

BMJ Open Experiences of COVID-19 patients in a Fangcang shelter hospital in China during the first wave of the COVID-19 pandemic: a qualitative descriptive study

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ABSTRACT

Objectives This study aimed to examine COVID-19 patients' experiences in a Fangcang shelter hospital in China, to provide insights into the effectiveness of this centralised isolation strategy as a novel solution to patient management during emerging infectious disease outbreaks.

Design This study adopted a qualitative descriptive design. Data were collected by individual semistructured interviews and analysed using thematic analysis.

Setting This study was undertaken in 1 of the 16 Fangcang shelter hospitals in Wuhan, China between 28 February 2020 and 7 March 2020. Fangcang shelter hospitals were temporary healthcare facilities intended for large-scale centralised isolation, treatment and disease monitoring of mild-to-moderate COVID-19 cases. These hospitals were an essential component of China's response to the first wave of the COVID-19 pandemic.

Participants A total of 27 COVID-19 patients were recruited by purposive sampling. Eligible participants were (1) COVID-19 patients; (2) above 18 years of age and (3) able to communicate effectively. Exclusion criteria were (1) being clinically or emotionally unstable and (2) experiencing communication difficulties.

Results Three themes and nine subthemes were identified. First, COVID-19 patients experienced a range of psychological reactions during hospitalisation, including fear, uncertainty, helplessness and concerns. Second, there were positive and negative experiences associated with communal living. While COVID-19 patients' evaluation of essential services in the hospital was overall positive, privacy and hygiene issues were highlighted as stressors during their hospital stay. Third, positive peer support and a trusting patient–healthcare professional relationship served as a birthplace for resilience, trust and gratitude in COVID-19 patients.

Conclusions Our findings suggest that, while sacrificing privacy, centralised isolation has the potential to mitigate negative psychological impacts of social isolation in COVID-19 patients by promoting meaningful peer connections, companionship and support within the shared living space. To our knowledge, this is the first study

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Qualitative methodology allowed broad exploration and insights about COVID-19 patients' hospitalisation experiences.
- ⇒ Purposive sampling ensured selection of participants with diverse characteristics.
- ⇒ Analyst triangulation involving two experienced qualitative researchers strengthened the methodology.
- ⇒ Potential bias may arise from interviewers also being front-line nurses providing care to participants.
- ⇒ Validation of interview transcripts with participants was impossible due to COVID-19 restrictions.

bringing patients' perspectives into healthcare service appraisal in emergency shelter hospitals.

INTRODUCTION

COVID-19 pandemic has intensely challenged the capacity of healthcare systems worldwide. China has gained much recognition for its prompt and decisive response to COVID-19 during the early stage of the pandemic.¹ An important countermeasure that China implemented against the first wave of COVID-19 was establishment of Fangcang shelter hospitals at the epicentre, the city of Wuhan.² Fangcang shelter hospitals, also known as mobile cabin hospitals, were temporary healthcare facilities transformed from existing public venues.³ They were intended for large-scale centralised isolation, treatment and disease monitoring of mild-to-moderate COVID-19 cases.² Between 5 February 2020 and 10 March 2020, a total of 16 Fangcang hospitals were put into use, accommodating over 12 000 low-acuity COVID-19 patients.^{2,4} These hospitals, along with other designated hospitals in Wuhan, significantly expanded the city's healthcare capacity and optimised domestic

healthcare resources at the height of the COVID-19 outbreak.^{3,5}

The concept of Fangcang shelter hospitals was adopted from emergency field hospitals historically used in natural disasters^{6,7} and epidemics.^{8,9} In addition to offering healthcare services, Fangcang hospitals also provided social spaces that aim to enable meaningful connections and resocialisation among COVID-19 patients.² This novel large-scale centralised isolation approach against COVID-19, first employed in China, was subsequently adopted by other countries, such as the USA,^{10,11} the UK¹² and Singapore,¹³ with various degrees of success.

