

# Concerns to Aging and Health of Schizophrenia Inpatients During COVID-19 Pandemic: A Qualitative Study

Su-Chen Lo<sup>1,2</sup> & Jiin-Ru Rong<sup>1</sup>

<sup>1</sup> School of Nursing, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan

<sup>2</sup> Department of Nursing, Bali Psychiatric Center, Ministry of Health and Welfare, New Taipei City, Taiwan

Correspondence: Jiin-Ru Rong, School of Nursing, National Taipei University of Nursing and Health Sciences, No.365, Ming-te Road, Peitou District, Taipei, Taiwan. Tel: 886-228-227-101. E-mail: jiinru@gmail.com

Received: July 16, 2023

Accepted: August 8, 2023

Online Published: August 21, 2023

doi:10.20849/ijns.v8i2.1362

URL: <https://doi.org/10.20849/ijns.v8i2.1362>

## Abstract

**Aims:** Patients with schizophrenia are more likely to be affected by contagious diseases and health problems because of the influence of factors such as comorbidity with chronic diseases, psychiatric symptoms, and whether treatment with psychotropic drugs is possible. Accordingly, during the COVID-19 pandemic, it was particularly important to pay attention to the health problems and coping experiences of patients with schizophrenia.

**Methods:** Twenty inpatients with schizophrenia were recruited via purposive sampling to participate in this qualitative study. Data collection was conducted from June to August 2022 and the data were analyzed via thematic analysis.

**Results:** Four dominant themes emerged from the responses of the participants, who: 1) were concerned about COVID-19 and performed health-management behaviors; 2) were concerned about significant health problems but did not take preventive actions; 3) experienced barriers to health management; and 4) required healthcare resources for elderly patients.

**Conclusions:** We found that these patients with schizophrenia had received health management education and implemented infection-prevention measures during the COVID-19 pandemic. Although they expressed concerns about health problems that interfered significantly with their daily lives, including the need for healthcare resources for the elderly, they lacked awareness of aging-related comorbidities. Healthcare professionals should thus align the care they provide with their patients' needs, continuously provide them with health-related information, observe their daily behaviors, and help them to develop their skills related to changing and implementing health behaviors.

**Keywords:** schizophrenia, aging, health problems, COVID-19 pandemic

## 1. Introduction

Schizophrenia is a severe psychiatric disorder that has a significant impact on the individual, their family, and society. Because of their increased risk of contracting physical illnesses such as cardiovascular, metabolic, and infectious diseases, people with schizophrenia are 2–3 times more likely to die early than the general population (Laursen et al., 2014; World Health Organization, 2022). Patients with schizophrenia are more likely to suffer from contagious diseases and health problems caused by factors such as comorbidity with chronic diseases, mental symptoms, and whether they can be treated with psychotropic drugs (Stein, 2021). Accordingly, it is necessary to pay special attention to the health behaviors and coping experiences of patients with schizophrenia during the COVID-19 pandemic. A substantial proportion of people diagnosed with schizophrenia experience chronic symptoms and disability at some point in their lives. Compared to the general population, schizophrenia is associated with a 2- to 12-fold increase in mortality and a 15- to 20-year reduction in life expectancy. Despite elevated rates of suicide and other unnatural causes of death, most morbidity in schizophrenia is attributed to age-related diseases (e.g., cardiovascular and respiratory diseases and diabetes mellitus). The increased prevalence of age-related disabilities and morbidities suggests that biological aging may be accelerated in schizophrenia. Polygenic risk for schizophrenia is positively correlated with brain age gap (Ori et al., 2021; Teeuw et al., 2021). Patients with schizophrenia experience accelerated brain aging and the onset of systemic

