



Barriers and facilitators of exercise behaviour for frail older adults in nursing homes: protocol for a qualitative study in China

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ABSTRACT

Exercise is significant for older adults to improve their poor health outcomes. It can delay weakness, enhance the quality of muscle and body balance, and prevent adverse events. However, the factors that hinder or promote exercise among frail nursing home residents are unclear. Few studies have investigated the exercise-related experiences and coping strategies of frail older adults, and it is necessary to further understand the overall situation among older adults. Therefore, this study aims to obtain information about the impact of exercise-related barriers and facilitators on the daily life of frail older adults and how they cope with this condition. Qualitative research design uses a phenomenological framework. Older adults participating in the study will be invited to describe their life experiences with exercise-related barriers and facilitators, the impact on their daily lives and the strategies they use to cope with the condition. This study will use purposeful sampling to ensure the sample provides informative cases representative of frail older adults with exercise-related barriers and facilitators. Face-to-face, personal and semi-structured interviews will be conducted in nursing homes in Sichuan, China. A trained qualitative researcher will conduct interviews. Transcripts will be analysed using NVivo V.10 qualitative software, and themes will be synthesised to highlight the critical issues raised by frail older adults about the exercise process. Understanding the awareness of frail older adults on exercise management care will help improve the existing health services in this area. This research data will be used in future research to develop a validated survey, which can be used by medical staff working in nursing homes to understand and strengthen the health service provision of frail older adults.

BACKGROUND

The proportion of the older adult population in the world population is large and growing.¹ In 2019, about 700 million older people worldwide were expected to double by 2050, with the number of people over 80 expected to triple.² According to the data of the National Bureau of Statistics of China, by the end of 2019, the population aged 60 and above in China was 260 million, accounting

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Frail older adults in nursing homes frequently encounter barriers to engaging in exercise, such as mobility limitations, lack of motivation and insufficient staff support.
- ⇒ Exercise programmes have demonstrated potential to improve physical function, reduce risk of falls and enhance quality of life in this population.
- ⇒ However, there is limited research exploring the unique contextual challenges and facilitating factors specific to nursing homes in China.

WHAT THIS STUDY ADDS

- ⇒ By using a qualitative approach, this study protocol will systematically investigate the perceptions of frail older adults, caregivers and other stakeholders within Chinese nursing homes.
- ⇒ The findings will offer culturally relevant perspectives on the barriers and facilitators of exercise behaviour in this population, thus contributing to the current body of knowledge.
- ⇒ The protocol will demonstrate how data from diverse perspectives can inform the development of more feasible and acceptable exercise interventions.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Study outcomes will inform targeted, evidence-based interventions that address the structural and cultural factors influencing exercise engagement in Chinese nursing homes.
- ⇒ Clinicians and nursing home administrators may use these findings to refine staff training, resource allocation and the design of physical activity programmes.
- ⇒ Policymakers will incorporate these insights into guidelines or policies that promote safe, accessible and effective exercise opportunities for frail older adults in institutional care settings.



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for 18.8% of the total population and the population aged 65 and above was 176 million, accounting for 12.6% of the total population. China's population ageing level will peak in the next 20 years.³ China has entered a stage of rapid ageing and has become the most

ageing developing country in the world.⁴ With the deepening of the ageing degree of Chinese society, the rate of empty nests, advanced age, disability and dementia in older adults rises, and the demand for long-term care for older adults also overgrows. Optimising older adults' care services has become a social problem that needs to be solved urgently. Research shows that the proportion of older adults who choose to provide for older adults in communities and institutions in China has increased from 4.21% in 2014 to 5.62% in 2018, and providing for older adults in institutions has become an important form to meet the needs of the older adults.⁵

Due to the decline of physical function, older adults will have various problems when they stay in the nursing home, such as falling, weakness, pressure sores.⁶ Frailty is defined as the non-specific state of increased vulnerability and decreased anti-stress ability in older adults due to the decline of physiological reserve function, an essential old-age syndrome.^{7–9} Under the influence of multiple factors such as ageing and chronic diseases, the parts of older adults' nervous, respiratory, digestive, immune and other systems are reduced, and they are more prone to physical weakness. The incidence of frailty increases with age, often accompanied by sleep disorders, cognitive decline and so on. Research shows that older adults in pension institutions are more susceptible to frailty. There are generally more senior people in pension institutions, and the frailty degree is more severe than that of older adults in communities. At present, faltering is considered reversible, which is the pre-disability state of older adults. If early individualised intervention is given, it can increase the body reserve, effectively reverse, slow down the progress and reduce the occurrence of adverse outcomes. According to the research, the incidence of frailty of older adults in foreign communities is 10.7%~17.4%, the incidence of the weakness of older adults in older adult care institutions is 52.3%,^{10–12} and the incidence of frailty in communities, older adult care institutions and hospitals in China is 12.8%, 44.3% and 22.6%, respectively.^{13 14} The nursing home has a high incidence of frailty.

