital. One respondent observed:

I think this mission results from the great efforts of the central government, which coordinate the activities of the provincial government, various hospitals, and social groups. The government has tried its best to coordinate every aspect, such as logistics. We have designated hotels to accommodate us, even though they are a bit far from the hospital.

(P9)

In one particular hospital, the command centre was composed of the hospital's original leader, the leader of the medical aid team and the clinical medical experts performing different duties.

The original hospital leader is responsible for the overall planning of materials and external communications, the medical aid team leader for managing the team members, and the clinical medical experts for providing tele-technical support to frontline doctors in the ward.

(P8)

Therefore, management structure not only ensured reasonable staff allocation but also facilitated information sharing and augmented protective equipment supplies, which were the base for successful aid mission.

4.2 | Theme 2: Nurse managers as internal and external team coordinators

Usually, a medical team comprised over 100 members, of whom more than half were nurses. As nurses were responsible not only for 24-h clinical care in the ward but also for critical tasks like infection control, managing material resources and logistics, their role was critical, ensuring the team's smooth operations. Usually, a chief head nurse, several head nurses in different wards and nurses-in-charge during different shifts were present. For nurses with managerial roles, 'higher positions signified greater pressure'. Nursing managers faced considerable pressure coordinating the various shifts, and the chief head nurse was the key coordinator.

Facing a new nursing team in an unfamiliar environment, I, as the chief head nurse, need to get acquainted with all of the nursing staff as soon as possible in just 2 days. It was very difficult at that time.

(P4)

TABLE 1 Demographic characteristic of the participants

Participant number	Gender	Age (year)	Education level	Professional qualification	Working tenure (year)	Previous department	Specialist qualification	Duration of aid (days)	Position in aid team	Mission site	Team form
1	Female	32	Bachelor	Senior nurse	9	Nephrology	None	30	Nurse	Designated hospital	Integrated
2	Female	36	Bachelor	Senior nurse	18	Department of infection control	ICU specialist	30	Head nurse in ward	Designated hospital	Integrated
3	Female	35	Bachelor	Registered nurse	11	Gynecology	None	30	Nurse	Designated hospital	Integrated
4	Female	35	Bachelor	Senior nurse	10	Urology	None	30	Chief head nurse	Designated hospital	Integrated
5	Female	42	Master	Associate chief physician	17	Gastroenterology	None	30	Team leader	Designated hospital	Integrated
6	Male	32	Bachelor	Attending physician	9	Respiratory department	None	30	Physician	Designated hospital	Integrated
7	Female	36	Master	Associate chief physician	10	Respiratory department	None	30	Physician	Designated hospital	Integrated
8	Female	41	Master	Associate chief physician	16	Endocrinology	None	30	Physician	Designated hospital	Integrated
9	Female	26	Bachelor	Registered nurse	5	ICU	ICU specialist	30	Nurse	Designated hospital	Integrated
10	Male	37	Master	Attending physician	9	Nephrology	Peritoneal dialysis, haemodialysis	32	Physician	Newly built hospital	Mixed
11	Female	27	Bachelor	Registered nurse	5	Oncology	None	30	Nurse	Designated hospital	Integrated
12	Female	27	Bachelor	Registered nurse	4	Cardiology	None	31	Nurse	Designated hospital	Mixed
13	Male	31	Master	Attending physician	2	Rheumatology	None	36	Physician	Newly built hospital	Mixed
14	Female	28	Bachelor	Senior nurse	7	Gastroenterology	None	31	Nurse	Designated hospital	Mixed
15	Male	42	Bachelor	Associate chief physician	17	Cardiology	None	27	Team leader	Newly built hospital	Mixed
16	Male	32	Bachelor	Registered nurse	9	ICU	None	42	Nurse	Designated hospital	Mixed
17	Male	41	Bachelor	Associate chief physician	19	Nephrology	Peritoneal dialysis, haemodialysis	36	Team leader	Newly built hospital	Mixed
18	Female	30	Bachelor	Senior nurse	10	ICU	ICU specialist	35	Nurse	Newly built hospital	Mixed
19	Female	33	Bachelor	Senior nurse	10	Respiratory department	None	53	Nurse	Designated hospital	Mixed
20	Male	29	Bachelor	Registered nurse	7	ICU	ICU specialist	46	Nurse	Newly built hospital	Mixed
21	Female	33	College	Registered nurse	11	ICU	ICU specialist	45	Charge nurse in shift	Makeshift hospital	Mixed
22	Female	36	Bachelor	Senior nurse	16	Nursing management department	None	44	Chief head nurse	Makeshift hospital	Mixed
23	Female	28	College	Registered nurse	4	ICU	ICU specialist	34	Nurse	Makeshift hospital	Mixed
24	Male	30	Bachelor	Registered nurse	5	Emergency department	None	52	Head nurse in ward	Designated hospital	Integrated
25	Female	26	Bachelor	Registered nurse	3	ICU	None	58	Nurse	Designated hospital	Integrated