physical diseases earlier than the general population (Charlson et al., 2018; Nguyen et al., 2018). Studies have shown that the actual age of the patient's brain is about 3–4 years older than its real age (Constantinides et al., 2023). The average life span of a person with schizophrenia is 15–20 years shorter than that of an unaffected person, and patients with schizophrenia have 2–12 times higher mortality rate than age-comparable general population (Dieset et al., 2016; Hjorthøj et al., 2017; Kirkpatrick et al., 2008; Laursen et al., 2014; Teeuw et al., 2021). Some studies suggest that patients with schizophrenia over the age of 50 can be classified as elderly (Cohen et al., 2018). Studies have shown that patients with metabolic syndrome of schizophrenia not only have an increased incidence of metabolic syndrome with age, but also have a risk of developing metabolic diseases that is twice or more than that of the general population (Papanastasiou, 2013). In Taiwan, the incidence of metabolic syndrome in patients with schizophrenia (34–37%) is more than twice that of the general population (15.7%) (Huang et al., 2009; Hwang et al., 2006; Yang et al., 2016). The comorbidities observed in schizophrenic patients are attributable to various risk factors, such as accelerated aging, declining health function, side effects of antipsychotic drugs, unhealthy lifestyle, lack of regular treatment of physiological diseases, and insufficient ability to take care of themselves (Hjorthøj et al., 2017; Laursen, 2019; Nguyen et al., 2018). The comorbidities observed in schizophrenic patients are attributable to various risk factors, such as accelerated aging, declining health function, side effects of antipsychotic drugs, unhealthy lifestyle, lack of regular treatment of physiological diseases, and insufficient ability to take care of themselves. Thus patients need to be made aware of aging-related and chronic diseases and establish health-management behaviors to reduce their risk of premature death and systemic physical diseases such as heart, metabolic, and respiratory diseases and control their disease severity, physical disability, and dependence.

Since early 2020, the COVID-19 pandemic has had a substantial impact on healthcare globally. There are many factors that hinder the ability of patients with schizophrenia to manage their health. It is a challenge for patients to recognize emerging diseases, implement health behaviors to prevent infection, and mitigate accelerated aging and chronic comorbidities during a pandemic (World Health Organization, 2023). Studies have shown that patients with schizophrenia have a higher risk of pneumonia and COVID-19 infection and mortality than the general population because of cognitive impairment, lack of awareness of illness, group living, and deficits in judgment and decision-making ability. They are also typically hindered by insufficient medical insurance and other nonmedical obstacles such as poor health behaviors, failure to perform regular health checkups, lack of awareness of chronic comorbidities, and an inability to manage their health. These factors may also exacerbate the observed high rates of morbidity and mortality among patients with schizophrenia (Kozloff et al., 2020; Tzur Bitan et al., 2021). In Taiwan, the National Health Insurance system is implemented. Many health examinations and drug treatments of patients are paid by this insurance system, which affects the motivation of patients with schizophrenia to use health care and receive medical treatment (Pan et al., 2019).

Schizophrenia is not only a brain disease, but also a health problem of accelerated aging and the occurrence of multiple systemic comorbidities. It increases the incidence of cardiovascular disease, metabolic disease and other physiological comorbidities in patients, and also affects patients' early disability and death. Most studies on schizophrenia focus on the disease and medication management of patients with schizophrenia (Huang et al., 2009; Hwang et al., 2006; Yang et al., 2016; Laursen, 2019), and there are few patient-centered studies on the prevention of aging and health management of patients with schizophrenia. From the perspective of adult and aging patients, how to help patients pay attention to their aging health and health management under the COVID-19 pandemic, and hope to extend this point of view to the aging and health management of schizophrenia patients. Therefore, this study on the experience of patients with schizophrenia during the COVID-19 pandemic aims to understand their concerns about aging, comorbidities, and health problems, as well as the coping experiences that they face and their needs for health management.

## **2. Method**

### *2.1 Research Design*

A qualitative study was conducted to explore the experience of patients with schizophrenia during the COVID-19 pandemic. Aims to understand their concerns about aging, comorbidities, and health problems.

### *2.2 Participants*

The inclusion criteria were that they were aged 45 years or over, were receiving ongoing psychiatric medication, had clear awareness, had a sense of orientation, were able to communicate verbally, had an education level of at least sixth grade, and did not have psychiatric symptoms that interfered with their ability to cooperate with the interviewer. The exclusion criteria were dementia, organ disease, and acute or violent episodes within one month of commencement of the study.

### 2.3 Data Collection

Data was collected through face-to-face interviews, data were collected from June to August 2022. The researcher explained the purpose and process of the study and their rights to the participant. After a patient had agreed to participate and signed the consent form, a face-to-face in-depth interview was conducted in a small, quiet room. Each interview lasted approximately 30–50 min.

All interviews were conducted by the first author. The interviewer took audio recordings of the interviews with the permission of the participants. After greeting the patient, the interviewer asked the patient about the impact of COVID-19 on their hospital experience and physical health problems, their experiences with pandemic infection control, life as an elderly patient, and health-problem management. Since some of the participants may not have been able to fully express their thoughts, the interviewer had also prepared a semi-structured interview outline (Table 1).

