

Real-Life Experiences of Self-Capacity Management in Patients with Chronic Heart Failure: A Qualitative Study

Angran Wang¹, Ning Zhang¹, Mengtian Li¹, Qin Mao¹, Anna Ma¹, Guodong Wang¹, Meng Li², Qiong Li^{1,3}

¹School of Nursing, Xinxiang Medical University, Xinxiang, Henan, People's Republic of China; ²Nursing Department, The Third People's Hospital of Henan Province, Zhengzhou, Henan, People's Republic of China; ³School of Nursing, North Henan Medical University, Xinxiang, Henan, 453519, People's Republic of China

Correspondence: Qiong Li, School of Nursing, Xinxiang Medical University, Xinxiang, Henan, People's Republic of China, Email aprilqiong@163.com

Background: Capacity overload is a persistent risk throughout the progression of heart failure. And effective capacity management can help patients control fluid retention and improve capacity overload, which is crucial for improving the prognosis of patients with chronic heart failure (CHF). However, current research often focuses on physiological and pathological mechanisms, with limited exploration of the psychological and social factors influencing patients' self-management behaviors. Additionally, while many studies have addressed the importance of capacity management, there remains a gap in understanding how patients' experiences with capacity management strategies can be optimized to improve adherence and long-term outcomes.

Objective: This study aims to explore the personal experiences of CHF patients regarding self-capacity management, identify the barriers they face in implementing self-management behaviors, and examine factors contributing to non-adherence. The goal is to provide a foundation for future intervention strategies.

Methods: A qualitative descriptive design was employed, using semi-structured in-depth interviews with CHF patients. The transcribed data were coded and analyzed thematically based on Colaizzi's phenomenological data analysis method. NVivo 14 software was employed for the analysis.

Results: The findings reveal that individuals with CHF encounter various barriers to effective self-capacity management. These barriers not only hinder their understanding and application of management strategies but also reduce their intrinsic motivation to adopt and sustain healthy behaviors. Four themes were identified: (1) Symptom distress leading to changes in daily behavior, (2) Barriers to implementing capacity management behaviors, (3) Low awareness of capacity management, and (4) Lack of knowledge regarding capacity management.

Conclusion: Healthcare providers must consider age-related differences and varying levels of knowledge receptivity among patients. Tailored educational programs that cater to individual patient needs are essential for enhancing accessibility and ensuring continuity of care. Regular post-education assessments, alongside continuous supervision and guidance, are crucial to improve patient understanding, promote behavioral changes, validate the effectiveness of educational interventions, and support the long-term adoption of self-management practices.

Keywords: heart failure, self-capacity management, patient experience, qualitative research, educational interventions

Introduction

Chronic Heart Failure (CHF) is a multifactorial clinical syndrome characterized by structural and/or functional abnormalities of the heart. These changes impair both ventricular systolic and/or diastolic function, leading to a range of clinical manifestations. The primary symptoms include respiratory difficulty, fatigue, and fluid retention, which may manifest as pulmonary congestion, circulatory stasis, and peripheral edema.¹ Studies estimate that the global prevalence of heart failure is approximately 64 million, with the prevalence expected to rise due to the aging population. In recent years, both

the incidence and prevalence of chronic heart failure have been steadily increasing, driven by the aging population and the growing burden of cardiovascular diseases. Projections in the United States suggest that the prevalence of heart failure will increase by nearly 46% from 2012 to 2030, accompanied by a projected 127% rise in healthcare costs.²

The 2022 ACC/AHA/HFSA Guideline for the Management of Heart Failure emphasizes the crucial role of self-management for patients with chronic heart failure.³ Several studies have demonstrated that effective self-management reduces the risk of heart failure-related hospitalizations,^{4–8} all-cause hospitalizations^{4,5,9} and all-cause mortality.^{7,9} Moreover, it plays a key role in enhancing the quality of life for patients with chronic heart failure.^{6,10} The study highlights that individuals with heart failure should learn to take their medications as prescribed, limit sodium intake, and recognize the signs and symptoms of worsening heart failure. However, knowledge alone is insufficient to improve self-management. Patients with heart failure also require time, support, and guidance to develop the necessary skills and overcome barriers to effective self-care.³ Another guideline defines self-management of heart failure as encompassing a range of behaviors, including adherence to prescribed medications, exercise, and dietary recommendations (maintenance), as well as recognizing early warning signs and adjusting home management strategies accordingly (management).¹¹ This “self-management” process is intricate, and without proper education and support, both patients and caregivers may find it challenging to successfully carry out these tasks.¹¹

Capacity overload is a key pathophysiological factor in the development of both acute and chronic heart failure. Fluid retention is common among patients with CHF,¹² and managing this fluid retention is critical for alleviating symptoms, reducing hospital re-admissions, and enhancing patients’ quality of life.¹³ Effective capacity management, a core component of self-management for CHF patients, encompasses several key aspects, including fluid status management, body weight monitoring, sodium intake control, symptom tracking, and medication adherence. This approach is essential for preventing acute exacerbations, minimizing re-admissions, and improving overall quality of life.^{14,15} The ultimate goal of capacity management is to help CHF patients achieve a personalized and optimal balance of fluid status.¹³

Despite widespread recognition of the importance of capacity management in CHF care, its actual implementation by patients remains sub-optimal.^{16,17} Studies have identified significant variability in patients’ perceptions, behaviors, and adherence to capacity management strategies, which can have a profound impact on disease outcomes and management.^{18,19} However, much of the existing literature has primarily focused on the physiological and pathological mechanisms underlying CHF, with limited exploration of the psychological and social factors influencing patient behavior.^{20,21} Furthermore, the majority of studies have employed quantitative methodologies, often neglecting the in-depth exploration of individual differences and the subjective experiences of patients.²

This study employs a qualitative research approach to address this gap, offering a more comprehensive understanding of the patient experience. By examining the real-life challenges, needs, and barriers faced by CHF patients in managing capacity, the study aims to provide valuable insights for developing targeted interventions that can enhance clinical nursing practices and improve patient outcomes.

