

Experiences of People with Heart Failure in a Contextual Cardiac Rehabilitation Program: A Phenomenological Study

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Abstract: Cardiac rehabilitation is widely recognized as an effective intervention for the secondary prevention of heart failure; however, participation rates remain low worldwide, including in Thailand, where existing programs are not well-suited to the Thai context. Therefore, a contextual cardiac rehabilitation program was developed to align with the Thai cultural contexts and lifestyles of Thai people with heart failure, and its effectiveness has been evaluated, demonstrating improved clinical outcomes. To gain insights into the development of a contextual cardiac rehabilitation program, this phenomenological study, part of a mixed-methods study, explored the experiences of people with heart failure who participated in the program and was conducted from December 2024 to January 2025. Ten participants were recruited purposively from a public tertiary hospital in Northeastern Thailand. Data were collected through two in-depth interviews, and transcripts were analyzed using thematic analysis.

Six themes emerged: 1) receiving multidisciplinary care, 2) gaining more essential knowledge, 3) changing way of life, 4) improving body functions, 5) perceiving the project benefits, and 6) perceiving obstacles. The study's findings reflected participants' experiences in the contextual cardiac rehabilitation program, its impact on their lifestyles, physical and mental health, and the benefits and challenges of participation. This provided a deeper understanding of the phenomenon and can be used to improve evidence-based practices and to develop nurse-led, patient-centered cardiac rehabilitation programs that integrate family caregivers into the rehabilitation process, promoting long-term adherence from hospital to home.

Keywords: Cardiac rehabilitation, Context, Experiences, Heart failure, Northeastern Thailand, Phenomenology, Rehabilitation

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Introduction

Heart failure (HF) is a critical global health problem affecting more than 56.2 million people, contributing significantly to mortality and disability, and increasing healthcare costs worldwide.¹ Secondary prevention interventions are crucial for managing HF management, reducing its burden, and controlling healthcare expenditures. Cardiac rehabilitation (CR) is a multidisciplinary intervention designed for secondary prevention after heart events, aiming to achieve optimal physical and mental health, significantly cutting mortality and hospitalizations.² CR includes exercise, nutritional counseling, medication management, psychological support, and lifestyle modifications.^{2,3} Despite its effectiveness, participation in CR for HF remains low worldwide.⁴ In Thailand, the CR participation rate among patients with cardiovascular disease (CVD) is reported to be only 12.5%.⁴ Several factors contribute to low participation in CR in Thailand, such as lack of energy, lack of awareness and knowledge, high cost of care, transportation issues, distance to CR centers, inability to take leave due to work schedules, exercise-induced pain or fatigue,^{4,5} suitability issues the Thai social-cultural contexts include work and family constraints to take time off from work, family obligations, misconceptions about daily physical activities expectation, that additional rehabilitation is unnecessary, and social support gaps.^{4,6} Additional barriers include the limited availability of CR centers and a lack of physician referrals to them.⁶

Due to those obstacles, a hybrid CR is an effective alternative that begins in the hospital and continues at home,⁷⁻⁹ yielding higher levels of patient satisfaction, compliance, and adherence than outpatient CR programs.^{7,10} Most previous studies focused on the effectiveness of hybrid CR programs in cardiac populations, but limited research explored the perspectives or experiences of people with HF participating in CR programs. Existing qualitative

studies examined the experiences of participating in digital CR and eHealth CR among patients with cardiovascular disease,^{11,12} after coronary artery bypass grafting (CABG),¹³ myocardial infarction (MI),^{14,15} and post-heart surgery recovery.¹⁶ A few qualitative studies were conducted in people with HF and caregivers to examine barriers and facilitators to home-based CR,¹⁷ perspectives on nurse-led self-management programs,¹⁸ and attitudes and beliefs toward CR to improve program uptake.¹⁹ However, there have been no studies on the perspectives or experiences of people with HF participating in the combined hospital-to-home CR programs, particularly in the Thai context.

To address this gap, the present study was conducted as part of a larger study, which adopted a sequential explanatory mixed-methods design. The initial quantitative phase evaluated the effectiveness of the contextual cardiac rehabilitation program (contextual CR) on clinical outcomes, followed by a qualitative study using a phenomenological approach to explore the experiences of people with HF in Thailand who had participated in the program. This qualitative study contributed to the quantitative study by providing an in-depth understanding of the factors that led patients to adhere to the program and patients' needs during CR participation. The phenomenological approach can explain and enrich the quantitative findings by providing insight into how patients experienced health improvement and how the program affected behavioral changes. The integration of both qualitative and quantitative research findings provided comprehensive insights into the program's effectiveness, explaining why and how it worked and failed in practice, which will be useful for program improvement and future implementation.