Table 1. Semi-structured interview guideline

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1. What health problems do you think you will encounter in old age?
  2. What health problems do you have in your physical aspect?
  3. Do you think these health problems can be dealt with?
  4. If you can handle it, how would you like to do it? (practical care)
  5. Or are you currently not dealing with these health issues?
  6. Why are these issues not addressed?
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### 2.4 Data Analysis

The data were analyzed via thematic analysis. Thematic analysis is an established method for identifying, reporting, and analyzing patterns in data, with minimal organization but description of the data in rich detail. Patterns are identified iteratively through a careful process of data familiarization, data coding, theme development, and review. The following six-step analysis method was used. Step 1: Become familiar with the data; Step 2: Generate initial codes; Step 3: Search for themes; Step 4: Review the themes; Step 5: Define the themes; Step 6: Perform write-up (Braun & Clarke, 2006). Two researchers independently read and coded the transcripts; these codes were examined and iteratively condensed into groups capturing similar themes, each with a number of subthemes. These themes and subthemes were then reviewed by members of the entire team. To achieve saturation of themes, we moved back and forth between data collection and analysis to ensure congruence between the data and the conceptual interpreted work. Based on review of the interview data by ourselves and clinical experts, it was determined that the data collected in this study was saturated when no new themes related to the topic emerged.

### 2.5 Ethical Considerations

All study protocol was approved by the Institutional Review Board of the Bali Psychiatric Center, Ministry of Health and Welfare, in Taiwan (ethical approval IRB number: 1101206-01). The participants provided their written informed consent for showing that they know the purpose of this study, the method of data collection, and the human rights of participating in this study, and they agreed to participate in this study. Participants could leave from the study at any time. As for the participating patient's data, the researchers are responsible for maintaining the confidentiality of the participant's data.

## 3. Results

The study included 20 inpatients with schizophrenia aged between 49 and 67 years old (11 male and 9 female; mean age = 56.8 years, SD = 5.3 years; Table 2), all of whom were able to share their physical health-management experiences. Four dominant themes emerged from the participants' responses: 1) they were concerned about COVID-19 and performed health-management behaviors; 2) they were concerned about significant health problems but did not take prevention actions; 3) they experienced barriers to health management; and 4) they required healthcare resources for elderly patients (Table 3).

Table 2. Demographic characteristics of the participants (n = 20)

Characteristic	Items	Number (%)
Age (years) (mean: 56.8 ± 5.3)	49–59	14 (70%)
	60–67	6 (30%)
Gender	Male	11 (55%)
	Female	9 (45%)
Education level	Bachelor's and above	5 (25%)
	High school	8 (40%)
	Junior high school	4 (20%)
	Elementary school	3 (10%)
Marital status	Married	3 (15%)
	Single	11 (55%)
	Divorced or widowed	6 (30%)
Duration of illness (years) (mean: 25.5 ± 5.5)	17–20	5 (25%)
	21–30	11 (55%)
	31–35	4 (20%)

Table 3. Themes

Themes	Subthemes
3.1 Concerned about COVID-19 and performed health management behaviors	3.1.1 Recognized the symptoms of COVID-19 and disease progression
	3.1.2 Performed COVID-19 health-protection behaviors
3.2 Concerned about significant health problems but did not take prevention actions	3.2.1 Paid attention only to significant health problems that interfered with daily life
	3.2.2 Lacked experience with aging-related concerns
	3.2.3 Did not actively perform actions to prevent aging and health problems
3.3 Experienced barriers to health management	3.3.1 Unable to detect health problems associated with accelerated aging due to disease
	3.3.2 Lacked financial resources to manage health problems
	3.3.3 Relied on hospital care to manage physical health problems
	3.3.4 Relied on medical insurance system regulations to attend regular consultations and manage medication administration (passive health behavior)
3.4 Required healthcare resources for elderly patients	3.4.1 Required assistance with obtaining health information, such as information about COVID-19, comorbidities, and health problems experienced by the elderly
	3.4.2 Required assistance with health management
	3.4.3 Required elderly-care living arrangements or long-term care resources

### 3.1 Theme 1: Concerned About COVID-19 and Performed Health Management Behaviors

During the COVID-19 pandemic, our participants (middle-aged and elderly schizophrenia patients with stable mental function who were hospitalized) were able to receive information about preventing COVID-19 infection, and the government's pandemic policies, pay attention to their underlying and pandemic-related physical condition, implement pandemic-control measures, and receive vaccinations. This shows that these patients were able to execute health behaviors to protect themselves when they were constantly given health guidance and reminders. The COVID-19 experience has thus had a positive influence on these patients' health behaviors.

