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The health care needs of multidimensional frail elderly patients with multimorbidity in primary health-care settings: a qualitative study

Linlin Zhao[1†], Bingjie Chang[1], Qinghua Hu[1], Xiaolei Chen[2], Juan Du[1] and Shuang Shao[1*]

Abstract

Purpose Our study aimed to explore the health care needs of older adults with multimorbidity assessed as multidimensional frailty from their perspective in Beijing, China, in primary health-care settings.

Methods This study was conducted using a qualitative approach involving semi-structured interviews of 21 participants at the Outpatient clinic, in four primary health care institutions (PHCIs), Beijing, China. The subjects were drawn from a cross-sectional survey that assessed multidimensional frailty in older adults with multimorbidity. The participants meeting the criteria were selected through purposive sampling until subject saturation. The interviews were transcribed and organized verbatim and then subjected to thematic analysis using inductive approach.

Results A total of four themes on the needs of the multidimensional frail elderly patients with multimorbidity were identified, including improving physical functioning, adjusting psychological status, obtaining social support, and choosing health care modalities. Improving physical functioning was their co-occurring need, regardless of the score on the physical frailty dimension. In contrast, it is when increased psychological and social frailty has an impact on physical functioning that might drive patients to develop psychological and social demands.

Conclusion This exploratory study is helpful to understand the healthcare needs of the multidimensionally frail elderly patients with multimorbidity from the perspectives of individuals, families, and society, in turn formulate healthcare promotion strategies. Appropriate policies and measures should be taken, such as integrating multidimensional frailty assessments into current multimorbidity management protocols, developing personalized interventions centered on patient needs, conducting family function assessments and caregiver training programs, and enhancing the integration of social resources.

Keywords Multimorbidity, Multidimensional frailty, Health care needs, Qualitative study, Elderly

[†]Linlin Zhao contributed equally to this work.

*Correspondence:
Shuang Shao
shaoshuang@ccmu.edu.cn
[1]School of General Practice and Continuing Education, Capital Medical University, 10 You'anmen Outer West 1st Street, Beijing 100069, China
[2]Department of general practice, Beijing Jishuitan Hospital, Capital Medical University, No. 31 Xinjiekou East Street, Beijing 100035, China

Introduction

By the end of 2023, the elderly population above 60 years old has reached nearly 30 million in China, accounting for 21.1% of the total population, which indicates that China has entered a period of moderate aging stage. It is also estimated that the proportion will exceed 30% by 2035, entering a period of severe aging stage [1]. With the aggravation of aging, the burden of chronic diseases in the elderly population is increasing, and multidimensional frailty and multimorbidity have become research focuses in the field of healthy aging. In recent years, there is a growing recognition of the multidimensional attributes of frailty. Multidimensional frailty emphasizes the absence of multiple functional domains such as physiology, psychology and society with the increase of age [2]. Multimorbidity is the coexistence of two or more diseases in an individual [3]. The two issues are intricately interlinked and the affected population partially overlaps. The elderly with multimorbidity often have impaired physical health and mental health problems, which increase the susceptibility to external stimuli, in turn increasing the possibility of developing to multidimensional frailty [4–5]. In other words, multidimensional frailty may result from the coexistence of multiple chronic diseases, with an upward trend in the prevalence of multidimensional frailty along with an increasing number of multimorbidity [6–7]. Correspondingly, the multidimensional frail populations often comorbid multiple chronic diseases [4]. Additionally, older adults with both multidimensional frailty and multimorbidity were at higher risk of adverse health outcomes, such as the risk of disability, hospitalization, or death, as well as being associated with rising health-related costs [4, 8, 9].

The diagnosis of multimorbidity is often based on the number of coexisting conditions, reflecting higher disease burden, increased risk of adverse health events, and greater healthcare utilization among older adults [10]. Nevertheless, it is often overlooked that patients with stable versus unstable multimorbidity exhibit entirely different functional statuses. Consequently, both national and international guidelines recommend a comprehensive geriatric assessment to predict the risk of multidimensional frailty for the elderly with multimorbidity [11–12], evaluating multidimensional functional declines caused by coexisting diseases. Given the high prevalence of multidimensional frailty and the shortage of geriatric specialists, there is an urgent need to implement multidimensional frailty screening in primary health-care settings, supported by general practitioner teams delivering integrated management strategies [13–15].

