



Original Article

## Hospitalization Experience of Older COVID-19 Patients in Fangcang Shelter Hospitals: A Qualitative Study

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### SUMMARY

**Objective:** In this study, we aimed to explore the hospitalization experience of older patients with coronavirus disease 2019 (COVID-19) in a Fangcang shelter hospital (FSH).

**Method:** The study followed standards and completed the checklist for reporting qualitative study as outlined in the "COREQ". A descriptive qualitative research was utilized. The data were analyzed using content analysis. Fifteen COVID-19 patients who were 60 years of age or older were selected using the purposive sample method from the FSH converted from the National Exhibition and Convention Centre in Shanghai, China. The data were collected via face-to-face semistructured interviews between April 9 and 30, 2022.

**Results:** The hospitalization experiences of older COVID-19 patients in the FSH were classified into three themes: physical experience, life experience, and mental experience. These themes included seven subthemes: physical symptoms, physical discomfort due to environmental factors, inconvenience, differential resilience, boredom, longing for face-to-face communication, and gratitude to healthcare workers and volunteers.

**Conclusions:** COVID-19 patients lived multifaceted, multilevel lives in the shelter hospital. To improve the hospitalization experience of older adults, several factors should be considered, such as facilities that are well suited for them, better symptom management, an emphasis on life adaptation, and appropriate psychological support.

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## 1. Introduction

The Omicron variant strain of coronavirus disease 2019 (COVID-19) is characterized by high transmissibility, fast transmission, and severe immune escape.<sup>1</sup> After it was identified in South Africa in November 2021, it took only two months to become the dominant epidemic strain worldwide. As of February 18, 2023, there were 673,901,791 confirmed COVID-19 cases globally, with 6,862,431 deaths.<sup>2</sup>

In April 2022, several Fangcang shelter hospitals (FSHs) were planned and built urgently in Shanghai to cope with the Omicron epidemic. An FSH is a large temporary hospital developed in China to address public health events. The term Fangcang sounds similar to Noah's Ark in Chinese,<sup>3</sup> and when needed, existing public places such as sports stadiums and exhibition centers are converted into medical facilities. They can isolate asymptomatic and mild COVID-19 patients from their families and communities while providing medical care, dis-

ease monitoring, food, shelter, and social activities. The largest portion was converted from the National Exhibition and Convention Center (Shanghai, China), which has 46,751 beds, and 43.65% of the admitted patients were seniors aged older than 60 years.

Seniors are debilitated due to aging, which increases their susceptibility to COVID-19. Studies have reported a massive outbreak in Omicron; older adults have been the hardest-hit age group, and 96% of mortality occurs among the population aged 60 years or older.<sup>4</sup> Moreover, these patients are more likely to develop severe conditions due to cardiovascular comorbidities. According to a cohort study, frail older adults are at a greater risk of death and mechanical ventilation after being infected with COVID-19. Although all older adults infected with FSH are mild or asymptomatic, most of them have comorbidities, so the possibility of transformation to severe illnesses cannot be ruled out. Moreover, it takes longer for a nucleic acid test to indicate a positive result in older patients than in younger patients.<sup>5</sup>

Additionally, while physical distancing in FSHs has significantly helped to contain the social spread of infection, it has also exacerbated the social isolation of older adults, as visits of family and friends to FSHs were prohibited to protect their residents.<sup>6</sup> Despite a shrinking social network during aging, the need for proximity, meaningful relationships and reciprocity are characteristic features of so-

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cial needs in late life.<sup>7</sup> Quarantine is often an unpleasant experience for those who undergo it. Separation from loved ones, the loss of freedom, uncertainty over disease status, and boredom can, on occasion, create dramatic effects and could have considerable physical and psychological impacts,<sup>8</sup> including physical symptoms, comfort, communication, safety and daily life.<sup>9</sup> It has been reported that the risks of loneliness, anxiety, and depression are significantly increased, resulting in negative experiences. These negative emotions further compromise autoimmune function to a certain extent.

Comfort theory, developed by Katharine Kolcava, is a mid-range theory that draws from the environmental principles of Florence Nightingale's caregiving. It is based on the understanding that a person's comfort is a direct experience of existence, reinforced by meeting their needs for relief, relaxation, and transcendence in the five contexts of human experience: physical, mental, social, cultural, and environmental.