Previous research on COVID-19 patients' hospitalisation experiences has been skewed towards severe COVID-19 cases^{14,15} and those treated in traditional hospitals.^{16–19} Psychological distress caused by disease factors and social disconnection was highlighted in these inpatients' experiences.^{14,16–19} Home or hotel isolation experiences of patients with mild COVID-19 have also been explored. Isolation-induced mental health issues were widely reported in these low-acuity self-caring COVID-19 patients owing to lack of social interaction and poor support for essential living and healthcare.^{20,21} Although several countries implemented centralised isolation strategy using repurposed public spaces which resembled Fangcang shelter hospitals,^{10,12,13,22} COVID-19 patients' experiences in these temporary facilities remain unexamined.

In China, existing literature on Fangcang hospital inpatients has mainly focused on symptom dynamics,^{23–25} treatment strategies,^{26–28} and clinical and mental health outcomes^{29–31} in this population. Limited data are available illuminating the lived isolation and healthcare experiences of this group during their hospital stay. Understanding COVID-19 patients' hospitalisation experiences in Fangcang shelter hospitals during the very early stage of the COVID-19 pandemic will assist in evaluating the effectiveness of this novel centralised isolation approach in response to public health crisis. Internationally, although large-scale aggressive COVID-19 countermeasures such as establishment of shelter hospitals are unlikely in countries supporting coexistence with COVID-19, such possibility should not be excluded in the future concerning the capricious trajectory of the COVID-19 pandemic and the potential emergence of new infectious diseases.

In view of the above, this study aimed to explore COVID-19 patients' experiences in a Fangcang hospital in Wuhan, China, during the first wave of COVID-19 in the nation. Evidence generated from this research may inform future centralised patient management in response to large-scale emerging infectious disease epidemics.

METHODS

Study design

This study adopted a qualitative descriptive design. The qualitative descriptive approach is most suitable where

a thorough and straight-forward account of events and experiences under investigation is needed.³² This design is best suited for the current research as it emphasises the subjective nature of COVID-19 patients' experiences and affords a broad insight into their hospital-stay journey.

Study setting and participants

This study was undertaken in 1 of the 16 Fangcang shelter hospitals in Wuhan, China during early 2020. At the time of the research, the city of Wuhan was the hardest-hit region by COVID-19 in China, accounting for the majority of all domestic confirmed COVID-19 cases.⁴ The Fangcang hospital where this study took place was transformed from the Wuhan Sports Centre Stadium, with a capacity of 1100 beds.

Purposive sampling was used for participant recruitment. Given that COVID-19 patients admitted to Fangcang hospitals were typically mild-to-moderate cases, the inclusion criteria were (1) confirmed COVID-19 diagnosis; (2) above 18 years of age; (3) being able to communicate effectively. Patients who were clinically unstable or experiencing extreme emotional distress or communication difficulties were excluded from this study. Eligible COVID-19 patients were selected by front-line nurses working in the hospital following the maximum variation principle based on their age, gender and the length of hospital stay. The intended sample size was set as above 15 according to the guideline proposed by Guest and Bunce.³³ Consequently, a total of 27 COVID-19 patients with diverse demographic and clinical characteristics were recruited as detailed in [table 1](#).

Data collection

Semistructured individual face-to-face interviews were conducted between 28 February 2020 and 7 March 2020. All the interviews took place in a quiet room separate from the main patient area with infection prevention procedures rigorously followed. The interviewers were two experienced qualitative researchers (TY and MFL) who were also front-line nurses working in the hospital.

The interview consisted of a set of open-ended questions involving the following topics: (1) feelings and perceptions regarding the COVID-19 diagnosis; (2) experiences and needs during hospitalisation; (3) perceptions of the quality of the services provided in the hospital and (4) overall views and perceptions towards collective isolation (online supplemental appendix A). These open-ended questions were supplemented by probing questions, such as 'Can you please tell me more about that?'. All interviews were audiorecorded. Field notes were taken during interviews to capture non-verbal cues, such as body languages and facial expressions. The length of the interviews ranged from 15 to 32 min (average duration: 25 min). Participant confidentiality was maintained by deidentifying personal information and encrypting data.