Managing older adults with multimorbidity and multidimensional frailty requires a holistic focus on overall functional status, rather than isolated diseases, due to the intertwined challenges of aging and frailty. This requires prioritizing patient-centered care to address their multifaceted needs. However, current management approaches for this population remain non-standardized and face systemic barriers. Traditional models emphasize physical assessments and physician-dominated decision-making [16], often neglecting psychological, social, and economic dimensions. This perpetuates mismatches between service provision and patient needs [17]. Recent studies highlight that multidimensionally frail individuals with multimorbidity face accelerated health deterioration and an increased risk of experiencing avoidable hospitalization, requiring complex and layered care [18–19]. It means that such populations have more social care needs, such as outpatient health care and home-based health care [18], to prevent fragmented management and reduce preventable admissions.

Compared to the extensive quantitative literature, qualitative studies exploring the experiences, perceptions, and needs of multidimensional frail older adults remain scarce. Exceptions include Singaporean [20] and British [21], studies using interviews to describe the physical, psychological, social, and functional challenges faced by multidimensionally frail older adults. They often strive to maintain health through activities they engaged in prior to multidimensional frailty, such as exercise [22]. In China, where primary care systems remain underdeveloped and healthcare resources are concentrated in tertiary hospitals, existing research on frail older adults' needs is predominantly conducted in inpatient settings [23–24]. However, there is a lack of qualitative analyses exploring the comprehensive needs of community-dwelling older adults with multimorbidity and multidimensional frailty in primary care contexts.

Under favorable policy support and robust economic foundations, the Chinese government has pioneered the implementation and refinement of initiatives such as the family doctor system and the National Essential Public Health Service Program in large and medium-sized cities with high aging rates, including Beijing and Shanghai. These efforts are committed to developing primary healthcare networks aimed at achieving comprehensive coverage of health management for key populations, including the older adults with chronic disease. Building on these initiatives, this study selected the PHCIs in Beijing as research sites, so as to provide a reference for other large and medium-sized cities to explore in related areas. Accordingly, we conducted qualitative interviews with the elderly with multimorbidity assessed as multidimensional frailty in this study, to discover their inner needs of individual, family and social at multiple levels. The findings might contribute to the development of precise intervention programs to slow down the progression of frailty in the elderly with multimorbidity, in turn achieving healthy aging.

Methods

Study design

This descriptive phenomenological study was conducted using a qualitative approach involving semi-structured interviews of multidimensional frail older adults with multimorbidity in PHCIs of Beijing, China. The semi-structured interview guidelines were used to guide the interviews, which were developed by two researchers through reading a large body of literature, with other members of the research team involved in discussing revisions. This study followed the Standards for Reporting Qualitative Research (SRQR) guidelines [25].

Participants and recruitment

This part of the study was based on the previous cross-sectional research, which conducted questionnaire surveys of the elderly with multimorbidity in four community health centers in the urban area of Beijing. In the first stage, the "criterion sampling" strategy of purposive sampling was used, that is, the sampling access criteria were set in advance, and then individual cases meeting the criteria were then selected for this study [26]. Inclusion criteria: (1) two or more chronic non-communicable diseases; (2) presence of multidimensional frailty was assessed by the Chinese version of Tilburg Frailty Indicator (TFI) [2, 27], i.e., the total score was ≥ 5 points; (3) willingness to participate in this study. Exclusion criteria: (1) expression or communication disorders; (2) with a history of mental illness; (3) in a terminal state of illness.

The previous cross-sectional study selected ≥ 65 older adults with multimorbidity from January to May 2024, ultimately enrolling 919 participants from outpatient clinics at four PHCIs in Beijing, China. A total of 391 participants who met these criteria in the first stage. In the second stage, some participants were selected for semi-structured interviews with the maximum variation sampling [20]. We made efforts to ensure that participants were represented on a series of factors, such as age, gender, household registration, personal income, type of multimorbidity, type of frailty, etc. Furthermore, we incorporated the health empowerment as proxy indicator for disease-related knowledge acquisition and self-management capacity, thus partially ensuring sample diversity in health literacy levels [28]. The sample size was determined according to the principle of thematic saturation [29]. In this study, no new information appeared when the 18th interviewee was interviewed, and 3 additional interviewees confirmed that no new themes appeared. In the end, 40 participants were invited, 18 of whom refused to be interviewed, one person's interview was interrupted, so they were not included, and 21 of whom were included in the study.