TABLE 2 Example of the data analysis presented in data extracts, codes and themes

Data extracts	Codes	Themes
'The entire action plan was deployed under the unified command of the central government...' (P5)	1.1 Powerful, structured deployment by the government	A multi-level management structure- a base for successful aid mission
'Linkages up and down were very good in our multi-level structure.' (P1)	1.2 Timely multi-level information exchange	
'I think this [mission resulted from] the great efforts of the central government, which coordinated the activities of the provincial government, various hospitals, and social groups.' (P9)	1.3 Magnetic multi-departmental coordination	
'The original hospital leader was responsible for the overall planning of materials and external communications, the medical aid team leader for managing the team members...' (P8)	1.4 Reasonable arrangements of human and material resources	
'Facing a new nursing team in an unfamiliar environment, I, as the chief head nurse, needed to get acquainted with all of the nursing staff as soon as possible in just 2 days. It was very difficult at that time.' (P4)	4.1 Higher positions signified greater pressure	The importance of nurse managers-internal and external team coordinators
'I invited them to report at least two positions to me based on self-evaluations...' (P2)	4.2 Quickly to investigate team members' abilities and match positions	
'Wearing protective gear induced fatigue and slower action, so the treatment shift was shortened to 4 h.' (P19)	4.3 Shortening shift arrangement for alleviating physical and mental stress of team members	
'I had to be a good role model first...' (P22)	4.4 Being a good role model	
'The situation in the ward, daily hotel accommodation, supplemental material resources, and precise shuttle bus arrangements between the hospital and hotel were all handled by the chief head nurse...' (P22)	4.5 Coordinating logistics with external parties	
'I applied a couple of times to join the mission because it is my responsibility. It is a great honor to support my colleagues at the frontline. I felt particularly excited, like entering into a battle [laughs], and didn't feel at all tired.' (P1)	2.1 The positive atmosphere and high morale	High morale and a supportive context as foundational for growth and stress mitigation
'...I constantly consulted with senior nurses here and in the hemodialysis department at my original hospital, and finally learnt to use [the blood purification system].' (P24)	2.2 Continued learning and mutual support	
'I met so many devoted colleagues and learned a lot from them, such as clinical skills and good virtues. This was a very valuable experience.' (P2)	2.3 Deep friendship after fighting together	
'We had only one or 2 days to prepare. We did not know exactly what to do upon arrival at the site...' (P23)	3.1 Getting started quickly in an emergency	Continuous streamlined workflow through communication
'There was no reference...Everyone worked daily and wrote down what he [or she] felt was important, then handed over [the notes] to [the person on] the next shift...' (P23)	3.2 Improving working workflow by repeated attempts	
'The team leaders entered the ward and discussed how to quickly set up rules and an emergency plan ... and so on for this special working context.' (P4)	3.3 Setting up rules, plan, and special shifts for disinfection and logistics	
'Nurses in the documentation shift checked the orders of the doctors and primary nurses much more thoroughly than in the normal ward...' (P12)	3.4 Formal and informal communication	
'We were not specifically assigned to one patient but to a ward in one shift.' (P14)	5.1 Adjusted comprehensive primary care model	The value of multidisciplinary collaboration in care
'We tried to make one plan for one patient, especially for the elders who often had previous diseases. For example, blood sugar was a key indicator for a diabetic patient. If the meal was late, you needed to watch out for dizziness or fatigue.' (P23)	5.2 Individualised person-centred plan	
'I was once in charge of a patient with menopausal syndrome. She was extremely anxious. I discussed her case with nurses, a physician trained in traditional Chinese medicine, and a psychological therapist. We figured out a comprehensive care plan for her.' (P13)	5.3 Collaboration of multidisciplinary personnel	

The head nurse in a ward, who was under the chief head nurse, supervised the HCWs' protective equipment and hand hygiene and the care of critical patients, making appropriate staff adjustments.