In general, healthcare workers should prioritize the hospitalization of older COVID-19 patients in FSHs to improve intervention measures and address the negative experiences of older COVID-19 patients. This study attempted to carry out in-depth interviews with 15 older COVID-19 patients in the FSH to understand their hospitalization experience and aid in improving individual, humanized and practical medical care services.

## 2. Materials and methods

### 2.1. Sample

From April 9 to 30, 2022, the senior patients in the FSH converted from the Shanghai National Exhibition and Convention Center were selected as the interviewees using a purposive sampling method. The interviews were conducted with older adults on the 3rd–5th days of admission, considering the less comprehensive and profound experience of the newly admitted patients and that the average length of stay for patients was 7–14 days. The inclusion criteria were as follows: patients (1) who were asymptomatic and diagnosed with mild COVID-19; (2) aged  $\geq 60$  years; (3) with good communication ability; and (4) who voluntarily participated in the interviews. The exclusion criterion were as follows: patients who reported a history of mental illness, patients who suffered from a sudden change in illness, those who were not suitable for further interviews and patients who wanted to quit at any time. The interviews ceased when the information met the principle of data saturation. A total of fifteen participants were interviewed. The demographic and characteristic information of the interviewees is shown in Table 1.

### 2.2. Data collection

Our research used descriptive qualitative research method to qualitatively analyze the hospitalization experience of older patients with COVID-19 in the FSH. We focused on identifying shared patterns rather than individual characteristics in the research subjects. This scientific approach guarantees the authenticity of the collected experience of participants to adhere to scientific standards. For this study, we adopted a descriptive phenomenological research methodology using one-on-one, face-to-face semi-structured interviews. The outline of the interview is as follows: What impressed you most during your stay in the FSH? Have you ever met certain inconveniences or difficulties during your stay in the FSH? How did you handle such inconveniences or difficulties? Do you prefer to stay in the FSH or quarantine at home, and why?

The interviews were conducted by the same researcher who

conducted the pre-interviews. During the research process, the researcher consistently maintained a reflective and self-reflective mindset. To avoid interruptions and personal privacy disclosure, interviews were conducted in a study room in the FSH. Before starting, interviewees were informed that the interviews would be recorded, and signed informed consent forms obtained. All participants agreed to be recorded. The interests of the interviewees were respected, and sensitive topics were avoided. Interviewees' questioning and refusal were also respected. The interviewer suspended prejudice and maintained an objective attitude. Inducement and judgment were avoided. The numbers N1–N15 were used to avoid interfering with the interviewees' privacy. Each interview lasted approximately 25 minutes, depending on the patient's status. Synchronous sound recordings and field notes were taken during the interview.

### 2.3. Data analysis

The sound recordings were transcribed into texts and sorted within 24 hours after the interviews. Following each interview, the researchers transcribed the recordings into texts by recording software, listened to the data sentence by sentence through repeated playback, and corrected the words to extract useful information. If any doubts arose during data confirmation, the patient was contacted for double-checking. Through information analysis, sorting, and summarization, the useful and repeated information was coded, and subthemes and themes were summarized step by step. Once critical information was missing during the sorting process, a second interview was conducted until the information reached data saturation. We presented the elderly participants of the interview with three main themes and seven sub-themes, inquiring whether their actual experiences were documented to guarantee the precision of the findings.

### 2.4. Ethical consideration

The present study strictly followed the Declaration of Helsinki. Before the interview, the interviewer evaluated whether the participants intended to chat and interpreted the content, purpose, and significance of the interview. Written informed consent was obtained only when the patients provided written informed consent and were assured that their data were highly confidential. This study was approved by the Ethics Committee of Xinqiao Hospital, Army Medical University (No. 2022-479-01).

**Table 1**  
Demographics and characteristics of the interviewees.

Interview No.	Sex	Age	Marital status	Diagnostic classification	Vaccinated (Y/N)	Empty nest (Y/N)
1	M	64	M	Asymptomatic	Y	Y
2	M	61	M	Mild	Y	Y
3	M	65	M	Mild	Y	N
4	M	66	M	Asymptomatic	Y	Y
5	F	61	M	Asymptomatic	Y	N
6	M	62	M	Asymptomatic	Y	Y
7	M	67	M	Mild	Y	N
8	M	62	M	Asymptomatic	Y	Y
9	M	67	M	Mild	Y	Y
10	F	65	M	Mild	Y	N
11	F	62	M	Asymptomatic	Y	Y
12	M	68	M	Asymptomatic	Y	N
13	F	60	M	Asymptomatic	Y	Y
14	M	65	M	Mild	Y	N
15	M	62	M	Mild	N	N