Research team

The research team consisted of a professor, an associate professor, a GP, and three graduate students. The interviews were conducted by a trained graduate student in qualitative interviewing under the supervision of the associate professor. All researchers have experience in spot field investigation and qualitative research.

Data collection

Individual in-depth interviews were conducted with participants in the rest rooms of community health service centers or by online telephone from July to August 2024. The researchers explained the purpose of and the content of the interview to the participant before the interview. After obtaining the informed consent of all participants, the whole interview was recorded and transcribed word by word. The researchers adjusted the order of the questions and asked follow-up questions as appropriate, keeping each interview last 15 to 30 min. During the interviews, the researchers remained respectful and objective.

Our interview questions were designed with a hierarchical progression. The initial questions primarily served as open-ended initiation, focusing on broad experiences of multidimensional frailty, such as, " What are the difficulties caused by multidimensional frailty for the participants?" Subsequently, follow-up questions were tailored based on participants' responses to explore specific needs, for example, " What obstacles do participants face in dealing with the problems caused by multidimensional frailty on their own? Or what help or support would participants like to obtain from their families, community health centers, or community organizations in primary health-care settings?" Finally, contextual validation was conducted for participants with insufficiently detailed responses using prompts such as, " How will the specific services or support listed above help the participants?" This structured approach ensured systematic verification of the prioritization of needs. The interview guide is detailed in the appendix1.

Data analysis

The interview data underwent independent dual-coding by two research team members to ensure analytic rigor and minimize individual coding biases. Within 24 h after the end of the interviews, the researcher transcribed the interview recordings into text form and imported them into NVivo12 software. Thematic analysis was used to sort out, summarize and code the interviews.

To ensure the rigidity of the results, two researchers from the research team analyzed the data separately. The specific steps were as follows: Firstly, the researchers read all the interviews to facilitate a comprehensive understanding and the overview of the data. Secondly,

Table 1 Characteristics of the participants

Items	Groups	Number(*n*)	component ratio(%)
age(year)	65–69	1	4.76
	70–74	7	33.33
	75–79	4	19.05
	80 and above	9	42.86
Gender	Female	16	76.19
	Male	5	23.81
	Primary school degree	5	23.81
Education	Junior high school degree	7	33.33
	Senior high school degree	4	19.05
	Technical secondary school or above	5	23.81
Income	Below 4000	5	23.81
	4000–5999	10	47.62
	6000and above	6	28.57
Health Empowerment	High level of health empowerment	10	47.62
	Low level of health empowerment	11	52.38
Type of Frailty	Physical frailty	15	71.43
	Psychological frailty	16	76.19
	social frailty	11	52.38
NCDs	Hypertension	19	90.48
	Diabetes	15	71.43
	Coronary atherosclerosis	13	61.90
	Stroke	7	33.33
	Chronic bone and joint disease	13	61.90
	Chronic obstructive pulmonary disease	2	9.52
	Chronic kidney disease	1	4.76
	Chronic gastrointestinal disease	4	19.05
	Cancer	1	4.76

Marginal Notes: The presence of different dimensions of frailty was assessed by the Chinese version of the Tilburg Frailty Indicator (TFI), i.e., fulfilment of the criteria of ≥ 3 points for the dimension of physical frailty, ≥ 2 points for the dimension of psychological frailty, or ≥ 2 points for the dimension of social frailty)

an inductive approach was used to generate the initial codes. Thirdly, the initial codes were compared, categorized and analyzed to form the themes and sub-themes. Fourthly, the researchers focused on the themes, checking whether the themes were relevant to the study, and whether there were correlations between the themes. Fifthly, the researchers analyzed each theme and named in detail. The final step was provided an analytical account of the themes. If there was disagreement in the coding process, it would be discussed by the research team members until a consensus was reached. Coding discrepancies were resolved through a three-stage process: contextual verification through re-examination of raw interview transcripts, deliberative discussions among research team members, culminating in arbitration by a third investigator (senior researcher) to achieve consensus-based resolution.