Table 1 Demographics of participants (N=27)

| Demographic characteristics | n (%) |
|-----------------------------|---------|
| Age | |
| 20–29 years | 5 (19) |
| 30–39 years | 6 (22) |
| 40–49 years | 5 (19) |
| 50–59 years | 9 (33) |
| ≥60 years | 2 (7) |
| Gender | |
| Male | 14 (52) |
| Female | 13 (48) |
| Residence | |
| Wuhan | 24 (89) |
| Other places | 3 (11) |
| Duration of infection | |
| 12–17 days | 9 (33) |
| 18–23 days | 12 (45) |
| 24–30 days | 6 (22) |
| Length of hospital stay | |
| 13–16 days | 15 (56) |
| 17–20 days | 12 (44) |
| Family member(s) infected | |
| Yes | 11 (41) |
| No | 16 (59) |

Data analysis

All interview recordings were transcribed verbatim and combined with field notes. Interview transcripts were checked for accuracy before being imported into NVivo V.12 for analysis.

Data analysis was performed by two qualitative researchers (YZ and HZ) independently following the six-step inductive thematic analysis approach described by Clarke *et al.*³⁴ Researchers read and reread interview transcripts alongside the field notes and identify patterns of meaning within the data. Phrases and statements of analytical interest were inductively coded and categorised into potential themes. These preliminary themes were jointly reviewed by the researchers against individual data codes and the entire dataset to determine their validity. Modifications were made where necessary. Data saturation was reached at 27 participants. All the themes/subthemes and relevant quotations were translated into English by YZ and back translated by HZ. The findings were reported according to the Standards for Reporting Qualitative Research guideline.³⁵

Rigour

Several strategies were employed to ensure rigour in this study following the Lincoln *et al.*'s four-dimension criteria.³⁶ First, the interviewers (TY and MFL) were front-line nurses who were familiar with the study settings

and participant backgrounds, and who had expertise in qualitative research. This has enhanced the credibility of the findings. Second, peer debriefing meetings were regularly held within the research team to review transcripts and discuss methodological issues and findings (confirmability). Third, to establish dependability of the results, an audit trail detailing the entire research process was maintained. Finally, to increase transferability of the findings, sufficient details of the study context and participant background information were provided.

Patient and public involvement

Neither patients nor the public were involved in the design, or conduct, or reporting, or dissemination plans of this study.

RESULTS

Three themes and nine subthemes were identified to describe COVID-19 patients' hospitalisation experiences. First, participants experienced a range of psychological reactions during their hospital stay, including fear, uncertainty, helplessness and concerns. Second, there were positive and negative experiences associated with communal living. While COVID-19 patients' evaluation of essential services in the hospital was overall positive, privacy and hygiene issues were highlighted as stressors during hospitalisation. Third, positive peer support and a trusting patient–healthcare professional relationship served as a birthplace for resilience, trust and gratitude in COVID-19 patients.

Theme 1: COVID-19-related psychological distress

Fear of COVID-19 symptom exacerbation

Participants expressed concerns and fears about potential worsening of COVID-19 symptoms. Those with pre-existing medical conditions were particularly apprehensive about disease exacerbation leading to death. 'I have hypertension and heart disease. I am not sure if these conditions will make my COVID-19 worse. I heard many people died of COVID-19, and this scares me.' (Participant 4).

Uncertainty about diagnosis, treatment, and prognosis

Participants reported feelings of uncertainty due to limited knowledge of COVID-19 treatment and prognosis. 'There are so many aspects of this disease (COVID-19) unknown to us...Are there any side effects of the drugs I am taking? Should I discontinue medication after discharge? Can I completely recover?' (Participant 11). Their uncertainty was further exacerbated by the perceived low sensitivity of COVID-19 nucleic acid tests producing false negative results. 'I tested negative for COVID-19 three times before receiving a positive result. I have never felt any COVID-19 symptoms at all. I am still doubtful about my COVID-19 diagnosis.' (Participant 15).

Helplessness towards family

Being isolated from family induced a sense of helplessness in participants due to inability to fulfil their caregiver

roles. This was particularly relevant when unexpected events occurred in their family. 'My wife is suffering from a schizophrenia relapse. My child is too young to look after himself. I should not be sick right now.' (Participant 23). 'My mother-in-law had a severe stroke and is in ICU now. My wife is stressed. I cannot offer any help, nor can I even comfort my wife in person. I am feeling helpless.' (Participant 12).

Concerns about COVID-19-related social stigma post discharge

Participants conveyed their concerns and worries about being stigmatised and subsequently alienated by the community postdischarge. 'People may still think I am a virus carrier even if I am fully recovered from COVID-19.' (Participant 25). 'I feel anxious about returning to work. Who wants a co-worker with a history of COVID-19?' (Participant 20).