Methods

Design

A descriptive phenomenological qualitative design was used, involving face-to-face semi-structured interviews to capture rich, intuitive descriptions of participants’ personal experiences, emotions, behaviors, and factors influencing their reproductive concerns. Data were analyzed using Colaizzi’s method, which provides a systematic and detailed approach to enhance the reliability and dependability of the findings.²² The COREQ (Criteria for Reporting Qualitative Research) checklist was followed to ensure the quality of the study design and reporting.²³

Study Participants

Using a purposive sampling method, patients with CHF hospitalized in the cardiology ward of a tertiary hospital in Xinxiang City, Henan Province, from May 2024 to August 2024 were selected for the study. The sample included 5 males and 7 females, aged 28 to 76 years.

Patients are eligible for enrollment if they meet the following criteria: Meets diagnostic criteria of the 2022 AHA/ACC/HFSA Guidelines for the Management of Heart Failure; The patient has given informed consent and has good communication skills. Exclusion criteria included patients with communication or cognitive impairments, minors under 18 years of age, individuals unwilling to participate in the interview, and those who withdrew from the study due to medical reasons. The sample size was not predetermined; instead, it was determined through data saturation, where data collection continued until no new themes emerged and the information became repetitive. The study concluded after the 12th participant, when saturation was reached. The Participant characteristics is shown in [Table 1](#).

Data Collection

In alignment with the disease characteristics of CHF, the research team developed an interview guide through a collaborative process that involved consultations with experts in cardiovascular medicine and cardiac rehabilitation.

Table 1 Participant Characteristics

Characteristics	No.(%)
Sex	
Male	5 (42)
Female	7 (58)
Age, years	
20–59	4 (33)
60–69	4 (33)
70–79	4 (33)
Marital Status	
Married	11 (92)
Divorced	1 (8)
Education Level	
Primary School and below	6 (50)
Junior high school	2 (17)
Senior high school	3 (25)
Undergraduate	1 (8)
Primary Caregiver	
Spouses	4 (33)
Sons and daughters	7 (58)
No Caregiver	1 (8)
NYHA Classification	
I	0 (0)
II	6 (50)
III	4 (33)
IV	4 (33)

Table 2 Interview Questions

Question 1	What symptoms have you experienced during your illness, and how would you describe these experiences? (During the interview, patients were prompted to elaborate on their sensations related to the symptoms, and their impact on daily life was explored.)
Question 2	Do you actively monitor or manage your sodium intake, daily fluid intake and output, or body weight?
Question 3	Has your doctor or nurse provided guidance on managing fluid overload during your illness? Are you familiar with the correct methods for monitoring this condition?
Question 4	Do you know the recommended daily sodium intake and fluid balance guidelines?
Question 5	What do you perceive as the main barriers to effectively monitoring or managing your condition?
Question 6	What kind of support or assistance do you think would help you overcome these challenges?

This guide was informed by an extensive literature review and preliminary interviews with two CHF patients. Based on the insights gained from these pre-interviews, the interview outline was revised and finalized. The final interview guide included five key questions (Table 2).

The interviewer was trained in qualitative research methods and interviewing techniques, specifically following the phenomenological approach. Data were collected using a semi-structured interview format. Prior to each interview, informed consent was obtained from the participants, and a consent form was signed. Interviews were conducted in a quiet, private cardiology clinic or ward, chosen for its good ventilation, calm atmosphere, and absence of other individuals to ensure a comfortable and confidential setting. Each interview lasted between 30 and 50 minutes. Throughout the interview process, non-verbal cues such as facial expressions and tone of voice were recorded. The interviewer encouraged participants to openly share their authentic experiences and feelings related to their illness, while ensuring that questions were neutral to avoid leading or influencing responses.

Data Analysis

The interviews were transcribed into text in a timely manner, and the transcribed data were subsequently analyzed using Colaizzi’s 7-step phenomenological analysis method.²⁴ See Figure 1.

To ensure the accuracy and quality of the transcription, the interviews were carefully reviewed and organized. Handwritten interview notes were analyzed by two independent researchers to identify any recordings with errors or those that were difficult to transcribe due to poor audio quality. The data were then classified and coded using NVivo 14 software. The analysis results were compared, and any discrepancies were resolved through discussion and consensus among the research team. During the analysis process, no new themes emerged, indicating that data saturation was achieved. This confirms that the collected data provided sufficient depth and breadth to address the research objectives, ensuring the rigor and comprehensiveness of the findings.