Ethical approval

This study was approved by the Medical Ethics Committee of Capital Medical University, Beijing, China (ethical review no. Z2024SY026). The study was conducted in accordance with the medical ethical principles of the Declaration of Helsinki. The researchers explained the study in detail to all participants before the survey, and anonymous information was published in this paper after obtaining written consent from the participants.

Results

A total of 21 participants were finally included in this study, with a valid response rate of 52.50%. The characteristics of participants are shown in Table 1. Four themes on the needs of the multidimensional frail elderly patients with multimorbidity were identified: improving physical functioning, adjusting psychological status, obtaining social support, and choosing health care modalities. Improving physical functioning was their co-occurring need, regardless of the score on the physical frailty dimension. In contrast, it is when increased psychological and social vulnerability has an impact on physical functioning that might drive patients to develop psychological and social demands.

Theme 1: improving physical function

Acquisition of disease-related knowledge from multi-channel

Interviewees have a high demand for preventive healthcare knowledge due to the loss of physical function with aging, and the long duration and multiple complications of chronic diseases.

> *"There should be more lectures on the prevention of common diseases in the community, which are easy to understand and enable patients to prevent themselves." Participant7.*

Additionally, they are eager to learn about chronic diseases in a variety of ways, including health information talks and health education prescriptions.

> *"We should know more about chronic diseases of the elderly by carrying out science popularization activities or issuing information leaflets." Participant16.*

In addition, there is a growing demand for online health information.

"Nowadays, the internet is developing rapidly, extremely rich in information. I will go to Baidu to find information to solve problems once I am not feeling well." Participant5.

The feedback underscores an escalating demand among this population for integrated online-offline health education delivery models.

Controlling physical symptoms

Fatigue, weakness, and impaired ambulation were the most frequently reported physical symptoms, significantly impacting daily living activities.

"*I feel fatigued most of the time and exhausted in doing everything. " Participant3.*

" My health is deteriorating—I can't see clearly and even walk downstairs. What's the point of living? " Participant10.

Respondents desired to maintain or improve their current physical health status by regular exercise, but lack of professional guidance.

"*I'll go for a walk, but have no idea how to exercise to stay in good shape." Participant11.*

Access to scientifically valid professional guidance is a critical need for maintaining physical function.

Rehabilitation services

With the reduction in muscle mass and muscle strength, there was an increased demand for rehabilitation therapy in multidimensional frail older adults driven by pain and mobility problems.

"I have a lumbar herniated disc that prevents me from bending over and walking, so I need regular acupuncture." Participant 7.

Moreover, patients preferred to receive comprehensive rehabilitation therapy in the primary healthcare setting.

"*Sets up the basic departments, such as rehabilitation, acupuncture in community health centers to save time seeking medical care in big hospitals." Participant 1.*

A diverse range of rehabilitation treatments should be provided by primary care services.

Theme 2: adjusting psychological status

Accompaniment and communication

Fear of aging increases the concern about physical illness in multidimensional frail individuals, which in turn causes excessive tension, worry, and other undesirable emotions.

"I'm always falling when I walk this year, which left me mentally stressed and completely unable to control my nervousness and fear at all." Participant 9.

Whereas it is often the case that negative emotions reduce the frequency of socialization.

"Generally, slow brain response and memory loss are particularly annoying. But I don't usually participate in any activities." Participant 6.

What's more, the elderly were unable to cope with negative emotions on their own, and adverse emotions lead to a physical stress response, which can further exacerbate the disease.

"It's hard for me to control these thoughts that my health getting worse by the day, which rises my blood pressure." Participant 7.

The multidimensional frail elderly patients with multimorbidity would like to alleviate their negative feelings through positive family communication and companionship.

"Usually, the children are so busy at work and have their own families. Considering that it will add to the burden on them, I am embarrassed to let them make more phone calls. However, sometimes I feel uncomfortable and want to chat with them, but they can't do it." Participant 1.

This suggests that fear of physical illness exacerbates psychological burden, while negative emotions exacerbate physical frailty and even social isolation. Moreover, there is a high need for family support and companionship.

Adjusting sleep

The majority of participants expressed that sleep deprivation or poor sleep quality can lead to negative emotions. In turn, negative emotional problems can exacerbate sleep disorders, in turn creating a vicious cycle.