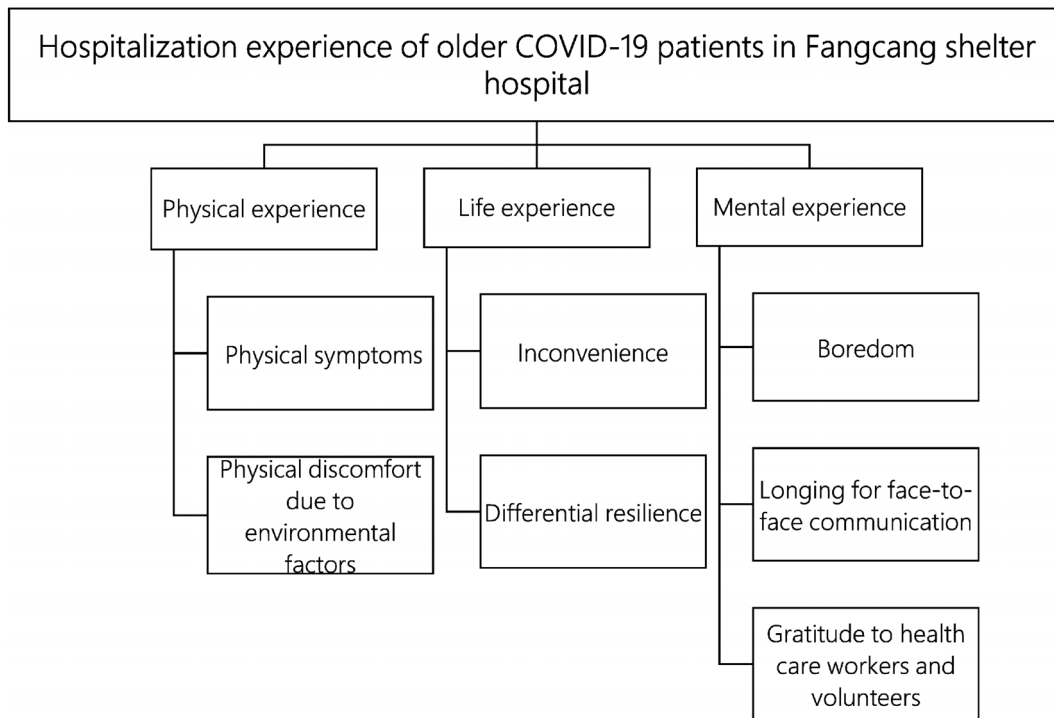


Figure 1. Key themes and subthemes tree.

### 3. Results

#### 3.1. Theme I: Physical experience

##### 3.1.1. Physical symptoms

Due to their reduced immune system, older adults cannot tolerate the more significant symptoms of an infection, such as sore throat, cough, and nasal congestion.

N2: "I can't sleep well and have a toothache and mild diarrhea, but I feel better now that the doctors gave me some medication to take."

N5: "My sleep quality is negatively impacted by an excessive amount of phlegm."

N7: "Maybe I've been sleeping in too much, which is why my stomach hurt."

##### 3.1.2. Physical discomfort due to environmental factors

The body might experience discomfort from several environmental elements, such as noise, light, and air quality, which can be mitigated by adding equipment, especially for older adults.

N3: "It's much better when I wear ear muffs because I can't sleep well because of the little noise next door."

N7: "The illumination persisted during the night, causing some disturbance to our sleep. However, we were provided with eye masks, allowing us to eventually doze off."

N10: "When I first stayed there, the air in the FSH was very stuffy and not very fresh. Things felt significantly better the day before yesterday after adding numerous air purifiers."

#### 3.2. Theme II: Life experience

##### 3.2.1. Inconvenience

A positive included the large floor space, but two negatives included insufficient washing facilities and a lack of privacy-protecting facilities.

N2: "There is a lot of water on the toilet floor, and I am very wor-

ried about falling on the ground whenever I go to the toilet."

N5: "Our beds were in close proximity and lacked any coverings, making it considerably simpler to affix bed curtains for the purpose of ensuring privacy."

N14: "The washing place is overcrowded and lacks sufficient space and facilities. The addition of the portable washroom has significantly improved the situation."

##### 3.2.2. Differential resilience in older adults

Some older adults can live well independently but some older adults are not comfortable with FSH living and need focused attention and assistance from health care workers.