Actually, many facets of the challenge are solved by the chief head nurse before it come down to the head nurses in the ward. I work under the orders of the chief head nurse, and adjusted to the practical situation.

(P24)

Nurse managers had to act 'quickly to investigate team members' abilities and match positions'. The head nurses applied flexible strategies such as 'inviting them to report at least two positions based on self-evaluations' and 'arranging the local nurses mainly worked in the documentation shift'. Because the local nurses were more familiar with the electronic documentation system, and the incoming skilled nurses mainly worked in the treatment shifts.

As the workload was heavy as 'wearing protective gear induces fatigue and slower action', when scheduling shifts, nurse managers 'shorten shift arraignment for alleviating physical and mental health of team members'. The nurses' psychological status also required attention in this high-risk working environment. These measures ensured the work proceeded smoothly, such as protecting nurses' safety and emotional stability, empowerment and team building, information sharing, provision of personal protective equipment, offering emotional support and rewarding nurses.

I have to be a good role model first, then gave praise supplemented by suggestions. It is beneficial for the leader to praise when the team members performed well.

(P22)

The chief head nurse also needed to 'coordinate logistics with external parties'. Therefore, nurse managers undertook multifaceted and challenging in a team.

The situation in the ward, daily hotel accommodation, supplemental material resources, and precise shuttle bus arrangements between the hospital and hotel are all handled by the chief head nurse. I think the chief head nurse is like a busy housekeeper.

(P22)

4.3 | Theme 3: High morale and a mutual supportive context

This theme conveyed HCW's intuitive feelings when working with colleagues. The deepest feelings of was the positive atmosphere and high morale during the aid mission. All of the HCWs joined the mission because of their professional commitment. With 'high morale

and one goal', they were mentally well prepared to cooperate with new peers.

Every one of us believes that we can overcome this epidemic because we succeeded in preparing the hospitals and medical teams so quickly. I am so proud of my peers. In the early stage, the manpower was insufficient. This spirit of selflessness and fearlessness is very motivating and infectious.

(P3)

'Continued learning and mutual support' was throughout teamwork. The HCWs believed they had adequate skills and experience to care for the patients because they had 'a 10-year professional tenure', 'experience with H1N1 flu', or 'ICU-specialist qualifications'. Only one participant stated that her skill 'was not sufficient to handle blood purification at the beginning' (P24). All of the HCWs who participated in this offsite mission had received training and information about COVID-19 'from the beginning to the end', which increased their confidence in dealing with the disease. They turned challenges into learning opportunities.

The friendly and cooperative atmosphere of the entire team fostered a strong feeling of being supported among the staff:

A patient in my ICU unit needed blood purification, but the machine here was different from what I had used before. I constantly consulted with senior nurses here and in the hemodialysis department at my original hospital, and finally learnt to use (the blood purification system).

(P24)

All HCWs gained 'deep friendship after fighting together'. Upon first entering the field, they were worried because they were not familiar with each other and have not developed a tacit understanding. However, by the end of the mission, most respondents had formed deep friendships, like 'brothers and sisters because we experienced life and death together'.

I meet so many devoted colleagues and learned a lot from them, such as clinical skills and good virtues. This is a very valuable experience'. Therefore, front-line care creates opportunities to learn and grow in the professional, ethical, personal, and aesthetic domains.

(P2)

4.4 | Theme 4: A continuous streamlined workflow

This theme reveals the main challenges facing HCWs in their off-site mission, illustrating how they adapted to the local working environment and initiated work in an orderly manner. At first, they

experienced shock, chaos, uncertainty, unsafety and unfamiliarity and had to 'get started quickly in an emergency'. As an old Chinese saying goes, they crossed the river by touching stones and 'drew on lessons learnt from SARS and previous working experience'.