"I sleep for a short time at night, but also dream all the time, and I feel exhausted during the day." Participant 16.

Persistent sleep deprivation led to severe emotional fluctuations.

"Poor sleep makes me irritable—even minor issues can provoke arguments." Participant 6.

Additionally, inadequate sleep worsened underlying health conditions.

"I struggle with falling asleep at night, and insufficient sleep occasionally leads to a sensation of tightness in my chest." Participant 6.

Nevertheless, they have sought medication with unsatisfactory results.

"I've been relying on medication for insomnia for a long time, but it doesn't work well. I'd like to have an effective way to improve my sleep." Participant 3.

Evidence indicates a high demand among participants for sleeping improvement measures, especially non-pharmacological interventions.

Theme 3: obtaining social support

Maintaining social functioning

Retirement removes the elderly from the sphere of social production, which can lead to a lack of values, disruption of interpersonal interactions and the atrophy of social functioning. Socialization might be beneficial in maintaining physical functioning and alleviating negative psychological emotions.

"I'm going to insist on participating in activities. I feel weak when I'm idle at home. " Participant 13.
"I meet up with friends in my free time, which keeps me in a good mood." Participant 5.

In addition, they have a strong desire to return to society and create social values.

"There are many skilled retired elderly people like me in our community who are idled at home. It's a good idea to set up a volunteer group of the elderly to give others a hand with their skills. We will feel worthy and happy." Participant 4.

It suggests that multidimensional frail individuals seek more proactive forms of social participation to ensure their social functioning.

Instrumental support

Age-related declines in physical capacity led to limitations in Instrumental Activities of Daily Living (IADL), such as shopping, housework, medical appointments, etc., requiring the assistance with family members and community volunteers.

"Now when I buy something big, I can't carry it myself and have to ask the kids to help." Participant 3.

While some participants retained Basic Activities of Daily Living (BADL), such as dressing and using the bathroom, they still required support for complex household tasks.

"I can get dressed and go to the bathroom myself, but I need my daughter to cook and do the housework." Participant 17.

Frequent follow-up visits for disease monitoring and medication adjustment emphasized the importance of companion-assisted healthcare navigation.

"I can't operate the hospital's registration system, and I need to hire a social worker for every follow-up medical appointment." Participant 12.

This indicates that the demands generated by declining functional capacity extends from daily living to healthcare settings.

Theme 4: choosing health care modalities

Door-to-door medical services

The multidimensional frail elderly suffer from changes in mental health and social adaptability, besides having a decline in physical function. They urgently need access to health care. Meanwhile, it is difficult for them to access health care due to the complexity of the hospital visit process and the weak adaptability of the elderly to digital technology. Coupled with the fact that patients may not be accompanied by their family members when seeking medical care, it is necessary to provide home-based medical services for them.

"I can still take care of myself, but the inconvenience of going up and down stairs prevents me from going to the hospital regularly. Therefore, I would like doctors from community health services to come to my house (to provide services)." Participant 7.

In particular, different from the strong home-care needs of the disabled elderly, the frail elderly have desires for home visits, home health counseling and home delivery of medicines.

"Providing home visits as regularly as possible. If a patient has not come to the hospital for a period , the doctor should take the initiative to call and enquire about the situation. Home visits are also available for patients who are not bedridden, while having difficulty with legs or feet." Participant 7.
"Due to I am getting older, it's inconvenient to go to the hospital by bus, and can't operate the hospital registration system. It would be convenient if the medication was delivered to the house on a regular basis." Participant 12.

This highlights a persistent discrepancy between service provision and the needs.

Individualized health management services

Participants prefer community health services for medication due to their convenience and reliable supply, but improving diagnostic and treatment capabilities are essential to strengthen trust.

> *"When I visit the community health center, it's only to collect medications. Sometimes my children help me pick them up, and I take the pills according to the instructions. The doctors have not systematically explained my condition or discussed next steps in treatment." Participant 11.*
> *"My family doctor often sends out many group messages on my mobile phone, most of which are not useful to me. I would like my doctor's advice on my condition." Participant 10.*

The delivery of personalized health care services is a crucial approach to addressing the unique needs of patients, enhancing treatment efficacy, and elevating the overall quality of primary healthcare services.