N1: "I am adjusting well to life here. We've been given plenty of supplies."

N6: "It's hard to adjust to life here. A lot of things are inconvenient."

N11: "I came to quarantine with my wife, there is nothing unaccustomed to having a partner around."

N15: "My families accompany me at home and it is more convenient at home when you need to do something. I am not used to here."

#### 3.3. Theme III: Mental experience

##### 3.3.1. Boredom

The prohibition against family members visiting the FSH while under quarantine. Due to the restrictions of the FSH on many recreational activities, older people find themselves more bored there than at home.

N4: "Time dilates in this place. A single day can feel as long as a whole year."

N6: "I typically experience boredom and lack of activities, and I only feel a sense of satisfaction when I engage in daily Tai Chi practice."

N15: "I actively participate in all kinds of knowledge lectures organized by them, which can teach me a lot of things, even though it's usually quite boring."

### 3.3.2. Longing for face-to-face communication

While video chat can be used to communicate with family members, older individuals still prefer face-to-face conversation; therefore, this method cannot replace it. This need can be met by psychological teams visiting the FSH and having face-to-face conversations with older persons.

N1: "I don't know anyone nearby, but I'd like to talk to someone."

N15: "I'd like to talk to and hug my grandson."

### 3.3.3. Gratitude to healthcare workers and volunteers

Seniors require additional assistance since they are more susceptible to FSH. When they encounter problems, volunteers, and medical professionals greatly assist them. As a result, individuals are more likely to appreciate volunteers and medical staff.

N1: "All healthcare professionals exhibit a commendable demeanor, diligently carrying out their duties, and we deeply value their compassionate service."

N11: "The health care workers will take care of the problem at a time when I complain about any discomfort about my body. I am very grateful to them."

## 4. Discussion

### 4.1. Plan FSH facilities for older adults in advance

The National Exhibition and Convention Center (Shanghai, China) Fangcang shelter hospital is the largest Fangcang shelter hospital in Shanghai as of 2022, totaling approximately 50,000 beds. Unfortunately, as the Omicron epidemic in Shanghai infected hundreds of thousands of inhabitants, the FSH was crowded, and changes in the environment have made many patients uncomfortable.<sup>10</sup> For older adult patients, who are a vulnerable group, their sense of discomfort is greater. This study indicated that older adults had some problems during their stay in FSH, such as inconveniences in washing and poor sleep at night due to lights, which are similar to the findings of Zhong et al.<sup>10</sup> The reason may be that infected patients flood on a large scale when FSH and most FSH are temporarily converted,<sup>3</sup> resulting in insufficient and inconvenient living facilities.

It is therefore suggested that the needs of older adults be considered first when planning the FSH. The beds closer to the bathroom can be used as geriatric wards, and each bed can be equipped with curtains for better privacy protection and installed with bed stop boards for safety reasons. Additional measures, such as the distribution of anti-slip shoes, use of blindfolds and earmuffs, use of adjustable lighting, addition of handrails to the bathroom, and use of PVC floor mats or TPE anti-slip mats on the ground, can also improve the comfort, convenience, and sleep quality of older adults during their stay in the FSH and prevent adverse events such as falls.

### 4.2. The symptom management of older COVID-19 patients should be improved

The physical symptoms of COVID-19 infection greatly impact older adults who are more intolerant to the symptoms of cough, sore throat, and nasal congestion. These symptoms cannot be ameliorated at home, and the environment within the FSH can have an adverse effect on the body. We mitigate the effects caused by the environment by improving the environment within the FSH. A growing number of studies have revealed that the depth and breadth of symptoms experienced by COVID-19-infected patients far exceed the initial typical symptoms.<sup>11</sup> According to the statistics of an international study, COVID-19 patients have experienced 55 symptoms.<sup>12</sup>

A research group has developed a COVID-19 symptom model including five symptom groups based on 5,652 COVID-19 cases nationwide in the United States: (1) cold and flu-like symptoms, (2) altered sense of smell and/or taste, (3) dyspnea and chest pain, (4) cognitive and visual problems, and (5) cardiac symptoms.<sup>13</sup> Moreover, asymptomatic COVID-19 patients are also at risk of suffering from long-term sequelae after infection.<sup>14</sup>

Therefore, more attention should be given to older COVID-19 patients for symptom control to alleviate the burdens of various symptoms on older adults. This suggests that in the future, we should be aware of additional elements, such as the environment and underlying self-inflicted conditions, in addition to the physical symptoms that the virus causes in older individuals during an epidemic. It is advised that symptom assessment instruments be developed with older patients' symptom management in mind. This calls for a strong foundation, which includes studies on symptom management strategies and pertinent clinical trials.