After entering into the site, they 'improve the workflow through repeated attempts'. HCWs continuously attempted to improve existing conditions and perfect the process:

Everyone work daily and write down what he (or she) feels important, and then hands over the notes to the person on the next shift. Eventually, a standardized handover form is developed.

(P23)

After forming tacit understanding by several shifts, they set up rules, an emergency plan for flexible shifts, infection control, patient transfers, daily meetings and reporting, online training, regular meetings and so on for this special working context.

Four types of shifts for nurses were set up. The treatment shift was for primary care, the documentation shift was for medical records, the infection control shift was for monitoring and assisting colleagues to put on and take off protective gear, and the logistics shift was for supplies. To minimise the spread of COVID-19, there were no cleaning workers so the infection control and logistics positions were all held by nurses. This was the most 'heavy duty', and male nurses were mainly responsible for this shift.

In the process of streamlining an emergency plan, the workflow, division of responsibilities and rules, teamwork, entailing 'formal and informal communication' between nurses, doctors and logistics managers, played a crucial and indispensable role. The communication between nurses and doctors in one shift were frequent:

Nurses in the documentation shift check the orders of the doctors much more thoroughly than in the normal ward. Because walkie-talkies are not convenient, I always remind the doctor to tell me right away if he has changed the order and not just to record it in the electronic system after the ward rounds.

(P12)

The formal communication between the head nurse and the chief doctor was also timely. The nurses reported the common problems to the head nurse, and the head nurse discussed it with the chief doctor to sort it out. The problem was then communicated to everyone at the meeting. The informal communication through mobile devices was active:

Besides handover meetings, we have an online WeChat group and regular discussions to ensure timely identification and resolution of problems.

(P16)

4.5 | Theme 5: The value of multidisciplinary collaboration in care

A comprehensive primary care model was adopted in all hospital types, which meant that doctors and nurses cared for a couple of patients during each shift. However, the model deviated slightly from the typical model. The HCWs 'are not specifically assigned to one patient but to a ward in one shift'. Moreover, as there was no nurse assistant in the ward, the nurses did a lot of basic care, 'especially for patients in the ICU unit'.

In the primary care model, individualised person-centred treatment, basic care, psychological treatment, rehabilitation and education were also advocated and practiced.

We try to make one plan for one patient, especially for the elders who often had previous diseases. For example, blood sugar was a key indicator for a diabetic patient. If the meal is late, you need to watch out for dizziness or fatigue.

(P23)

As COVID-19 is a novel infectious disease, psychological care was a critical component of patient-centred care in an isolated ward.

Patients' psychological status is various. We have to spend more time and demonstrate patience observing and caring for them when they expressed anxiety, depression, or other negative emotions.

(P14)

When sufficient personnel were subsequently available, a shift lasted 4 h, and handovers occurred more frequently. Every patient's needs and problems needed to be recorded to ensure timely resolution. So, the challenge was ensuring continuity.

There are no mobile devices, such as iPads, in the ward. Later, we use paper and pen, and take photos with the one and only shared mobile phone in the ward and send them to our own mobile phones outside for accurate handover.

(P14)

The effectiveness of person-centred care depended on the collaboration of multidisciplinary personnel. When facing a critical condition, the shift staff cooperated to deal with the situation, and a multidisciplinary expert team was on call for tele-consultations.

I was once in charge of a patient with menopausal syndrome. She was extremely anxious. I discussed her case with nurses, a physician trained in traditional Chinese medicine, and a psychological therapist to figure out a comprehensive care plan for her.

(P13)

5 | DISCUSSION

The five themes depicting the experiences of 25 HCWs during the COVID-19 aid mission reveal similarities and differences compared with the experiences of HCWs who served during other infectious disease pandemics. We discuss each of these points here to deepen understanding of their experiences and elicit insights for future pandemic response planning.