Participating in treatment decision-making

There are a variety of treatment options available for managing multimorbidity. As patients become more self-aware, they gradually want to participate in the treatment decision-making process and negotiate their treatment with their physicians.

> *"I have taken more than a dozen medications now. I would like my doctor to inform me of the side effects of each medication, so that I can choose the best medication regimen." Participant 7.*
> *"I would like my family doctor to listen to my thoughts about what is best for my health. " Participant 16.*

Patients need to be actively involved in treatment decisions and have access to clear, transparent information about their medications to optimize personalized treatment plans. Such participation not only alleviates treatment-related anxiety but also counters the marginalizing effects of chronic illness through sustained engagement.

Discussion

In this research, it was found that improving physical functioning was a common need among the elderly with multimorbidity suffering from multidimensional frailty, irrespective of whether they met the TFI diagnostic criteria for physical frailty. At the same time, multidimensional frail individuals who meet the diagnostic criteria for physical frailty may also have psychological and social needs, regardless of whether they met the TFI diagnostic criteria for psychological and social frailty. Nonetheless, increased psychological and social frailty might drive patients to develop psychological and social needs when it has an impact on physical functioning. Several reasons were as follows: First, the study assessed different frail dimensions using the TFI Frailty Assessment Scale, which relies on the subjective perception and self-report. Conversely, subjective judgements of the same symptom varied between individuals, which to some extent influenced the assessment results. Second, due to the long-term effects of multiple chronic diseases and their complications, even if individuals were not assessed as physically frailty, the physical symptoms brought about by the diseases will have an impact on daily life. Moreover, physical frailty, psychological frailty and social frailty could interact with each other [30–31]. The physical frail elderly are more susceptible to mental health problems as their reduced physical functioning effects the daily activities. Furthermore, declining physical functioning can lead to a gradual disengagement from their original social network, which can easily trigger social debility [32]. Conversely, it is possible that psychological and social frailty may also exacerbate physical frailty [30–31]. The above causes individuals with different frail dimensions to exhibit common needs.

Exploring patient-engaged models of frailty management to improve physical function

In this study, the multidimensional frail elderly patients with multimorbidity are faced with the dual dilemma of improving physical functioning, as well as preventing complications and comorbidities correlated with chronic diseases, which drive multidimensional symptom management needs, including disease knowledge acquisition, symptom control, and participation in treatment decision-making. This aligns partially with findings from a New Zealand study, which similarly described the "fatigue" and "loss of strength", among other triggers, as a demand to improve physical functioning [20]. Furthermore, our study revealed two key finding: "sleep deprivation-induced physical symptoms" and "the persistence in social activities to maintain physical capacity". These results suggest that physical functional decline not only effects physiological health but also triggers psychological and social needs. Consequently, there is a core demand for professional guidance to manage these physical changes effectively. Due to the decline in physical function, patients can clearly feel the symptoms of weakness that affect their daily life. Additionally, the multidimensional frail elderly have increased vulnerability and decreased resistance, which tends to aggravate the underlying diseases. Conversely, multimorbidity accelerate the process of multidimensional frailty [4], leading to a decline in functional status and quality of life, which in

turn increases the risk of death as well as the healthcare burden.

Furthermore, the interaction of multiple chronic conditions with polypharmacy poses significant challenges to treatment decision-making, particularly in balancing efficacy and safety [33], resulting in a range of health and treatment burden issues. The findings demonstrate that the fear of long-term treatment or persistent physical decompensation significantly impairs patients' self-efficacy, prompting a proactive desire to participate in treatment decisions. This is consistent with Skilbeck's study, which underscored the challenges of balancing functional decline and daily life management in multidimensional frail patients with chronic conditions [34]. These insights highlight the need for clinicians to adopt a needs-driven shared decision-making model, moving beyond traditional symptom-based management to better address patients' individual needs. Considering the complexity and heterogeneity in the management of the multidimensional frail elderly with multimorbidity, patients' preferences should be incorporated to promote their participation in shared decision-making processes related to prevention and treatment, and to improve adherence to management [35]. Doctors should comprehensively assess the physical condition and medication needs of the older adults with multimorbidity in clinical practice, to develop individualized programs.