Theme 2: Communal living and essential needs

Positive experiences

Participants expressed their satisfaction with the basic services offered in the Fangcang hospital. 'It is better than I thought. I have everything I need here.' (Participant 1). The overall living conditions were described as 'functional', 'decent' and 'liveable'. The meals were perceived as 'highly nutritious', 'large size' and 'good taste'. 'I can't complain. The food is so good, better than home-made meals' (Participant 4). Moreover, participants also commented on the mental health benefits of outdoor exercise and a variety of nurse-led activities. 'I enjoy stretching out or walking in the fenced outdoor area. It relaxes me' (Participant 16). 'Nurses taught us to do Tai-Chi, dance, and breathing exercises several times a week...These activities really calmed my anxious thoughts' (Participant 21).

In addition, participants mentioned the usefulness of the WeChat app as a tool to communicate their needs to healthcare workers. 'Whenever I have any questions, I would send a message on WeChat, and they will reply instantly.' (Participant 11). 'It (WeChat) is convenient to both us and the nurses. It saves nurses a trip down the ward when it is not necessary.' (Participant 17).

Negative experiences

On the other hand, communal living also caused stress due to lack of privacy. 'I feel like living in a huge dormitory where there is hardly any personal space.' (Participant 6). 'I can't sleep properly because of environmental noises and snoring of other patients.' (Participant 25). Hygiene issues were also noted as a stressor. 'I can't take a proper shower because there is no shower equipment in the bathroom.' (Participant 22). 'Although I could manage with sink baths, I still feel uncomfortable.' (Participant 10). 'The toilet is not very clean although they seem to clean it every day' (Participant 3).

Theme 3: birthplace of resilience, trust and gratitude

'We are all in this together'

Communal living facilitated socialisation among COVID-19 patients. Participants consistently reported

that peer connection broke the monotony of life in isolation and brought forth new mental vigour. 'We chat most of the day, stopping only to eat and sleep, like a bunch of school kids. I feel quite relaxed and happy.' (Participant 24). 'I like chatting with them (patients)...We always remind each other to stay positive.' (Participant 13). This camaraderie progressively built within the patient community helped participants mitigate their disease-induced negative emotions.

'I previously self-isolated at home for 19 days, it was miserable. I felt depressed and hopeless. Now I feel much better since I am surrounded by people who have been through the same journey as me. I am not alone in this fight against COVID-19. We are all in this together. This gives me strength and hope.' (Participant 7)

Also, witnessing fellow patients recovered and discharged from the hospital rekindled a sense of hope in participants. 'Every time I see someone being discharged, I feel so happy, because that person could be me someday' (Participant 2). 'I believe we will all recover. It is just a matter of time.' (Participant 18).

'I am in good hands'

Participants derived a sense of security from a trusting relationship with healthcare providers. They commented on the level of professionalism shown by clinicians in the hospital. 'They (physicians) are absolutely experts...When I told the doctor my complex medical history, he instantly knew what medications I need... I really feel I am in good hands.' (Participant 5). 'These nurses are very nice and quick to respond...I feel safe here.' (Participant 26). 'Nothing to complain about. They (healthcare workers) work long hours without a break while wearing heavy PPE. They are lifesaving heroes.' (Participant 19). Some participants benefited from the psychological/emotional support offered by healthcare providers. 'The nurse took time to listen to my nervous chatter and comforted me... I felt much better after that.' (Participant 2). 'I felt such a sense of relief after talking to the doctor about my concerns. He reassured me that I would be ok' (Participant 14). In addition, healthcare professionals were seen as a reliable source for COVID-19-related information. 'Social media never tell you the truth (about COVID-19), I only trust what doctors say.' (Participant 8). 'As I know more about this virus from doctors and nurses, I feel less scared' (Participant 1).

'I am unfortunate to get COVID-19 but fortunate to be here'

Participants expressed their gratitude towards front-line healthcare workers in the hospital and policy-makers who proposed establishment of Fangcang hospitals. 'I am unfortunate to get COVID-19 but fortunate to be here...I am safe and well-cared-for by doctors and nurses' (Participant 19). 'Fangcang hospitals are absolutely a wise decision (in response to the COVID-19 outbreak). I would have been miserable if I were still self-isolated at

home.’ (Participant 27). This gratitude turned to a sense of national pride in some participants.