Methodological Rigor

In ensuring the methodological rigor of this qualitative study, various strategies were employed to maintain trustworthiness throughout the research process.²⁵ Credibility was achieved through the involvement of authors with clinical experience in cardiology nursing and qualitative research training, which enhanced their ability to establish rapport with participants. The interviewer’s active engagement in daily clinical activities helped foster immersion and facilitated continuous observation, while regular team meetings ensured collaborative refinement of themes and categories. Potential biases due to the researchers’ clinical involvement were acknowledged and mitigated during both data collection and analysis. Prior to the commencement of the study, we conducted a thorough self-assessment to identify and document any personal beliefs, values, and biases that could potentially influence the research process. This proactive step involved reflecting on our professional experiences, preconceptions about chronic heart failure (CHF) management, and any assumptions that might affect our objectivity. By explicitly examining these aspects, we aimed to enhance our awareness

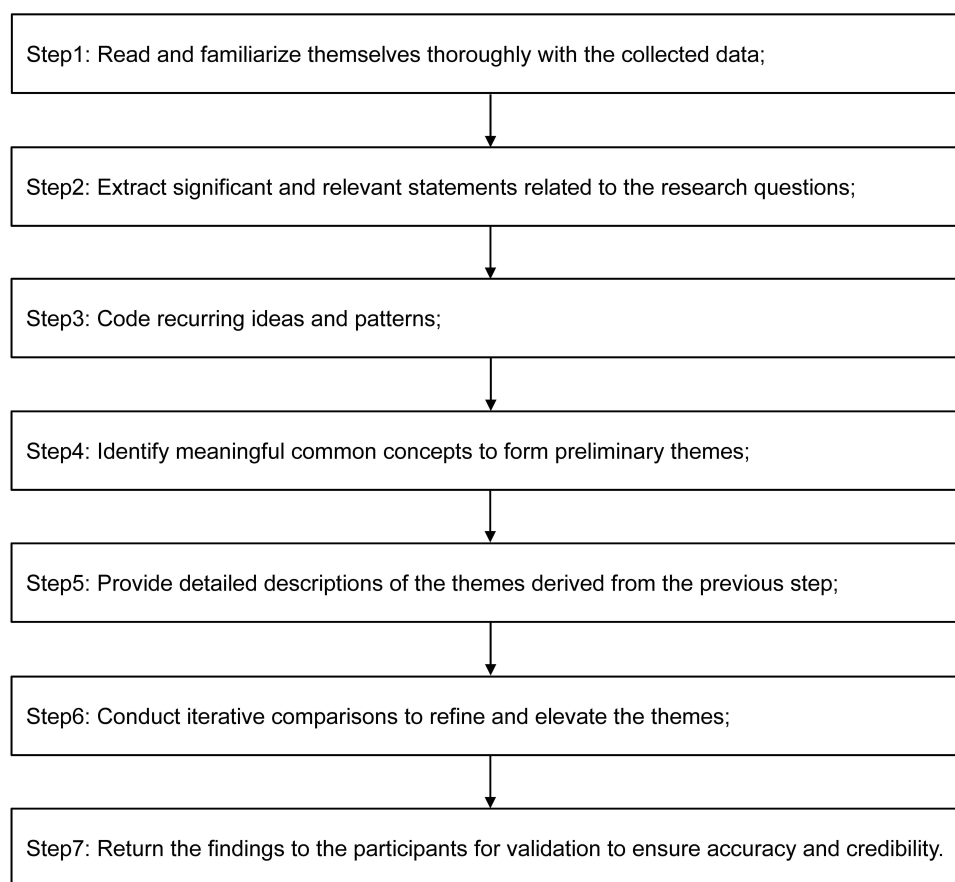


Figure 1 Colaizzi's 7-step phenomenological analysis.

of how our perspectives could shape the research design, data collection, and interpretation. This process of critical self-reflection ensured that we maintained accountability to both ourselves and the participants, fostering a more transparent and rigorous research environment. Throughout the study, we revisited these reflections to ensure ongoing awareness and minimize the impact of any preconceived notions on the findings. Reflexivity was also integrated by considering how the researchers' demographics, prior experiences, and presuppositions influenced their interactions with participants and data interpretation. To further enhance credibility, we conducted member checking by returning to participants for feedback on our findings and interpretations. This process allowed us to verify our representation of participants' experiences and provided an opportunity for participants to clarify or expand on their narratives. Confirmability was ensured by maintaining a comprehensive audit trail, including original audio recordings, verbatim transcripts, and detailed records of the data analysis process, thereby guaranteeing transparency and future verifiability. Dependability was addressed through peer debriefing conducted by a qualitative expert external to the research team, which helped reduce potential biases and refined the coding framework. Finally, the study's transferability was supported by the diversity of participants, including variations in age, gender, and health status, and by the use of in-depth interviews, ensuring the applicability of the findings to other similar populations and settings.