#### 3.1.1 Recognized the Symptoms of COVID-19 and Disease Progression

During the pandemic, health education by nurses and media reports led the patients to pay attention to the effects of the pandemic on their physical health and the precautions they needed to take. They advocated taking relevant pandemic-control measures, such as hand washing, mask wearing, and vaccination. (P) is the participant's number.

*"Nurses and television both mentioned wearing masks to protect myself. I wore a mask every day and regularly changed my mask. I also washed my hands frequently, kept a distance from others, and actively cooperated."* (P4)

*"We had to pay attention to regular hand washing for pandemic control, which included seven steps. We also had to wear masks. Every month, the nurse would provide health information, and there was a quiz too. I remembered all of these events."* (P9)

*"The nurses instructed us to wear masks and wash our hands regularly to protect ourselves, i.e., not get COVID-19, and I carried out these measures."* (P12)

*"Before the pandemic, I worked in the cleaning team and helped sweep the road. In addition, I take physical rehabilitation to control my bone spurs problem, I need to do recovery activities every week. However, due to the pandemic of COVID-19, I couldn't go out, and I haven't received treatment recently. I know if I get infected, it will be bad for me."* (P5)

#### 3.1.2 Performed COVID-19 Health-Protection Behaviors

In response to the promotion of pandemic-prevention policies and related advocacy in the media, the participants showed their willingness to execute pandemic-control measures to protect their health and cooperated with vaccination.

*"I received the COVID-19 vaccination and have taken four doses to protect myself from getting infected. The television kept mentioning vaccination."* (P4)

*"I received three doses of the COVID-19 vaccine but became infected anyway. It felt like a common cold, and I have recovered. I want to go out, but the news mentioned that there is a BA5 variant, and I can only wait for the lockdown to be over."* (P7)

*"I could not return home during the COVID-19 pandemic, nor take leave and go out. Once, I was ill, and the nurses told me to do a rapid screening test. I got a fright and thought I was infected. Luckily, I was not infected; I just had sinusitis."* (P9)

*"The greatest impact of the COVID-19 pandemic was that I could not return home to spend the Chinese New Year with my family. I have received three doses of the COVID-19 vaccine and will take the fourth dose when the time comes, to protect myself. The government kept advocating vaccination."* (P10)

### 3.2 Theme 2: Concerned About Significant Health Problems but Did Not Take Prevention Actions

During the interview, the patients mentioned oral and dental problems, declining physical strength, and bone and muscle problems, which they considered to be normal health problems. They were concerned about significant changes in their health but they did not pay attention to active management and prevention of aging-related problems while sick.

#### 3.2.1 Paid Attention Only to Significant Health Problems That Interfered With Daily Life

The impression that these patients had of aging was influenced by their social context and the information they received via the media. They observed that they had less energy, that their physical strength had declined, and that they suffered from health problems such as dental issues, unsteady gait, falls, and fractures.

*"The television mentioned that I would forget things, forget to turn off the gas when I leave home, lose muscle mass, and develop osteoporosis when I age. I have not experienced these things yet, but I become tired easily."*

(P1)

*“I am 51 years old and felt that my physical strength was not as good as before, but I did not pay too much attention to these changes. It is okay to lead my life naturally every day, and I do not think too much about these things, as birth, aging, sickness, and death are a natural part of life.” (P9)*

*“Aging causes health problems, such as more severe knee joint erosion and hypertension. I have not experienced these things yet and have only heard about them from health-education posters. I am 53 years old and do not have any chronic diseases or health problems, but my teeth were loose, and I had seven teeth removed. This did not affect me greatly.” (P17)*

### 3.2.2 Lacked Experience With Aging-Related Concerns

These middle-aged and elderly hospitalized patients with schizophrenia lacked experience with aging and did not think about the possible health problems associated with aging.

*“I did not think about aging.” (P1)*

*“I never thought I would become old before today and only felt that time was passing very fast and that my life is very exhausting. Twenty years have passed in a blink of an eye, and I have reached this age unknowingly.” (P3)*

*“We will grow old slowly and become weaker and walk more slowly. I do not feel that I have become old yet.” (P10)*

*“I did not realize that my physical strength had declined, only felt that I lacked strength, but I was unable to stand steadily and fell down when I went to the toilet, resulting in a hand fracture. I did not think about how I could help myself.” (P15)*

### 3.2.3 Did Not Actively Perform Actions to Prevent Aging and Health Problems

The patients had found that their physical strength had declined, that they tended to be tired, and that their movements were not flexible. They coped by slowing down their actions to avoid disrupting their lifestyle. In addition, many of the patients did not feel that they had aged and did not consider future health problems, nor did they actively engage in health behaviors to prevent the accelerated aging associated with schizophrenia.