Physical inactivity is now proven to be a significant risk factor for frailty and disability in older people.¹⁵ On the contrary, studies have shown that regular exercise can delay weakness, improve muscle mass and body balance, and prevent adverse events.¹⁶ The primary mechanism is that physical activity can protect or enhance the function of several critical systems affected by age, including endocrine, respiratory, cardiovascular and skeletal muscle.^{17 18} In addition, previous research has found that exercise improves depression and health-related quality of life in frail and prefrail older adults.¹⁹ The WHO's Global Recommendations on Physical Activity for Health states that adults aged 65 and over should perform 150 min of moderate to 75 min of vigorous aerobic activity and two or more days of muscle-strengthening activities (ie, strength/resistance training) per week.²⁰ Exercise is of great benefit to the older adults. However, 87.6% of the non-frail older adults in nursing institutions often

exercise. Only 41.7% of frail older adults often exercise, and frail older adults are more likely to have sedentary behaviour.^{13 21} There are few related studies on hindering the exercise of frail older adults, and there is a lack of research on the experience and view of the training of frail older adults. Therefore, this study aims to understand the exercise experience and opinions of older adults with weak nursing institutions and the relevant factors that promote and hinder older adults when they exercise. The information obtained from the targeted survey will provide better information support for health-care practitioners in nursing homes.

Aims and objectives

The overarching aim of this study is to explore the lived experiences of frail older adults on how to exercise. Specifically, this study aims to investigate the following:

- ▶ How is frailty affecting older adults exercise in daily life?
- ▶ Whether older adults feel they can cope with exercise.
- ▶ Strategies that frail older adults use to deal with movement.
- ▶ Support that frail older adults may have or need to help them manage with exercise.

METHODS/DESIGN

Design and setting

This protocol is written based on Consolidated Criteria for Reporting Qualitative Research (COREQ) and Standards for Reporting Qualitative Research.²² A qualitative study will describe the lived experiences of frail older adults' exercise in nursing homes.^{23 24} This design will enable participants to describe their experiences of how exercise affects their daily life, the strategies they use to cope with movement and the support they may have or require to allow them to manage practice in nursing homes. Qualitative research is crucial because little is known about exercise experience in frail older adults. This approach will enable us to obtain a detailed description of how frail older adults perceive and think about exercise.

This study will be situated within a phenomenological framework as we attempt to understand the experience and expressions of the person who has lived it.²⁵ A phenomenological framework requires the researchers to examine the issue from the perspective of individuals with first-hand experience. As the participants in our study are frail older adults living in nursing homes, the phenomenological methodological framework is particularly relevant.

This study will be conducted at nursing homes in different regions of China from April 2025 to July 2025. China is a large developing country with varying economic and cultural levels in each area. To make the sample of this study more representative, frail older adults in nursing homes in different regions such as western, central and southern China are selected as the objects of this study.

Participants

Participants will be recruited from different nursing homes. Attempts shall be made to include culturally and linguistically diverse frail older adults who speak Chinese to ensure we hear various voices. Inclusion criteria will include: (1) age ≥ 60 years; (2) stay in nursing homes for ≥ 1 year (The more extended the older adults stay in the nursing home, the more they adapt to the nursing home. Considering the influence of the adaptability and stability factors of the nursing home for the older adults on the interview results, the duration of the study subjects' stay in the nursing home is defined as ≥ 1 year.); (3) Tilburg Frailty Score ≥ 5 (identified as frailty)²⁶; (4) good language expression and communication skills; (5) informed and consented to the study. Exclusion criteria will include: (1) inability to cooperate (mental illness or disturbance of consciousness); (2) long-term bed; (3) participating in another research study.