Ethical Consideration

This study was conducted in accordance with ethical guidelines and approved by the Ethics Committee of Xinxiang Medical University (Ethic No. XYLL-20230312). All participants provided written informed consent prior to participation. The purpose of the study was clearly explained to the patients, including the voluntary nature of participation, the confidentiality of their responses, and their right to withdraw from the study at any time without any impact on their medical care. To ensure privacy, personal identifiers were removed from all data, and all information collected

was kept confidential. Written informed consent was obtained from all participants for the publication of anonymized responses and direct quotes. Participants were informed that their responses would be used solely for the purposes of the study and would not be shared with anyone outside the research team. The researchers were mindful of the potential emotional and psychological impact of discussing personal health experiences, and appropriate support was made available for participants who felt discomfort during the interviews. The research adhered to the principles of Helsinki Declaration.²⁶

Results

The qualitative analysis brought up four themes: (1) Symptom distress leading to changes in daily behavior, (2) Barriers to implementing capacity management behaviors, (3) Low awareness of capacity management, and (4) Lack of knowledge regarding capacity management. See Table 3.

Theme One: Symptom Distress Leading to Changes in Daily Behavior

The patient reports a big change in daily physical activities and lifestyle habits following the onset of the disease. According to the *Chinese Guidelines for the Diagnosis and Treatment of Heart Failure 2024*,¹ patient education should emphasize the early recognition of symptoms indicative of worsening heart failure and provide a clear action plan for managing these symptoms.

Subtheme One: Limitations in Daily Physical Activity

The symptoms indicative of exacerbation or worsening of heart failure primarily include increased fatigue, heightened dyspnea, reduced exercise tolerance, the onset or worsening of edema (particularly in the lower extremities), and weight gain.³ Eighty percent of patients reported that shortness of breath, cough, and fatigue were the predominant symptoms of their condition. These symptoms significantly impacted their daily activities, including tasks such as climbing stairs and engaging in walking exercises.

- N01: I have experienced pulmonary stasis and gastric stasis, but there are no signs of edema. A few months ago, when I was working, I would also experience shortness of breath, which seemed to be related to asthma.
- N12: I am unable to walk long distances without becoming breathless. Even walking from the ward to the bathroom leaves me gasping for air. I often need to pause and rest before I can regain my breath, and I lack the energy to speak.

Table 3 Themes and Sub-Themes

Themes	Sub-Themes
Symptom Distress Leading to Changes in Daily Behavior	a) Limitations in Daily Physical Activity
	b) Changes in Daily Habits
Barriers to Implementing Capacity Management Behaviors	a) Lack of Confidence in Managing the Condition (due to age or underlying health issues)
	b) Management Behaviors are Influenced by Caregivers
Low Awareness of Capacity Management	a) Stubborn Lifestyle Choices
	b) Cognitive Bias Regarding the Importance of Capacity Management
	c) Poor Adherence to Management Practices
Lack of Knowledge Regarding Capacity Management	a) Limited Ability to Receive and Utilize Information
	b) Lack of Access to Scientific and Authoritative Information
	c) Seeking Knowledge for Improvement

Notes: a) Represents Subtheme 1. b) Represents Subtheme 2. c) Represents Subtheme 3.

Some patients also have symptoms such as vomiting and sweating.

N02: I frequently experience sweating, occasional bouts of nausea, and often feel too fatigued to complete my tasks.

Subtheme Two: Changes in Daily Habits

Some patients who previously maintained regular exercise routines were compelled to suspend or even discontinue their exercise programs due to changes in their condition.

N10: I used to be someone who loved exercise and would often take walks after dinner. However, since my heart condition worsened, I haven't dared to exercise anymore.

A young to middle-aged patient reported being able to exercise, but experienced increased difficulty during the recovery process afterward.

N03: It's not as good as it used to be if you work out on a daily basis, it's not that you can't work out now, but this process of resting and relieving yourself after a workout is harder for me.

Several other patients reported being unable to exercise, noting that even slight physical activity triggered coughing and fatigue.

N08: Coughing, struggling to climb stairs, not sleeping well because of coughing, and coughing when I was talking, so I didn't have much of an exercise routine anymore.

N01: I'm afraid to do heavy work when I'm short of breath, and I don't get noticeable shortness of breath when I don't do heavy work.

Theme Two: Barriers to Implementing Capacity Management Behaviors

Subtheme One: Lack of Confidence in Managing the Condition (Due to Age or Underlying Health Issues)

This study explored the barriers that hinder patients' ability to effectively manage their capacity. The results of qualitative interviews revealed that some patients identified age-related vision and hearing impairments as significant factors limiting their ability to perform capacity management. The decline in these physiological functions made it more difficult for patients to accurately acquire and comprehend disease-related information, which in turn impacted their ability to utilize the knowledge and diminished their confidence in managing their condition. Notably, this loss of confidence was especially pronounced among the older patient population.

N09: Gee, I'm getting older. My hearing and vision aren't what they used to be, and it's becoming harder for me to see and hear clearly.

N10: Oops, I'm getting older. When I was admitted to the hospital, the doctor advised me to reduce my salt intake and be mindful of my water consumption, but they didn't provide clear instructions on how to do this. I also wasn't sure how effective these measures would be. During my hospital stay, I just followed the doctor's and nurse's guidance, but beyond that, I didn't pay much attention to other recommendations.

It can be seen that it is difficult for patients to fully understand or accept instructions related to capacity management in the presence of hearing and vision loss, which may be one of the reasons for lower compliance with capacity management.

Subtheme Two: Management Behaviors are Influenced by Caregivers

In addition to age-related factors, patients reported primarily relying on their caregivers for assistance, reminders, or even to perform capacity management tasks on their behalf. Without this support, they would struggle to manage on their own.