‘I am so lucky to be a Chinese citizen. I am being treated in a hospital that was built in two days and being taken care of by dedicated healthcare professionals from all over the country. Not everyone in the world is as lucky as I am.’ (Participant 9).

DISCUSSION

This study illuminated the isolation and healthcare experiences of COVID-19 patients in a Fangcang shelter hospital in Wuhan, China, during the first wave of the COVID-19 pandemic. Our findings suggest that, while sacrificing privacy, centralised isolation has the capacity to attenuate isolation-induced psychological distress in COVID-19 patients by facilitating meaningful peer connections and support within the shared living space. To our knowledge, this is the first study bringing patients’ perspectives into appraisal of healthcare services in emergency shelter hospitals.

COVID-19-related psychological distress

Mental distress among COVID-19 patients, particularly during the early stages of the pandemic, has been widely reported.^{16 17 37} This study, in support of previous research,^{18 37 38} revealed that these negative emotions largely stemmed from poor knowledge of the disease, family concerns and the perceived social stigma. Concerning the highly transmissible nature of COVID-19 and absence of targeted therapy,³⁹ patients’ feelings of fear and uncertainty were unsurprising. Perceptions of COVID-19-related social stigma reflects a limited public understanding of this novel infectious disease and the fear surrounding a large-scale outbreak. These findings, consistent with those reported in the context of Wuhan, China, during the first wave of COVID-19,^{16 17 19 38} highlighted the necessity of offering psychological care and family support to these emotionally vulnerable low-acuity COVID-19 patients. It is also suggested that increasing public knowledge about COVID-19 and addressing misinformation may facilitate reintegration of recovered COVID-19 patients into the community.³⁸

Communal living and essential needs

Fangcang shelter hospitals were built in extreme conditions and intended to fulfil COVID-19 patients’ both medical and non-medical needs.² Our study reported an overall satisfactory level of care and services provided in the hospital as evaluated by the inpatients. Previous studies in Australia⁴⁰ and Nepal⁴¹ reported that limited in-hospital mobility and inadequate communication with healthcare providers were major complaints of hospitalised COVID-19 patients. In contrast to these, Fangcang hospitals attended to inpatients’ mobility needs by providing spacious fenced outdoor exercise area and arranging various nurse-led physical activities. Further, the use of

WeChat platform facilitated effective patient–healthcare worker communication. The WeChat app has been widely used in various healthcare settings in China to support patient care.^{42–44} This study demonstrates the usefulness of WeChat in managing isolated patients with an infectious disease in a shelter hospital environment. Concerning the heavy workload and a high risk of COVID-19 infection faced by front-line healthcare workers,⁴⁵ this communication tool served as a functional alternative to the face-to-face healthcare delivery, allowing patients’ needs to be known and addressed in a timely manner.

This study also reported multiple stressors associated with communal living. Consistent with prior research on field hospitals in the contexts of COVID-19¹¹ and natural disasters,⁴⁶ insufficient sanitary facilities leading to poor hygiene of inpatients was noted in this study. Inadequate hygiene not only affects patients’ physical comfort, but is also a known cause of hospital-acquired infections.⁴⁷ Although Fangcang shelter hospitals were built for emergency purpose and only served as temporary isolation centres, ensuring availability of essential hygiene services may benefit patients’ overall health and recovery. Additionally, lack of personal space and environmental noises were also stressors experienced by Fangcang hospital inpatients. The physical environment of a hospital, such as lighting, noises and layout, is known to affect patients’ physical and mental health.⁴⁸ Our findings suggest that, although Fangcang hospitals were intended as temporary infrastructure against public health crisis, a balance needs to be achieved between maximising the use of space and ensuring patient comfort and privacy, to improve its feasibility as shelters for people.