Improving family emotional support for psychological adaptation

Consistent with prior qualitative studies on the experiences of frail older adults [34], participants in our study described experiencing "distress or anxiety caused by deteriorating health". We also identified "sleep deprivation" as a factor that further exacerbates physical decline [36]. Notably, participants' psychological needs extended beyond a desire for more effective sleep interventions, they sought to fulfill these needs through familial emotional support. This is partly due to the influence of the traditional "family-oriented" notion, coupled with the deprivation of social roles and the prominent mental problems in the frail elderly population. As a result, the family has become the most important source of emotional support [37].

Previous research has demonstrated that higher perceived intimacy in emotional support reduces the risk of multidimensional frailty [38]. Specifically, the psychological well-being of the multidimensional frail elderly could be benefited from the emotional support of their children [39]. In addition, our study further revealed pharmacological interventions alone have limited effectiveness in improving sleep, highlighting the need for comprehensive psychological interventions, including family emotional support.

Family support plays a crucial role in promoting the mental health of elderly individuals. Therefore, it is essential to strengthen children's awareness of their parents' needs and encourage them to increase the frequency of visits, thereby addressing both the physical and emotional well-being of their aging parents. Additionally, it is imperative to establish institutional partnerships with accredited mental health organizations to provide elderly individuals with regular professional psychological support interventions. Combining family support with professional care can create a more comprehensive approach to improving the mental health of the elderly.

Strengthening social support to maintain social networks

Consistent with prior findings [21], older adults with multidimensional frailty actively strove to sustain connections with their physical environments and social networks anchoring themselves amid declines in physical, psychological, and social functioning. Multidimensional frailty not only drives persistent physical deterioration but also disrupts pre-existing social networks due to overwhelming disease burdens. Participants attempted to balance proactive social engagement with reliance on external support to preserve their social functioning. For example, engaging in social activities to sustain relationships, while simultaneously depending on assistance to uphold physical and mental health. On the one hand, patients with physical frailty often experience symptoms such as decreased muscle mass and declining sensory system function. These symptoms lead to a reduction in outdoor social activities, resulting in social withdrawal and, over time, an increased risk of social frailty [40]. On the other hand, social withdrawal due to adverse negative emotional states can further exacerbate social frailty [36]. In turn, persistent social frailty can create a feedback loop, worsening both physical and mental health deterioration [41]. Therefore, assessing the frailty status of patients with multimorbidity should not only focus on physical function and mental health, but also includes the maintenance of social functioning, such as social network, social support, social participation. This comprehensive approach is essential for developing more effective health guidance programs.

In addition, social support plays a significant and active role in the managing multidimensional frailty, such as support from family, friends, and social organizations. This phenomenon arises from the gradual accumulation of age-related disease burdens, as well as the progressive decline in vision, hearing function, and muscle strength. These multifaceted impairments severely compromise the sensory and motor functions of frail elderly individuals, ultimately resulting in their dependence on others for assistance in daily living activities [42]. Maltby's study further suggests that support from broader social

networks, such as friends and social organizations, has a greater impact on multidimensional frailty compared to support from the nuclear family and other immediate family members [43]. In contrast, Lambotte's study found that social frail elderly individuals preferred to receive support from their nuclear family, while those with both physical and psychological frailty preferred integrated care support from family and social organizations [44]. Therefore, it is imperative to actively integrate social resources by establishing effective coordination mechanisms among primary healthcare providers, community organizations, and family support systems to strengthen localized social support networks.

Demand-oriented construction of door-to-door service network

The process of medical decision-making for the assessment and management of patients with multimorbidity is more complex than for single chronic conditions [45]. This complexity is further exacerbated by the cumulative effects of the interaction between multidimensional frailty and multimorbidity, which challenge the capacity of primary healthcare services [46]. In this context, our interviews revealed that multidimensionally frail elderly with multimorbidity are in dire need of personalized, precise, and integrated health management services. Supporting this finding, previous study has confirmed that personalized diseases management provides significant benefits to frail elderly individuals in the community compared to routine care [47]. Given these insights, it is evident that multidimensional frailty assessment should be institutionalized as a priority screening program for managing elderly individuals with comorbidities. Such assessments should incorporate personalized interventions that address physical decline, psychological distress, and impaired social functioning.