This over-reliance on caregivers led to a lack of familiarity with self-management knowledge and diminished initiative in taking charge of their own care.

N02 (The caregiver is her daughter): My daughter usually tests me too, I can't remember these things on my own. If my daughter can't remember to give me a test then she probably won't.

Additionally, respondents expressed reliance on their caregivers to manage their sodium intake and tended to avoid proactively asking for reminders or assistance, fearing they might burden their caregivers. This behavior may be influenced by the psychological factor of not wanting to impose additional problems on others.

N12 (The caregiver is her daughter): I'm not too picky with food; my daughter cooks for me, and I just eat whatever she prepares. I know that too much salt is bad, but I don't pay much attention to the exact amount.

This study also highlighted the non-therapeutic challenges faced by patients without caregivers, who are otherwise capable of self-care, during hospitalization and how these challenges impact their ability to manage their own capacity. Examples include tasks such as checking in for admission, waiting in line to pay bills, scheduling test appointments, recording doctor's instructions and precautions, and noting medication doses and frequencies. These responsibilities can drain patients' energy, potentially limiting their ability to effectively manage their own care.

N08: I remember the nurse telling me about it during my hospitalization, but with all the things I had to take care of during my hospitalization, I didn't pay much attention to it again afterwards.

This reflects the challenges patients face during hospitalization, where they must divide their limited energy between managing their health and handling the daily tasks required by the hospital.

Theme Three: Low Awareness of Capacity Management

Patients shared varying levels of awareness regarding capacity management. Some indicated that their approach to capacity management was primarily shaped by past experiences or established habits, and they were reluctant to change. Nearly all patients expressed a lack of understanding about the importance of capacity management, unaware of its potential benefits or how it could assist them. Even among those who were familiar with the concept, their ability to adhere to it was limited due to a lack of awareness and understanding.

Subtheme One: Stubborn Lifestyle Choices

In this study, when asked whether they monitored their daily water intake, the interview results revealed that some patients typically determined the amount of water to drink based on past habits rather than consciously measuring it. They generally felt that it was more important to listen to their body's signals, believing that drinking an amount that felt comfortable was the right approach, without the need to adhere to a strict guideline.

N05: When I drink water, I don't pay much attention to it. I usually drink a little when I'm thirsty, without really thinking about it. However, I know I need to keep it under control, especially since I don't particularly enjoy drinking water and often forget about it.

N09: I'm not sure how much I should drink, I just drink when I'm thirsty and stop when I no longer feel thirsty.

N11: I haven't paid much attention to my water intake. I only drink when I'm thirsty. When I was younger, I preferred cold water over hot water, and now I drink even less.

Subtheme Two: Cognitive Bias Regarding the Importance of Capacity Management

Healthcare professionals typically provide disease education at the early stages of a patient's hospital admission. Patients and their families often believe that as long as they strictly follow the treatment plan prescribed by healthcare providers, they do not need to pay additional attention to other health-related information. As a result, they are unlikely to proactively seek consultation from doctors or nurses unless they experience discomfort or unusual symptoms.

N01: Mainly, I don't fully understand the purpose of constant monitoring. Sometimes I consider taking a test, but if I don't think about it, I don't. I only think about contacting doctors or nurses if I experience any symptoms.

N01: It's still (necessary) for your doctor or nurse to instruct you on how to monitor these things, because it's not usual to pay special attention to these things, not knowing how important it is, and it feels like it's okay to test or not to test.

N04: I didn't think to monitor these things until you told me about them today, I didn't even care about them before, so maybe I still don't understand them.

N09: Ouch, I haven't really paid attention to this. My appetite is fine, and I can eat both sweet and salty foods, but I haven't considered how many grams of salt I should be consuming each day.

Patients may be less willing to engage in capacity management behaviors if they have a poor understanding of their importance, especially when hindered by their condition or physical limitations.

N07: I can't walk easily, and I don't have this sense to say to test or something, and I don't know how to monitor, the doctors and nurses have told me how to monitor, and the follow-up didn't pay attention to the long time and also forgot about it.

Some patients mentioned that their hospitalization was just a temporary phase and that they expected to return to normal life after recovery, not fully understanding the importance of continued capacity management.

N03: Because I have to go to work after I'm cured, I don't have a lot of energy to pay attention and monitor these things, and I don't know what's the purpose of monitoring this.

Some patients are aware of capacity management and make an effort to control their intake, but their approach lacks precision and scientific accuracy.

N07: At first, I drank a lot of water, but after learning about the importance of controlling my intake, I started drinking less.

Some patients have a limited understanding of the importance of capacity management because of the low level of education in their living environment.

N08: At that stage of the illness, I knew I couldn't drink a lot of water, but once I started feeling a little better, my water intake increased. Now, I know I can drink 1,500 mL, and 1,700 mL is fine as well.

N11: It started with swollen eyes and legs. In the countryside, we don't always take our health seriously; as long as we can eat and sleep and don't feel pain, we don't think of it as a serious issue. I mainly experienced shortness of breath, but fortunately, it didn't affect my rest or sleep.

Subtheme Three: Poor Adherence to Management Practices

A subset of patients demonstrated some understanding of capacity management, such as using a salt spoon to measure intake at each meal and a graduated glass to monitor water intake daily. However, none of these practices were consistently followed. The lack of continuous supervision or monitoring by healthcare professionals, combined with patients' uncertainty about the accuracy of their measurements, led to Poor Adherence to Management Practices.