*“Since I reached the age of 50, my body tends to become tired, I felt sleepy the entire day; my bones and tendons are not flexible and walking is tiring. Hence, I walk slowly.” (P19)*

*“I only feel that my physical strength has declined. I do not yet require assistance from my family members; my daily lifestyle is normal and I am able to take care of myself. I have not thought about the problem of aging yet.” (P2)*

*“I have hypertension and diabetes mellitus, and these problems occur in old age! Perhaps because of my disease, I did not think of what would happen in the future; I will think about this problem in 10 years.” (P20)*

## 3.3 Theme 3: Experienced Barriers to Health Management

The loss of cognitive function in patients with schizophrenia affects their oral hygiene. Among our participants, those with severe edentulism wanted to undergo treatment but lacked the means to pay for it. Because of the costs associated with healthcare, the participants were worried about their source of income for future care.

### 3.3.1 Unable to Detect Health Problems Associated With Accelerated Aging Due to Disease

Although the participants felt that their physical strength and balance had declined and that they suffered from falls, fractures, and other health problems, they were unaware that these were related to their schizophrenia or accelerated aging. For example, they did not detect dental problems early and perform preventive dental healthcare, resulting in tooth avulsion and damage.

*“At age 50 I found that I had more white hair and wrinkles, had lost 10 teeth, and had poor teeth, and my physical strength had declined compared to when I was younger. However, I could only let nature take its course.” (P14)*

*“My teeth are in poor condition and many have fallen out. This may be because I often forget to brush my teeth. Around age 50, my teeth started to fall out when I was brushing my teeth, and I could only let it happen as I did not know what other special treatment was needed.” (P2)*

*“My rear teeth have fallen out, and I only have some front teeth left. I can still eat. I also do not have money for treatment and do not know what the problem is with missing teeth.” (P12)*

### 3.3.2 Lacked Financial Resources to Manage Health Problems

Participants with severe edentulism wanted to undergo treatment but lacked the means to pay for it.

*“My teeth have all fallen out, and I have only one tooth left. I need 200,000 NTD for dentures, which I cannot afford. Hence, I can only eat porridge and chopped vegetables.” (P6)*

*“My teeth would move and bleed. When I saw the dentist, he said that the teeth would have to be removed, and I now have fewer teeth. I cannot afford dentures.” (P7)*

### 3.3.3 Relied on Hospital Care to Manage Physical Health Problems

The participants sought assistance from doctors and nurses with management of significant problems and discomfort. They did not actively enquire about their physical health and required nurses to remind them to maintain their treatment and medication.

*“I only look for a doctor when I am unwell and do not think of how I could help to manage my own health.” (P5)*

*“I suffer from gout and see a doctor when there is pain. I also cannot walk fast and do not particularly think about how to help myself, so I walk slowly.” (P10)*

*“I have hypertension and esophageal reflux and am currently on medication. Hence, I do not pay attention to other problems that I might have, and I seek assistance from nurses when I am unwell.” (P11)*

*“Only after hospitalization and blood testing did I discover that I have diabetes mellitus and hypertension. The doctor periodically prescribes drugs for me to take, and I do not pay attention to discomfort as arrangements are made when necessary.” (P16)*

*“I suffer from hypertension, and the nurse helps me to make an appointment to see the doctor. I take my medication regularly and do not forget my doctor’s appointments.” (P19)*

*“I found that I had diabetes mellitus and hypertension when I went for an examination at the hospital. I collected drugs for hypertension and diabetes mellitus. The nurse would remind me to eat. I have not thought of what will happen in the future and just live normally for now.” (P20)*

### 3.3.4 Relied on Medical Insurance System Regulations to Attend Regular Consultations and Manage Medication Administration (Passive Health Behavior)

The participants felt that they did not need to spend a lot of money when receiving treatment in hospitals and would rely on going to the hospital for medical care if they were unwell in their old age. Therefore, they did not take active health-management actions themselves.