The multidimensional frail elderly with multimorbidity suffer from simultaneous physical illness, functional decline, and psychological problems. Nevertheless, it is difficult to make a holistic intervention, due to the short consultation time in healthcare facilities and inconvenient access for the multidimensional frail elderly. This study also suggests that the above problems can be solved through the provision of home healthcare services, but the reality is that most of the existing home healthcare service contents are to provide home beds and basic nursing care for the disabled elderly in China [48], which can't satisfy the needs of the multidimensional frail elderly in terms of counselling, health education, home visits, medical guidance for a long period. As such, the list of Door-to-door medical services for the multidimensional frail elderly with multimorbidity should be improved on a demand-driven basis and included in the health insurance reimbursement. Additionally, the number of technicians in primary health care should be expanded to address more complex health issues through a multidisciplinary approach. This team should be led by family physicians rather than relying solely on nursing services.

Conclusion

This exploratory qualitative study elucidates the health care needs of the multidimensionally frail older adults with multimorbidity from individual, familial, and societal perspectives, providing a foundation for demand-driven care enhancement strategies. The findings reveal a critical disconnect between the needs of this population and the current provision of primary healthcare services. Specifically, in the context of coexisting multimorbidity and multidimensional frailty, systematically capturing older adults' needs is essential to maximize opportunities for delivering comprehensive, vulnerability-sensitive care. First, family doctor teams composed of general practitioners and community nurses are increasingly positioned to address the complex needs of multidimensionally frail older adults. Leveraging established partnerships through family doctor contracting services, these teams can conduct multidimensional frailty assessments and integrate patients into care management groups. Intervention goals should be collaboratively developed through group education and patient feedback, which is essential for patient-centered care in multidisciplinary teams. Second, capitalizing on the family-focused approach of these teams, regular evaluations of family functioning should be conducted. Targeted training should be provided to close family members, particularly their children, to engage them in the care processes. Third, community health centers should harness their connectivity with local residents by collaborating with community workers to organize social activities and establish peer support groups. Such initiatives could facilitate rehabilitation experience sharing, psychological comfort, and mutual aid among community-dwelling frail older adults, fostering resilience and holistic care integration.

Strengths and limitations of this study

As we know, this is the first qualitative study to capture the intrinsic preferences of multidimensional frail elderly individuals with multimorbidity from different perspectives in primary health-care settings in Beijing. However, there are some limitations. Firstly, although the sample size has met the criteria for theme saturation, a larger sample size may be necessary to achieve meaning saturation and capture more complex needs. Secondly, it is unclear whether the results of this study, which focused solely on participants visiting urban community health centers in Beijing, are applicable to suburban areas or

other cities. Furthermore, this study primarily relied on a pre-existing cross-sectional survey in the inclusion of respondents. Due to the relatively low prevalence of frailty and low participation intention among male comorbid patients, the sample may not be fully representative. Additionally, regarding socioeconomic status, we ensured representative diversity in educational attainment and monthly income during participant recruitment, but systematically omitted occupational data collection in this study given the diminished influence of pre-retirement occupational status on health outcomes among older adults. In future studies, we hope to continue collaborating with community health centers to further expand the number of respondents. Finally, subjective interpretations by the researcher during the descriptive analysis may introduce bias, although we used independent coding and group focused discussions to minimize potential bias.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12875-025-02836-8.

Supplementary Material 1

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Author contributions
LLZ is the first author. SS is the corresponding author obtained the funding. SS and LLZ designed the study. All the authors Participated in the revision of interview outlines. LLZ, BJC and QHH collected the data. LLZ, BJC and XLC were involved in data sorting and analysis. LLZ drafted the manuscript. LLZ and SS discussed and analyzed the disparities of the themes and interpreted the data. SS and JD revised and critically reviewed the article. All authors have read and approved the final manuscript.

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Data availability
We provided an interview guideline in the manuscript or supplementary information document.The anonymized citation data in the results section of this manuscript is available upon request from the corresponding author, other data involving patient privacy will not be shared to protect the confidentiality and anonymity of the interviewees.

Declarations

Competing interests
The authors declare no competing interests.

Disclosure
The authors disclose no conflict of interest.

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Not applicable.

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