- N02: It's probably still not monitored very regularly, and although I usually take it, I mostly just think about it and take it again.
- N03: I knew a bit about capacity management and had heard about the need to monitor salt intake using a salt spoon, but I stopped using it after just a few times.
- N06: I use a glass with an 800 mL scale and drink about two cups a day, more or less. The nurse had given me instructions on how to measure it, but I forgot over time, and now I'm not sure how to measure it anymore.
- N10: I only checked my weight a couple of times, but since the scales in the section didn't seem very accurate, I stopped measuring it.

Theme Four: Lack of Knowledge Regarding Capacity Management

Subtheme One: Limited Ability to Receive and Utilize Information

In this study, we found that although some patients had been introduced to the concept of capacity management through information or instruction from healthcare professionals, they lacked a clear understanding of what it truly involved. This resulted in an inability to translate their theoretical knowledge into practical action and a lack of motivation to apply it.

- N02: My doctor told me I should use a salt spoon to measure it if I have sodium, but I haven't used it much either.
- N05: I don't know much about this stuff, I've been told about it before but I've forgotten all about it now, so if you can tell me more about how to measure it that's fine.

Subtheme Two: Lack of Access to Scientific and Authoritative Information

The majority of patients expressed a desire for capacity management during the interviews, and some had already undergone related measures. However, all of them voiced a lack of confidence in the scientific validity and effectiveness of these approaches.

- N06: I know to eat meals with less salt, and I just know that I should never eat too much salt anyway, and I've been consciously controlling it, but I haven't measured it specifically.
- N07: Salt (intake is supposed to be) 3g a day ? I'm not sure about the specific intake aspect.
- N08: I don't really understand how this monitoring is properly supposed to go, but I'm willing to do it if someone gives me guidance.
- N09: When it comes to water intake, I simply drink when my mouth feels dry. I don't usually drink a lot, but I typically have about three large cups a day—something like that.

Some patients, while having good eating habits that align with certain aspects of capacity management, believe they are already practicing it. However, their approach is primarily based on personal experience rather than scientific guidance.

- N03: That's not quite clear anyway we've always been on a low salt diet in our house and we've never put much salt in, but I wouldn't say I've ever really made a point of monitoring how many grams we've put in.
- N04: My doctor has told me this as well, and has done proper monitoring, but it's mostly by feel and not done very accurately.

Subtheme Three: Seeking Knowledge for Improvement

Many patients expressed a willingness to learn about and engage in capacity management, showing openness to guidance if they believed it would benefit their health.

- N03: I don't know much about capacity management—what exactly needs to be managed. Can you explain what it's used for and what it's supposed to monitor? Otherwise, I'm not sure I'll be able to stick with it.
- N08: I'm not entirely sure how the monitoring is supposed to be done, but I'm willing to give it a try if I receive proper guidance.

N09: Then it would be best if someone would come and talk to me and tell me what to do, and I'd still be willing to do it if it's good for my health.

Some patients also expressed a desire for their caregivers to receive instruction alongside their own.

N07: This can be helpful to my health if you can talk to me from time to time and teach me how I should take the test, and I'll have my son listen to help me take a piece of the test as well.

When asked how they would prefer to be instructed, patients indicated that they would like to receive guidance remotely, either by phone or via the WeChat app.

N08: You can give me phone instructions or you can push me some on WeChat and I'll see it at my leisure and I'll go and follow the right ones to monitor.

Discussion

Capacity Management Challenges in Older Adults: Impact of Aging, Organic Decline, and Disease Symptoms

Health education on capacity management is a standard component of routine care for hospitalized patients. However, older patients often exhibit low confidence in managing their own capacity, due to age-related declines in physical and cognitive functions. Research has demonstrated that aging is associated with a decline in both physical and cognitive abilities, which can impede caregivers' capacity to effectively meet patients' care needs in terms of strength, energy, and the acquisition of necessary knowledge and caregiving skills.^{27,28} This study found that some elderly patients faced barriers to receiving health education during hospitalization, particularly when it was their first encounter with such information. Factors such as blurred vision and impaired hearing hindered their ability to engage, leading to a lack of motivation for capacity management and a subsequent disinterest in related content. This finding highlights one of the key reasons for the low adherence to capacity management among elderly patients. This process aligns with the findings of Eckerblad, Jeanette et al,²⁹ who reported that while frail older adults recognize the importance of self-care behaviors, they often face barriers such as dizziness, shortness of breath, or pain, which prevent them from performing these behaviors to the desired extent. Additionally, physical and sensory impairments, including issues with vision and hearing, present further challenges to maintaining their health.