*“I do not think about becoming old and am comfortable staying in the hospital. My food expenses are paid for by my family members. I earn pocket money when I work here; hence, there is nothing to worry about.” (P03)*

*“I am divorced and do not have contact with my children and ex-wife. I also do not have a home, and I ensure that I have a consistent lifestyle by staying in the hospital. Although I am 60 years old, I do not think about what will happen when I am old. If my physical condition is poor, I can only rest in the hospital.” (P20)*

## 3.4 Theme 4: Required Healthcare Resources for Elderly Patients

The participants were worried about having insufficient financial resources in their old age and about being unable to stay in the hospital for a prolonged period until they died. They were worried about maintaining their physical health, their future long-term care arrangements, and about loneliness in old age, which caused them to feel down. They hoped that additional information related to disease and old age could be provided.

### 3.4.1 Required Assistance With Obtaining Health Information, Such as Information About COVID-19, Comorbidities, and Health Problems Experienced by the Elderly

The participants hoped that the medical staff would provide them with guidance related to diseases and old age, including information on pandemic control, bone health, maintenance of muscle endurance, and dental and nutrition care.

*“I feel that old-age problems could be added to health education sometimes, as discussion can be carried out during health education, on topics such as preventing dementia, protecting bones, maintaining muscle endurance, and nutrition.” (P1)*

*“Health education can cover diverse topics, such as fitness, preventing rapid aging, and how to manage aging early. There should be a plan.” (P3)*

*“As I have grown older, my movements have tended to become sluggish. If I am in a room with young patients, I*

*tend to knock into them and fall down. My teeth are in poor condition, as I have no teeth for eating, and I also need to know how to manage my condition.” (P3)*

*“There have been large changes in my movement as I have got older. I am afraid of falling down when I walk and tend to feel like I am falling. I do not know if there are ways to help me.” (P13)*

*“I did not think that I would be hospitalized for a long period of time. My physical strength is decreasing as I age, and my teeth have fallen out. We can act to make ourselves healthy, though, and early discussion would help us to help ourselves.” (P17)*

#### 3.4.2 Required Assistance With Health Management

Participants mentioned that although they should be responsible for maintaining their health, they are also worried about the results of physical examination, but they often could not remember their results as a result of memory loss. To monitor their health, they hoped to find methods that would assist them to record and compare their physical examination results.

*“I hope that the hospital will inform us of the physical examination results. We can only know of our physical health status if there are reports. The hospital should also inform us even if the report results are normal, so that we can start paying attention to our health and identify problems. It would be better if the results could be recorded so that we could compare them with past results to see the differences, rather than them giving us a report sheet, as this is easily lost.” (P1)*

*“The nurse informs me of my blood test results. However, I am old and often forget the results and do not know if there are abnormalities. It would be better if the information were retained. I would not forget the results if the test report were recorded in a booklet, and I could compare them with the previous year and the year before that to look for any differences.” (P5)*

*“We still need to depend on ourselves for our health and ensure that we undergo health examinations. Blood tests can be carried out in the hospital, and they will inform us of the results so that we know if we are healthy.” (P8)*

#### 3.4.3 Required Elderly-Care Living Arrangements or Long-Term Care Resources

The participants were worried about having insufficient financial resources in their old age and about maintaining their physical health and other future long-term care arrangements.

*“We need money as we age, as everything requires money. Health maintenance also requires money. However, I am broke, now that I am old, and I do not know how to maintain my health.” (P18)*

*“I am also worried that when I become old I will not be able to stay in the hospital, and I will be broke after my discharge and will not have a place to stay.” (P20)*

*“Will the hospital allow me to stay longer if I am aging slowly? My parents are no longer around and my brother does not let me return home. What should I do when I become old?” (P19)*

## 4. Discussion

We found that the participants did not fully understand the comorbidities and accelerated aging that are caused by schizophrenia, and that they therefore reduced their health management behaviors or did not actively implement healthcare actions. However, based on the health management and action experience of patients with schizophrenia during the COVID-19 pandemic, we can understand the nurses continuously explaining health information and the importance of managing health to patients, which can help patients improve their awareness of aging and health management. With repeated explanations and reminders, these patients with schizophrenia were able to manage their chronic health conditions and improve their self-care skills. Healthcare professionals should thus improve their care skills for such patients by analyzing the following themes.