Research team

It is necessary to describe the researcher's background, qualifications and training according to COREQ.²⁷ All interviews were conducted by the same investigator (KS, held a master's degree in geriatric nursing, and received systematic training on theoretical knowledge and practical skills of qualitative research) through the same outline to minimise predictable bias. She has been practicing clinical nursing for 4 years. Her major research interest is improving the quality of life of older adults. Other researchers all have master's degrees or above, have received training related to qualitative research and are familiar with qualitative and medical research.

Procedure

Before this interview, researchers will go to nursing homes to recruit participants and establish ways to connect with older adults. Researchers will bring gifts to visit the older adults in nursing homes as an incentive to participate, acknowledge the time and keep in touch with them to increase their sense of familiarity and trust. The researchers will contact each participant to schedule a face-to-face interview at a mutually convenient date and time at nursing homes. Participants will complete interviews about their exercise-related impediments and facilitators in daily life. Information about their socio-demographic background, country of birth, self-identified ethnicity, marital status and current physical activity level will also be collected. The researchers will analyse this information to provide a sample population profile. This information may guide further purposive sampling to ensure that the total sample recruited for this study is representative of the broader characteristics of the frail older adults who live in nursing homes.

Semi-structured interviews will be used to interview the participants. The frail older adults will be asked about attitudes towards exercise, what kind of physical exercise they take, what factors promote or hinder the activity

of the older adults, what the difficulties encountered in daily practice are and how to solve them.

The interview information will be recorded by audio recording. The interviewer will also make written notes during and after each interview, which may include observations, thoughts and ideas about the discussion and other information about the participants' responses.²⁸

The interviews will be transcribed verbatim. All participants will be allowed to review and edit their interview responses. If the participants feel that the transcript contains the information they feel uncomfortable using, they can revise the interviews. Researchers will endeavour to shorten the time between completing interviews and receiving transcripts for review.

This study adopted a method from previously reported work with slight modifications. After the face-to-face interview and submission of the completed diary, all participants will be invited to a focus group meeting to discuss whether they have put forward any new information.²⁹ The focus group will consist of five or six frail elders. They will be conducted by researchers who have completed all face-to-face interviews and guide participants through the interviews.³⁰ Allowing participants to attend a focus group will qualify for interaction to explore and clarify their reactions, attitudes and perspectives and provide participants with different ways to tell their stories.³¹ Responses in a group setting may differ from those in individual interviews or the diary method.

Patients and public involvement

Because this protocol is a frail older adults' project, there will be no public recruitment. This study seeks to involve frail older adults who live in nursing homes. Participants will not be involved in the study's design, the development of interview questions or the conduct of the study. The frail older adults who participate in this study will not be involved in the study's design, the development of the interview questions or the conduct of the study. They will be interviewed to understand their attitudes and experiences with exercise better. Frail older adults will also be invited to comment on the text and the analysis results. The results will be shared with those who are interested.

Sample size

Purposive sampling is used until the data is saturated and no new themes or ideas are extracted, reaching theoretical saturation.^{32 33} Saturation means that the new data collection does not further clarify the problem being investigated.^{34 35} Research within the phenomenology methodology has suggested that this requires between 5 and 25 participants.³⁶ In this study, we will aim to interview at least 25 frail older adults to ensure the richness of the data with a broad and diverse sample and to provide confidence that saturation will be reached.

Data collection

The phenomenological research method was adopted for the research. Relevant literature was consulted,

Box 1 Interview guide

Demographic questions

Age, gender, level of education, marital status, number of children, number of chronic diseases, Geriatric Frailty Scale score, years of stay in the nursing home and number of drugs taken.

Main questions

- ⇒ What do you think about exercise for the older adults?
- ⇒ Have you ever discussed your exercise concerns with health professionals or other medical staff? Why?
- ⇒ Is there adequate information about exercise?
- ⇒ Please describe how you usually exercise.
- ⇒ How many times do you exercise a week?
- ⇒ What kind of exercise do you usually choose in the nursing home?
- ⇒ How long do you exercise each time?
- ⇒ What motivates your exercise in daily life?
- ⇒ What problems do you experience when exercising?
- ⇒ Do you have any negative experiences that would discourage your exercise?
- ⇒ What are your worries about exercise?
- ⇒ How did you solve these difficulties?
- ⇒ Will exercise benefit you?
- ⇒ What happens to your body and mind after regular exercise?

and the semi-structured interview outline of qualitative research was formulated through the research group discussion.³⁷ Data collection consists of three instruments: semi-structured interviews, socio-demographic and background information and field notes. Socio-demographic data include age, education level, information source, number of children, occupational status and income status. We will also collect information about exercise, including frequency of activity, duration of the training, the promoters of practice and factors in motor difficulties.