Resilience, trust and gratitude

Communal living facilitated socialisation and peer connections among COVID-19 patients. The detrimental psychological, emotional and behavioural impacts of prolonged social isolation have been widely reported, including depression, feelings of loneliness, irritability and self-harm behaviours.^{49–52} Previous studies in the contexts of SARS⁵³ and COVID-19⁴⁰ indicated that social isolation exacerbated the disease-associated mental distress in hospitalised patients. Our findings mirrored those of Li *et al.*,⁵⁴ suggesting that, in contrast to single-room isolation, the shared space in the Fangcang hospital promoted peer interaction and support within the patient community, which mitigated the unintended negative mental health impacts of isolation. According to WHO,⁵⁵ health is defined as a state of physical, psychological and social well-being. As demonstrated in this study, fulfilment of social needs of isolated patients can potentially benefit their physical and mental recovery. A socially and emotionally connected patient community, as evidenced by our findings, may serve as the birthplace of hope and resilience in combating an infectious disease.

The reassurance and support gained from healthcare professionals also helped alleviate stress in COVID-19 patients in this study. In line with prior research,^{4 56}



healthcare professionals were seen as a reliable source for COVID-19-related information. This is particularly pertinent during the very early stage of the COVID-19 pandemic when public knowledge about COVID-19 was limited and mainly acquired from social media.⁴ In addition to fulfilling COVID-19 patients' information needs, healthcare providers also attended to patients' psychological and emotional needs. Several studies highlighted the critical role of healthcare professionals in promoting resilience in patients with cancer,⁵⁷ rare diseases⁵⁸ and infectious diseases.⁵⁹ In support of these, this study demonstrated that healthcare professionals allowed COVID-19 patients regain a sense of security and hope amidst the uncertainty surrounding their health conditions. This regained security promoted trust in the therapeutic relationship and brought a sense of gratitude.

Practical implications and future research

Using the COVID-19 pandemic as a context, our study provided a valuable insight into the shelter hospital-based centralised isolation strategy as an innovative solution to public health crisis response. It is suggested that, while compromising on privacy, centralised isolation has the potential to mitigate isolation-induced mental distress in patients by promoting meaningful peer connections, companionship and support within the shared living space.

Several supportive strategies may be implemented to improve the feasibility of this public health intervention for future epidemics or disasters. Health administrators should develop strategies to address privacy and hygiene issues in daily operation of shelter hospitals. Adequate sanitation should be guaranteed to prevent secondary infections in hospitalised patients. Moreover, adequate emotional/psychological care should be offered to inpatients. It is important that a multidisciplinary team involving physicians, nurses, counsellors and social workers work collaboratively to identify and address patients' multifaceted needs. This includes coordinating community services that support isolated patients' family needs.

Future in-depth qualitative studies are needed to examine the effectiveness of this centralised isolation strategy in different contexts from the inpatients' perspective. Comparative evidence across countries on the impacts of different isolation strategies on COVID-19 patients are warranted to inform future public health response to particularly large-scale infectious disease outbreaks.

Limitations

This study has potential limitations. First, the sample may not be representative of the population (all COVID-19 patients admitted to Fangcang shelter hospitals) due to single-site sampling and self-selection bias. Specifically, this study only examined COVID-19 patients treated in 1 of the 16 Fangcang shelter hospitals and those who were emotionally stable and potentially had a pre-existing

interest in sharing their experiences. Second, the interviewees were front-line nurses known to participants in the Fangcang hospital. The inherent imbalance of power in the therapeutic relationship may affect participants' responses. For example, participants may feel inclined to respond in a positive and agreeable manner based on perceived concerns that it would impact their medical care. Additionally, it was possible that front-line nurses unconsciously selected patients with certain personality traits such as sociability and friendliness. Nevertheless, several strategies were implemented to reduce respondent and interviewer bias, including the interviewers adhering to the inclusion and exclusion criteria when recruiting participants, and clarifying the purpose of the research and the anonymous nature of participation to respondents prior to interview. Third, owing to the COVID-19 restrictions imposed, it was impossible to conduct member-checking with participants to validate the interview transcripts.

CONCLUSION

Through in-depth qualitative analysis of COVID-19 patients' experiences in a Fangcang shelter hospital, this study shed light on the effectiveness of a novel centralised isolation strategy implemented in China during the very early stage of the COVID-19 pandemic. It is suggested that collective isolation has the capacity to fulfil patients' physical, psychological and social needs. Future research is needed to inform a comprehensive understanding of this centralised isolation approach across different contexts.