### 4.3. Highlight the life adaptability of older COVID-19 patients

This study revealed that older adults have varying levels of resilience. The reason for this may be that some older adults are more dependent on their families and less comfortable living in an FSH.

In 1970, Sister Callista Roy, a nurse theorist, proposed the Roy adaptation model (RAM), which regards each individual as an inter-related system that accepts stimuli from the external environment and the individual itself, and through the coping mechanism of regulation and cognition, an adaptive or null response may occur.<sup>15</sup> Some research results have indicated an intimate association between adaptive coping and health outcomes.<sup>16</sup> Many researchers have constructed assessment tools and adopted nursing care based on RAM.<sup>17</sup>

FSH nurses should assess the adaptability of older COVID-19 patients with an adaptation scale. In addition, the Activities of Daily Living (ADL) assessment tool and Comprehensive Geriatric Assessment (CGA) scale can also be used. CGA is a "multidimensional, multidisciplinary diagnostic and therapeutic process conducted to determine the medical, mental, and functional problems of older adults with frailty so that a coordinated and integrated plan for treatment and follow-up can be developed." It is advised that many assessment instruments be used to evaluate older 'adults' adaptability and that a multifaceted evaluation of older adults be carried out to appropriately represent their underlying medical, psychological, and social issues.<sup>18</sup> Specific care measures should be planned based on the assessment results to improve the quality of nursing services.

### 4.4. Implement evidence-based and appropriate psychological support for older adults

This study revealed that most older adults feel bored with quarantine life in the FSH and are eager for face-to-face communication. Despite the possibility of serious complications being rare for older adults with asymptomatic or mild symptoms, a series of factors, namely, the environment during quarantine, emotional loss caused by social distancing, and worries about family health, have affected the mental health of older COVID-19 patients, resulting in changes in mood, diet, sleep, and behavior.<sup>19</sup> Previous research has shown that similar psychological stress responses are present during infectious disease outbreaks,<sup>20</sup> and older adults are more prone to psychological problems.<sup>21</sup> Moreover, the media reported that older adults are susceptible to COVID-19 infection and have a high mortality rate, which added to their psychological burden.<sup>22</sup>

Thankfully, maintaining an optimistic attitude plays a positive

role in disease recovery.<sup>23</sup> In this study, some older adults were grateful to the healthcare workers and volunteers. This sentiment should be improved by screening older adults for psychological problems and providing them with targeted interventions. Based on the characteristics of COVID-19 patients, researchers have developed a simple psychological screening scale with eight dimensions (intrusion, avoidance, hyperactivity, numbness, depression, generalized anxiety, health anxiety, and somatization). It is a simple and effective tool for quick screening of mental health issues in COVID-19 patients.<sup>24</sup> A pool of psychological experts on FSH is vital, and appropriate tools should be applied to dynamically assess the psychological state of older COVID-19 patients, thereby identifying risk factors earlier. Evidence-based psychological interventions suitable for older adults can be implemented. Professional psychological counseling services, including online telepsychological services, are also available.

FSHs can provide sunshine activity rooms and organize square dance, Tai Chi Chuan, and Baduanjin activities. Family support is also critical for the mental health of older adults. They were encouraged to interact with family members by phone or video. FSHs should also set up family beds, and family members who are simultaneously infected can be arranged together for family support.

## 5. Conclusion

Concerns about the physical and mental well-being of older adults infected with COVID-19 have increased among society and medical organizations during the pandemic. In-depth interviews with older adults were undertaken in this study to gain insight into their hospitalization experiences regarding physiology, psychology, and life experience in an FSH. The results of this study can provide a reference for individual, humanized and practical medical care services for older patients, especially in the context of large-scale public health events such as infectious disease epidemics. To enhance the hospitalization experience of older adults and improve their physical and mental health, various measures should be considered. These include improved symptom management, the ability to adapt, and the implementation of evidence-based and appropriate psychological support. In the future, additional quantitative research could be conducted to explore the fields of physiology, psychology, life, and therapeutic tactics.

## Availability of data and materials

All the research data is available on request from the corresponding author.

## Consent for publication

Not applicable.

## Competing interests

The authors declare no conflicts of interest or financial ties to disclose.

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