5.1 | Management structure

Researchers agreed that when a natural or bio-disaster occurred, governmental departments must focus on organising rescue work (Kc et al., 2019). The government needed to anticipate and plan for increased nursing, medical, allied health and ancillary staff to cope with rising patient numbers (Corley et al., 2010). During this COVID-19 pandemic, contextualising a plan to the prevailing situation was essential. Contextualisation entails the incorporation of relevant practical details and economic, cultural, political, and multi-faceted dimensions (Salet & de Vries, 2019). The central government coordinated governmental and non-governmental resources across provinces, thereby establishing a top-down rescue network.

The multi-level information exchange among collaborative departments, reflecting the characteristics of 'magnet hospitals', such as adequate training and support, effective leadership, improved information circulation, and proper allocation of manpower and protective equipment (Lam & Hung, 2013; Maunder et al., 2008). These organisational factors fostered a safer and structured work environment (Su et al., 2007), which contributed to decreasing the HCWs' anxiety and uncertainty about being infected as well as reducing pressure, stress levels and workloads (Chen et al., 2016; McMullan et al., 2016). During the early phases of the pandemic, protective gear, basic equipment and other logistical resources were often lacking (Hewlett & Hewlett, 2005; Pincha Baduge et al., 2018). However, the Chinese government rapidly made logistical arrangements, provided medical supplies and guaranteed compensation for interruptions in income by combing health, transportation and civil affairs departments. These actions proved effective in addressing common concerns among HCWs regarding work during the pandemic (Grace et al., 2005; Kim et al., 2006) and will encourage them to provide care for patients during future outbreaks of new infectious diseases (Oh et al., 2017). Therefore, estimations of economic costs, particularly in developing countries facing shortages of trained staff, weak response systems and inadequate medical infrastructure, are crucial to design realistic and sustainable medical aid plans (Harris et al., 2018; Hughes, 2015).

5.2 | Nurse managers as core coordinators

Experienced HCWs had to organise offsite handling of infectious diseases, with nurses assuming multiple roles, such as being

prepared and able to recognise infection, prevent its spread and provide appropriate patient care (Stanley, 2012). Several strategies that ensured the smooth work shown in this study, like how to arrange the nurses, were recommended for future nurse managers. In this aid mission, nurse managers experienced highest level of stress, as they had to plan and implement strategies in areas where none had previously existed while serving as role models (Holmgren et al., 2019). Given their numerous roles and tasks, nurse managers required timely attention to ensure the success of ongoing efforts and persuade experienced managers to work during future epidemics (Khalid et al., 2016).

5.3 | Morale and working context

All of the HCWs in our study were motivated by their professional responsibility and commitment to this aid mission, similar to those at the front line during Ebola outbreaks in Africa (Pincha Baduge et al., 2017) and an influenza epidemic in Ireland (Robertson et al., 2004). A previous study on the Ebola epidemic found that HCWs' willingness to care for patients influenced their personal preparedness (Pincha Baduge et al., 2018). The extent of professional and personal preparedness could affect a hospital's overall response capacity (McMullan et al., 2016), working efficiency (Corley et al., 2010) and quality of care (Lam & Hung, 2013). A recent investigation of 11,183 Chinese nurses who demonstrated very high levels of willingness to work in the COVID-19 aid mission (Gan et al., 2020). Another study found that apart from professional commitment, colleagues' support and spousal approval were significant determinants of HCWs' intentions of caring for SARS patients (Grace et al., 2005; Kim et al., 2006). Pre-deployment information dissemination and training are crucial for developing foundational values and future collaboration (Holmgren et al., 2019), especially required for large-scale medical rescue missions.

Like the HCWs surveyed in the Ebola outbreak (Belfroid et al., 2018), all of the HCWs in this study rated their overall experience positively. However, a survey conducted in Hong Kong revealed that 93.5% of medical staff considered the SARS outbreak to be a traumatic experience (Lin et al., 2007). Studies have shown that self-transformation and self-growth are critical factors in transforming the experience of caring for patients inflicted by infectious diseases into positive experiences (Chiang et al., 2007; Lau & Chan, 2005; Liu & Liehr, 2009). Altruistic acceptance of work-related risks was found to be negatively related to PTS levels (Wu et al., 2009). Therefore, continued learning and mutual support should be prioritised in future pandemic response planning not only to enable HCWs to provide effective care but also to support their mental health and growth.