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Correction notice This article has been corrected since it first published. The affiliation for 'Ji Ji' has been updated.

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Contributors All authors were involved in the design of this study. TY and MFL were responsible for participant recruitment and data collection. YZ and HZ were responsible for data analysis and were the co-lead writers of the manuscript. T-YL and JJ had oversight of data collection and analysis and were coordinating writers of the manuscript. YZ and HZ contributed equally and share the first authorship. JJ is responsible for the overall content as guarantor.

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Competing interests None declared.

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Patient consent for publication Not applicable.

Ethics approval This study was approved by the Ethics Committee of Sir Run Run Hospital, Nanjing Medical University, China via an expedited pathway (2020-SR-005). Due to the COVID-19 restrictions imposed, acquisition of individual written informed consent was impossible. Instead, we obtained verbal informed consent from each participant which was audiorecorded. During the individual consent process, potential participants were briefed on the purpose of the research and the voluntary nature of participation.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement The datasets generated and/or analysed during the current study are not publicly available due to privacy or ethical restrictions but are available from the corresponding author on reasonable request.

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Appendix A: Semi-Structured Interview Guide

| | | | | |
|-------|--------------|-------------|-----------|-------------|
| Date: | Interviewer: | Start time: | End time: | Archival #: |
|-------|--------------|-------------|-----------|-------------|

Introduction

Thank you for agreeing to participate in this interview. We are interviewing you to better understand your experiences at the Fangcang shelter hospital. So, there are no right or wrong answers to any of our questions, we are interested in your own experiences.

Participation in this study is voluntary and your decision to participate, or not participate, will not affect the care you currently receive from this hospital. The interview should take approximately one hour depending on how much information you would like to share. With your permission, I would like to audio record the interview because I don't want to miss any of your comments. All responses will be kept confidential. This means that your de-identified interview responses will only be shared with research team members, and we will ensure that any information we include in our report does not identify you as the respondent. You may decline to answer any question or stop the interview at any time and for any reason. Are there any questions about what I have just explained?

May I turn on the digital recorder?

A. Warm-up questions

Before we begin, it would be nice if you could tell me a bit about yourself. How long have you been in this hospital?

B. Demographic information

1. Age and gender
2. Place of primary residence

C. Core questions

1. Feelings and perceptions regarding the COVID-19 diagnosis

- a). When did you first test positive for COVID-19?
- b). Are/were any of your family members also infected with COVID-19?
- c). How do you feel about being diagnosed with COVID-19?
- d). Can you tell me about your understanding of your health condition?
- e). Can you tell me about your understanding of COVID-19 and its impacts on you and your family?
- f). Are you concerned about your health? What are your concerns?
- g). Are you concerned about your family? What are your concerns?

2. Experiences and needs during hospitalisation

- a). How would you describe your experiences as a patient in the Fangcang hospital?
- b). What things do you like or dislike about your hospital stay?
- c). Do you think your essential needs are met during hospitalisation? (Prompts: anything related to activities of daily living).
- d). Do you think your healthcare needs are met during hospitalisation?
- e). How would you describe your health since receiving care from this hospital? (Prompts: both physical and mental health).

3. Perceptions of the quality of the services provided in the hospital

- a). How would you describe the services you have received from this hospital? (Prompts: food service, sanitation service, healthcare service, etc)

b). What things you like or dislike about the services you have received from this hospital?

c). How would you describe the quality of care you received from this hospital?

4. Overall views and perceptions towards collective isolation.

a). Can you tell me about your views about isolation during infectious disease outbreaks

b). What is it like to be isolated with other COVID-19 patients in a shelter hospital?

c). Looking back on your experiences of being isolated at home, how does it differ to your isolation experiences at the Fangcang shelter hospital?

d). What do you think are the pros and cons of being isolated with other COVID-19 patients in a shared living environment?

e). How would describe the Fangcang shelter hospital in comparison with traditional hospitals?

5. Conclusion

a). Is there anything else that you would like to comment on about your hospitalisation experiences that we haven't discussed today?

Thank you very much for your time and the information you shared today.

Note: This interview guide only represents the main themes to be discussed with participants and hence does not include various probing questions that may be used, such as "Can you please tell me a little bit more about that" "What does this mean to you?"