This study also found that despite receiving health education from healthcare professionals upon admission, many patients exhibited an over-reliance on doctors and nurses. They tended to believe that simply adhering to the prescribed treatment plan was sufficient, without recognizing the importance of additional healthcare information, particularly related to capacity management in chronic heart failure. This attitude may stem from the patients' trust in healthcare professionals and their reliance on the healthcare process. Patients often assume that the guidance provided is comprehensive, leading them to focus solely on following instructions rather than engaging with other aspects of their care. However, this perspective may overlook the importance of patients' active involvement in their own health management, as well as the need for ongoing learning and adaptation throughout the course of disease management. This view aligns with the findings of Qiuping Wu et al, who noted that some patients believe simply following their doctor's prescription is sufficient to alleviate their symptoms.³⁰ In addition, these patients often lack self-care initiative, struggle to adopt healthy behaviors, and may make unsupervised adjustments to their medication regimen, ultimately relying on chance to manage their condition. To enhance patients' self-management abilities, healthcare professionals should encourage them to ask questions and actively engage in their treatment plans during the education process. Furthermore, it is crucial to emphasize the importance of continuous monitoring and self-assessment for effective disease management.

Lack of Intrinsic Motivation for Capacity Management: Inadequate Awareness of Its Importance and the Absence of Continuous Monitoring Tools

In this study, it was found that patients were often reluctant to undergo capacity management due to lack of understanding of its significance and usefulness, and after being informed of the benefits of capacity management for them, patients expressed willingness to do it. A similar experience was observed in a study on medication adherence among patients with hypertension.³ In discussing potential educational materials, healthcare providers noted that when patients are adequately educated about the risks of non-adherence, they are more likely to take their medications, regardless of symptoms. As one provider put it: When you find a person who has been educated, the next time they come back, they are fully able to understand their problem and are ready for it. In other words, when a person understands his condition and what the doctor is trying to do, he does 100 times more than anything you can do.

This could explain why it is important to provide adequate health education to patients.

Our study found that many patients who received guidance on capacity management from doctors and nurses during hospitalization often failed to maintain adherence over time. This may be attributable to two main factors. On one hand, the busy workload of healthcare professionals may limit their ability to provide detailed explanations or demonstrations during the initial guidance. Even if the guidance is scientifically sound, the lack of timely and continuous supervision or follow-up after the initial instruction can ultimately result in poor patient compliance and diminished confidence in continuing capacity management. The findings of Qama and Rubinelli et al align with this study in terms of healthcare professionals' communication and patient understanding.³¹ Patients emphasized the importance of receiving appropriate professional guidance to grasp the "big picture" of their condition. Participants reported feeling "rushed" during doctor visits, noting that "the doctor didn't have time to be as thorough as he should have been." As a result, they felt ill-equipped to manage unexpected situations and make informed decisions. This led to a loss of confidence in healthcare professionals and a sense of powerlessness among patients. These insights corroborate the findings of the present study. On the other hand, patient adherence may also be affected by varying levels of knowledge. Although patients receive education on capacity management, many struggle to apply this knowledge effectively, often relying on personal experience and habits rather than evidence-based practices. This uncertainty about the accuracy of their methods can further contribute to poor compliance. This finding is consistent with existing literature, which suggests that a patient's level of knowledge directly influences their ability to successfully follow a capacity management program.

A study by Spaling et al indicated that self-care in chronic heart failure is still significantly impacted by avoidable limitations related to knowledge, self-efficacy, and symptom interpretation.¹⁸ While patients and caregivers often report knowing the self-care recommendations, they frequently struggle with how to apply this knowledge in their daily lives. The need for ongoing supervision underscores the importance of external support in maintaining healthy behaviors. Additionally, patients' uncertainty about self-care measures may reflect inadequate explanations of specific operational details during the education process, which can lead to a lack of confidence in the validity of these measures. Similarly, the study by Nadria et al found that advice (actionable tips) provided by physicians and healthcare providers can increase patients' level of relevant knowledge. A higher level of knowledge may enhance patients' perceived susceptibility to and understanding of the severity of their condition. This increased awareness can motivate patients to develop strategies to overcome barriers to self-care behaviors.¹⁹ Therefore, to improve patient compliance, healthcare professionals should offer clearer and more detailed instructions, as well as consistent follow-up and support, to reinforce health education and boost patients' confidence in implementing capacity management strategies.

The Impact of Caregiver Engagement on the Quality and Adherence to Patient Capacity Management

Our study found that patients exhibited a reliance on caregivers for capacity management, often depending on them to handle tasks such as monitoring daily sodium intake, weight management, and other aspects of care. In terms of daily capacity management monitoring, some patients were reluctant to request limitations on salt intake due to the psychological burden of not wanting to inconvenience their caregivers, which ultimately led to poor adherence to capacity management. This finding is consistent with the research by Min and Lee et al³² which suggests that patients often rely

on family caregivers to adjust their lifestyles for self-care and continuously seek knowledge, advice, and reassurance from healthcare professionals to improve their self-management. Similarly, Shirima et al emphasized the crucial role of family members in helping patients adhere to the guidance provided during educational programs.³³ In this study, nurses described how educating both patients and their families on how to assist patients in following hospital instructions at home enhanced the uptake of educational content. Several healthcare professionals noted that involving family members in the education process helped patients focus more effectively on the information being provided. According to interdependence theory, changes in the attributes or behavioral decisions of one member of a dyadic group can influence the outcomes for both members of the group.³⁴ Among the patients who participated in this study, the majority (91.6%) were cared for by their children or spouses, all of whom were family members. Patients who demonstrated excessive dependence on their caregivers were exclusively cared for by their children (100%). This dependency may be linked to the specific roles of the caregivers. In China, most primary caregivers of patients with CHF are adult children (46.2%) or spouses/partners (45.8%), with the majority of caregivers spending more than 4 hours a day on caregiving duties.³⁵ Studies have shown that patients with CHF experience a high symptom burden, significant physiological and psychological needs, decreased physical and cognitive functioning, and heightened emotional demands throughout the course of their illness. Patients' dependence on caregivers for capacity management behaviors may be linked to an increasing reliance on the caregivers' roles as the illness progresses. Furthermore, family caregivers of CHF patients often receive insufficient information and support.³⁵ Therefore, measures to enhance social support for caregivers should be strengthened to assist them with the challenging tasks of caregiving. Additionally, caregivers require early and ongoing professional guidance and competency training to improve their ability to recognize symptoms and effectively respond to emergencies.³⁶