With the consent of the participants, each interview will be recorded using an audio recorder.³⁸ Before the interview, participants will be assured of the voluntary nature of their participation in the study and their right to withdraw at any stage.³⁹ Since the interview needs a quiet, private and appropriate place and time, we will ask participants to express their thoughts when they can participate fully. The interview will last 30–40 min.⁴⁰ The questions for the interview topic guide are listed in [box 1](#). The second author (YL) will conduct pilot interviews, and the research staff will resolve their deficiencies. A research professional trained in qualitative methodology (second author) will show all discussions. The interview audio files will be transcribed verbatim without considering identifiers such as names.⁴¹

Data analysis

As an independent qualitative description method, thematic analysis mainly describes ‘a method to identify, analyse and report data patterns’.⁴² Thematic analysis will be performed, where each recorded interview will be listened to several times to make sense of the data and the interview as a whole.⁴³ The analytical process will be

guided by the interpretive description method and will be divided into the following four stages:

Phase 1: Transcription of the audio files.

Phase 2: Familiarise with the data and generate the initial code.

Phase 3: Comparing, contrasting and searching for topics.

Phase 4: Develop the patterns and review the themes.

In the first phase, qualitative data will be transcribed verbatim, cleaned up and preserved by the moderator (XZ). Microsoft Word will be applied to support the analysis process. In the second stage, the two authors (YL and CL) read the entire transcript, familiarised themselves with it and began the initial coding.³³ In the third stage, the two authors (KS and CL) will code and organise each interview according to the research questions (this phase will be assisted by NVivo V.10 software). Synchronously, constant comparison analysis will be done to find similar and different themes within and across interviews. To enhance the credibility of the data, all authors reviewed the data several times for clarification and consensus until the explanatory topics were finally described. These steps help us achieve a comprehensive insight and provide a consistent and relevant data description.

DISCUSSION

This project will provide exercise information and experiences for frail older adults in nursing homes. The project will fill gaps in the literature and increase conceptual understanding of the exercise experience of frail older adults, which is poorly understood. It is contended that a greater understanding of the impact of exercise on daily life, together with information about the strategies frail older adults use to help cope, provides information for healthcare providers to offer sensitive and practical support to older adults in this phase of their lives. It is suggested that the medical staff in the older adult care institutions should improve their exercise awareness and innovate the exercise mode of the older adult care institutions. In addition, the knowledge gained will increase the broader community’s awareness of the burden that older adults may cause society.

The findings of this project may lead to follow-up research to investigate novel ways of providing support to older adults with frailty and improving pathways of care to help older adults effectively manage this condition. Therefore, the results of this study will contribute to a new perspective on the exercise of older adults and provide insight into the views of different types of socio-economic and demographic families on the movement of nursing homes. The medical staff should help the older adults cope with the weak identity crisis to improve the physical function and activity ability of the frail older adults in the older adult care institutions and promote the development of healthy ageing.

Strengths and limitations of this study

- ▶ This study aims to better understand how older adults in nursing homes exercise daily and how they cope with the situation.
- ▶ A diverse and comprehensive sample of frail older adults in nursing homes about exercise-related obstacles and facilitators will be included, such as those from varying areas.
- ▶ Uses rigorous design and methodology to capture the lived experience of frail older adults in nursing homes.
- ▶ It will provide knowledge that will inform medical staff in nursing homes and determine the best support(s) needed so that sensitive healthcare practices can be implemented for older adults.
- ▶ Due to the limited capacity and availability of interpreters, data analysis will be conducted in English, so some subtleties of the local language may have been lost in translation.

Ethics approval and consent for participation

This study complies with the International Ethical Guidelines for Biomedical Research and Declaration of Helsinki, which has been approved by the Human Research Ethics Committees of The Affiliated Hospital of Southwest Medical University (No: KY2019274) and People's Hospital of Deyang Human Research Ethics Committee (No: 2019-04-150-K01). Researchers will carry out the study following relevant guidelines and regulations. Written informed consent will be obtained before each interview. Participants will be informed about the study objective and voluntary participation. The study team will disseminate project outcomes via publication, conference presentations, workshops and webinars.

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