Patients with schizophrenia tend to be overrepresented in congregate living arrangements, which puts them at additional risk for COVID-19 infection. Moreover, deficits in cognition and judgment may interfere with their implementation of recommended measures such as hand washing and physical distancing (Brown et al., 2020; Kozloff et al., 2020). However, the situation in this study was somewhat different in that, during the pandemic, the nurses and other healthcare professionals repeatedly implemented the official healthcare guidance publicized via the mass media, for example by providing masks and alcohol disinfectants, which enhanced the patients' ability to recognize and control COVID-19 infection. The controlled health behaviors implemented in all general interactions in the inpatient ward highlighted the importance of health management behaviors for controlling COVID-19 infection, and this improved the patients' willingness to implement these behaviors. Importantly, the



results of this study show that, despite the impact of schizophrenia on their cognitive and executive functions, these patients were able to learn and implement new health-management behaviors in coping with the COVID-19 pandemic. Patients with schizophrenia may be vulnerable to the effects of the COVID-19 pandemic. Some of the proposed strategies included providing up-to-date information tailored toward this particular patient population. Moreover, additional support to maintain healthy lifestyle habits and continuation of required care for underlying medical conditions were recommended (Druss, 2020; Zhand & Joobar, 2021).

Accordingly, patients may similarly be able to learn and perform health management behaviors that mitigate chronic diseases and health problems associated with schizophrenia and aging. Some strategies proposed for achieving this would include providing up-to-date health information tailored to vulnerable populations, providing additional support for maintaining healthy lifestyle habits, and continuing required care for underlying medical conditions. The fact that the patients requested health information and expressed concerns regarding health management suggests that they were motivated to manage their health and behavior themselves during the COVID-19 response period. To enhance the health behavior of middle-aged patients and prevent health problems, such patients should be educated about the comorbidities associated with schizophrenia, including accelerated aging.

Patients with schizophrenia experience accelerated aging and other challenges that are not typically experienced by the general population. Our participants expressed concerns about health problems that significantly affected their quality of life, and they also experienced a lack of health information regarding the aging and comorbidities associated with schizophrenia, which may exacerbate chronic schizophrenia. Our participants said that they were troubled by tooth damage and loss because they had failed to detect severe dental damage or implement preventive dental care in time to prevent tooth loss. A systematic review and meta-analysis revealed a paucity of oral healthcare behaviors, including tooth brushing and going to the dentist, among people with serious mental illness (Tabvuma et al., 2022). Another study showed that, compared to the general population, patients with schizophrenia were less likely to have had tooth scaling or dental treatment, but more likely to have undergone dental extraction (Denis et al., 2020). Further, a narrative review found that people with mental health disorders had poor oral health and inadequate access to dental services. (Slack-Smith et al., 2017). Overall, the published literature identifies barriers to healthcare at the individual, organizational, and systemic levels. Patients with schizophrenia are hampered by organizational problems (e.g., unavailability of equipment, poor infrastructure, understaffing, hospital pharmacy issues, and insufficient health-promotion/lifestyle interventions), patient-related issues (deficits in awareness of physical problems, nonadherence, need for accompaniment), and financial barriers. Lower levels of knowledge of physical illnesses and a lack of understanding of preventive behaviors have been shown to be common among patients with psychosis. Because poor knowledge is associated with poor health-related behaviors, physical health education should be provided to patients with psychosis (Kim et al., 2019; Kohn et al., 2022).

Under the Taiwanese public health insurance service system, which has a high enrolment rate, psychiatric patients have frequent contact with medical professionals during both hospitalization and outpatient treatment. It also highlights the fact that healthcare professionals should be aware of their patients' knowledge and health-management behaviors. Similarly, patients must provide information about their health-management skills and practice performing health behaviors in order to manage or reduce the comorbidities and mortality associated with mental illness.

Studies have shown that even mental care professionals have negative stereotypes concerning patients with severe mental illness, especially schizophrenia (Loch et al., 2013; Nordt et al., 2006). Physical healthcare can be complicated by psychiatric impairments such as cognitive and communication deficits and reduced pain sensitivity. Accordingly, healthcare professionals should not focus only on screening and performing emergency care to improve the physical health of patients with severe psychiatric conditions, but also on providing preventive care and health monitoring (Maj et al., 2020). However, professional psychiatric staff tend to focus on changes in psychotic symptoms, etiologies, the effectiveness of psychotropic drug treatment, and risky behaviors in their patients. For patients with stable mental illness, more attention should be paid to their autonomous behavior and functional rehabilitation under continuous drug treatment. However, our understanding of the practical effects of accelerated aging and the impact of comorbidities on health and disability is insufficient, let alone our knowledge of how best to provide health guidance and preparation for middle-aged and elderly psychiatric patients. Studies have shown that psychiatric nurses lack sufficient training and experience to identify and treat somatic health problems in people with severe mental illness, which adversely impacts the health awareness, implementation of health behaviors, and early prevention of aging, chronic diseases, and health problems of patients with mental illness (Kohn et al., 2022). The participants in this study exhibited stable

improvement in their psychiatric symptoms but expressed a need for assistance in obtaining health information regarding their disease comorbidities, health problems associated with aging, bone and muscle health maintenance, and dental and nutritional care. They believed that their positive symptoms had improved over time, which they attributed to the active development of self-management skills and the strategies they used to cope with hallucinations and delusions. Only some of them experienced commensurate improvements in their capacity to attain functional recovery (Shepherd et al., 2012).