In addition, this study also examined the challenges faced by patients without caregivers during hospitalization, highlighting the need for patients to independently manage a range of complex hospital tasks. These tasks include checking in for admission, waiting in line to pay bills, scheduling test appointments, recording doctor's orders, and tracking the dosage and timing of daily medications. These additional responsibilities consume significant energy, limiting the patients' ability to effectively manage their capacity. This situation underscores the crucial role of caregivers during hospitalization—not only to provide emotional support but also to assist with everyday tasks, enabling patients to focus more on their treatment and health management. Caregivers play a vital role in supporting patient capacity management.³⁷ With a caregiver present, patients are better able to understand and absorb information related to capacity management, while caregivers can assist with the implementation of self-management practices, improving both the quality and efficiency of capacity management. It is therefore recommended that future capacity management intervention programs be designed to address both the patient and caregiver together, in order to enhance the quality of care and adherence to capacity management practices.

While our study offers valuable insights, it is important to consider the limitations that may influence the interpretation of the findings. The small sample size of 12 participants, drawn from a single tertiary hospital in Xinxiang City, Henan Province, may not fully capture the diversity of capacity management behaviors and experiences among all CHF patients. This limitation restricts the generalizability of our findings to broader populations. Furthermore, while the study highlighted the importance of caregiver involvement in capacity management, it did not examine the specific roles and mechanisms of influence of different types of caregivers (eg, family members vs professional caregivers). Future studies could further investigate these roles and their impact on patient outcomes.

The findings of this study provide valuable insights into the personal experiences of patients with CHF regarding self-capacity management. While most previous studies have focused on the physiological and pathological mechanisms of CHF, our study addresses a critical gap by emphasizing the psychological and social dimensions of self-capacity management. Unlike quantitative studies that often overlook individual differences and subjective experiences, our qualitative methodology allows for a deeper understanding of the challenges and motivations that patients encounter. This approach not only complements existing research but also provides a foundation for developing more personalized and effective interventions.

Limitations

This study selected 12 patients with CHF from the cardiology ward of a tertiary hospital in Xinxiang City, Henan Province, using purposive sampling. The small sample size, limited regional scope, and focus on a single healthcare facility may not fully capture the diversity of capacity management behaviors and experiences among all CHF patients. Additionally, the reliance on semi-structured interviews, while valuable for exploring patients' personal experiences, may introduce subjectivity and information bias. Patients may alter their responses consciously or unconsciously based on their interaction with the researcher, potentially affecting data accuracy.

Although the study used information saturation to determine sample size, this assessment may be influenced by the researcher's subjective judgment, introducing potential bias. Furthermore, the study did not adequately address the impact of cultural and socioeconomic factors on patients' capacity management behaviors, which could vary significantly across different populations. Future research should explore these factors more thoroughly.

While the study highlighted the importance of caregiver involvement in capacity management, it did not examine the specific roles and mechanisms of influence of different types of caregivers (eg, family members vs professional caregivers). Future studies could further investigate these roles and their impact on patient outcomes.

Conclusions

The findings of this study highlight the significant challenges faced by CHF patients in self-management, particularly regarding capacity management. This not only impedes patients' ability to understand and implement capacity management strategies, but also diminishes their intrinsic motivation to translate their knowledge into practice.

To address these challenges, we propose concrete solutions for improving self-capacity management in CHF patients. Healthcare professionals should recognize and accommodate patients' diverse age-related and cognitive differences when delivering capacity management education. This can be achieved through customized, individualized educational programs that integrate technologies such as telemedicine and remote health services to enhance accessibility, continuity, and patient engagement. Regular post-education assessments are essential to track cognitive and behavioral changes, ensuring the sustained effectiveness of interventions. Continuous supervision and guidance can foster long-term capacity management habits, reducing the risk of patient deterioration and readmissions.

Furthermore, actively involving both patients and caregivers in the decision-making process can enhance patient engagement and intervention adherence. Future research should delve deeper into the impact of cultural and socioeconomic factors on patients' capacity management behaviors, using mixed-methods approaches to capture both quantitative and qualitative dimensions. Additionally, comparative studies examining the distinct roles and influences of various caregivers (eg, family members vs professional caregivers) can provide critical insights into how different support structures affect patient outcomes. Research into the effectiveness of technology-enhanced educational interventions and their long-term impact on capacity management behaviors is also warranted.

In conclusion, this study highlights the need for a multifaceted approach to enhance capacity management in CHF patients, integrating personalized education, technological support, and continuous care. By addressing the identified barriers and implementing the proposed strategies, future interventions can more effectively improve patients' quality of life.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no conflicts of interest in this work.

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