5.4 | Workflow and communication

The HCWs in this study experienced chaos and unfamiliarity like the HCWs during Ebola (Hewlett & Hewlett, 2005) and SARS (Shih

et al., 2009), which were reportedly major stress inducers during the Sierra Leone offsite aid mission (Liu et al., 2019). Offsite working situations induce conflict arising from feelings of unsafety and unfamiliarity (Robertson et al., 2004). Consequently, effective communication channels, including regular meetings of doctors and nurses, were crucial (Corley et al., 2010). Collaborative dialogues between HCWs and various stakeholders were necessary for large-scale pandemic response planning (Mody & Cinti, 2007). During this aid mission, timely communication between HCWs during shifts helped to resolve common problems arising between head nurses and doctors and facilitated overall information dissemination among the nurse managers, doctors, hospital staff, external logistics departments and higher-level command centres. Therefore, both formal and informal communication channels should be encouraged in the future.

To be noted, nurses in the COVID-19 aid mission undertook additional arduous infection control shifts, which were usually performed by allied health and ancillary staff in normal wards. A previous study of HCWs during the SARS outbreak found that distress levels were highest among nurses, followed by doctors and health-care assistants (Wong et al., 2005). A recent survey of Chinese front-line nurses caring for COVID-19 patients found that working hours were the main cause of stress (Mo et al., 2020). Therefore, ancillary staff recruitment should be considered in the future.

5.5 | Person-centred care and multidisciplinary staff

Patients with infectious diseases require different care strategies, entailing new roles and challenges (Corley et al., 2010). Accordingly, HCWs usually need to develop and adjust care models. Because a person-centred care model entails individualised care for each patient, multidisciplinary teams are thus required during an infectious disease pandemic to address patients' comorbidities. Person-centred care in this COVID-19 mission also included psychological care and attending to patients' daily needs. HCWs had to balance infection management and person-centred care carefully to maintain the patients' social participation, mental health and quality of life (Dichter et al., 2020). Most HCWs supported the current model, which could be applied in future rescue missions. One challenge entailed providing continuous care in a context of frequent shifts with limited recording devices. A previous study reported similar challenges associated with social isolation measures (Dichter et al., 2020). In the future, electronic records should be maintained in wards to ensure accurate handovers.

5.6 | Limitations and future directions

The findings of this qualitative study on the experiences of HCWs who participated in a COVID-19 aid mission are not generalisable across sites. The situation regarding offsite aid is closely related to local cultural and economic situation, as such experiences may

be transferred to a similar country or region. Future studies could attempt to explore the cultural, spiritual and ethical challenges entailed in cooperation between offsite and local HCWs and patient care across the nation within offsite medical aid missions.

6 | CONCLUSIONS

We conducted a phenomenological investigation of the experiences of cooperation of 25 HCWs who participated in an offsite medical aid mission during China's COVID-19 pandemic. Five themes emerged, revealing similarities and differences relating to HCWs' experiences with other infectious disease pandemics. Pandemic aid missions are difficult to plan because of unpredictable circumstances contexts. We offer several recommendations for future pandemic planning drawn from this study.

7 | RELEVANCE TO CLINICAL PRACTICE

We offer the following recommendations derived from this study for future pandemic planning. (1) Positive morale and supportive working text should be paid prioritised attention, as they lay great foundation for cooperation. (2) Sufficient experienced and ancillary staff should be recruited, to ease the working burden. (3) Multiple communication channels such as regular handover meetings, online chat applications and electronic recording devices are essential, to ensure efficient information exchange. (4) Multidisciplinary cooperation is necessary in COVID-19 wards, as the situation of patients is complicated.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet the criteria recommended by the ICMJE (http://www.icmje.org/ethical_1auth_or.html). Dr. XB had full access to all the data in this study and take responsibility for the integrity of the data and the accuracy of the data analysis. Concept and design: AW, ST and XB. Data collection: LL, JZ, XB and XC. Acquisition, analysis or interpretation of data: AW and XB. All authors discussed the codings throughout the analysis. Drafting of the manuscript: AW. Critical revision of the manuscript for important intellectual content: All authors contributed to reviewing and editing the manuscript.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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