The participants expressed concern about being lonely in old age and becoming homeless, which affected their mood. Research in Taiwan has shown that patients with schizophrenia are most concerned about health self-care because they live alone in the community and lack the resources to care for themselves. The care that elderly patients can perform for themselves is hindered by declining health, aging, and chronic diseases. Further, a lack of access to healthcare resources and activities causes patients to feel anxious and helpless, which adversely affects their mental recovery and increases mortality (Liao & Rong, 2020). Patient evaluation is the cornerstone of successfully implementing tailored physical health services. Taking account of the patient's perspectives in physical healthcare evaluations results in constructive and relevant recommendations that improve physical healthcare services, policy, and future research directions. Improved physical healthcare is a pressing need for patients with schizophrenia; a few simple tools to assess and record key physical parameters, combined with lifestyle intervention and pharmacological treatment, could significantly improve their physical outcomes (Heald et al., 2010). A qualitative study showed that health self-management behaviors among patients with schizophrenia were driven by motivation. When well balanced and at an appropriate level, these behaviors were effective in achieving psychological and physical health (Katakura et al., 2013). The findings of another study underscore the feasibility and acceptability of health promotion programmers and highlight the need to further develop multi-modal programs according to the needs of the target group (Kirschner et al., 2022).

## 5. Conclusion

This study analyzed the experiences of middle-aged and elderly inpatients with schizophrenia in the context of health problems such as COVID-19 infection, aging, and comorbidities associated with schizophrenia in a psychiatric hospital in Taiwan and investigated the factors that hindered or promoted health behaviors. We identified factors that contributed to the patients' ability to perform health behaviors related to infection control during the COVID-19 pandemic. Health behaviors can help to prevent the accelerated aging and comorbidities in people with schizophrenia. Based on these findings, the healthcare team continues to teach infection-prevention self-care behaviors for the control of COVID-19, and to observe and remind patients to correct inappropriate behaviors. The provision of protective resources for infection control facilitates the implementation of infection-control behaviors by patients. The patients' health behaviors and their interactions with the professional care team demonstrate that those with stable psychiatric symptoms can implement health-management behaviors in response to continuous education, prompting, and access to health self-management resources.

Middle-aged and elderly patients with schizophrenia have had an increased risk of morbidity and mortality during the COVID-19 pandemic due to the accelerated aging and chronic comorbidities associated with schizophrenia. Therefore, they should have a higher level of awareness of their overall health status and be able to perform health management behaviors to maintain their overall health. During the pandemic period, such patients have still required continuous health management and care for health problems such as frailty and metabolic, cardiovascular, and oral disease. The results of the interviews in this study show that our participants lacked an awareness of the risk of accelerated aging associated with schizophrenia. This suggests that the accelerated aging, multiple health problems, comorbidities, and their high level of reliance on healthcare professionals, are important factors that hinder patients from implementing healthy behaviors.

We found that our participants had gained experience in implementing health management behaviors during the COVID-19 pandemic, and they expressed concerns about health problems that significantly affected their daily lives. Healthcare professionals should provide care that aligns with the needs of their patients, continuously educate them and provide health information, observe their behaviors in their daily lives, and enhance their skills in learning and implementing health behaviors. With the assistance of health insurance resources, patients with schizophrenia can improve their awareness of aging and disease comorbidities and establish appropriate health-management behaviors, just as they were able to respond appropriately to the COVID-19 infection problem.

## 6. Study Limitations and Recommendations

The limitations of this study are mainly related to the location of the participants; due to the COVID-19 crisis, we were not able to recruit participants from other locations. We selected inpatients with schizophrenia for

interviews and observation of their health-management behaviors. Our findings reflected the patients' experiences of coping with COVID-19 and factors influencing their health behaviors in this psychiatric hospital. However, our findings reflect only the experiences of patients in this specific setting, which may differ from those of patients in other settings. Further research is required for the continued exploration and development of intervention programs.

### Acknowledgements

We are grateful to thank all of the participants. We express our sincere gratitude to the clinical experts at Bali Psychiatric Center, Ministry of Health and Welfare for supporting this study.

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