Literature Review

Currently, the CR programs can be delivered in several formats, including hospital- or center-based outpatient CR programs, home-based,^{2,3} hybrid,⁷

digital, and eHealth CR programs.^{11,12} Hospital CR programs are unsuitable for remote people with HF due to travel and time burdens, while home-based CR requires caregiver dependency, and digital programs require high-tech equipment and high-speed internet.^{4,6,7} Therefore, a contextual CR program was needed in this study. It differed from the conventional one in that it emphasized tailoring interventions to the individual contexts of people with HF, including sociocultural background, living environment, and daily life circumstances. This contextual CR program benefited people with HF by addressing barriers to participation observed in real-world practice, including integrating hospital- and home-based CR, family involvement, and telephone and LINE monitoring.

Qualitative studies conducted after CR participation are crucial for understanding the complex individual perspectives that influence participation in CR programs, as they often reveal insights that quantitative studies overlook. Previous studies on patient experiences in CR programs revealed positive outcomes, including improved knowledge, functional capacity, and psychosocial well-being.¹² Many patients reported emotional improvements, greater control over their recovery, and increased awareness of the importance of lifestyle modification and health management.¹⁵ However, some participants also expressed concerns regarding inadequate support and communication with healthcare providers,^{11,12} while some experienced anxiety and fear following a cardiac event, which negatively affected their engagement in CR programs.¹⁶ Additional barriers included a lack of knowledge about CR, communication difficulties with healthcare providers, and limited awareness of available services.¹⁴ In the Thai literature, one study examined the effectiveness of a hospital-based CR in HF patients, and another examined the effectiveness of a home-based exercise CR program.^{20,21} No study provides an in-depth understanding of HF patients' experiences of participating in CR programs in Thailand, particularly regarding how these programs

align with local and real-life contexts. Therefore, this study aimed to explore the experiences of HF patients participating in a contextual CR program. Findings would provide valuable insights to help healthcare professionals improve the contextual CR program, particularly for HF patients, and align it with the Thai healthcare system, thereby improving future patient care.

Philosophical and Methodological Underpinnings of the Study

Phenomenology based on Heidegger's philosophy was employed in this study. Heideggerian hermeneutic phenomenology is a philosophical foundation that focuses on the main concepts of lived experience, as seen in how things appear to us in our daily lives; Dasein refers to existence with self-awareness and understanding of their own being; being-in-the-world as human beings are not isolated, but situated within a social and cultural context; and hermeneutics, which is the art of interpretation to uncover deeper and hidden meanings within lived experiences.^{22,23} A methodology of Heideggerian hermeneutic phenomenology focuses on interpreting human existence, particularly the lived experiences of human beings within their social, cultural, and historical contexts, to reveal the meanings of everyday life.²³ Using Heideggerian hermeneutic phenomenology was appropriate to explore the lived experience of participating in the CR program through the lens of people with HF—how they felt and perceived their participation in the program. To understand these phenomena, researchers needed to remain reflexively considerate of the patients' backgrounds, including sociocultural contexts that shaped how people gave meaning to their CR participation.²⁴

Study Aim

This study aimed to explore the experiences of people with HF living in Northeast Thailand after participating in a contextual CR program.

Method

Design: This Heideggerian hermeneutic-phenomenological study, which was part of a larger sequential explanatory mixed-methods study, was conducted from December 2024 to January 2025 to obtain in-depth information directly from HF participants who attended the contextual CR program. The Consolidated Criteria for Reporting Qualitative Research checklist served as a guideline for this study.²⁵

Participants and Setting: Purposive sampling was used to recruit participants with HF who were admitted to the cardiology ward at a public tertiary hospital in Northeast Thailand and had completed the 12-week contextual CR program. The inclusion criteria to recruit participants were: aged 18 years or older (persons whose age over 60 years were assessed for cognitive impairment using the Mini-cog test),²⁶ had been diagnosed with HF with reduced ejection fraction (left ventricular ejection fraction: LVEF 15–40%) by the physician, were classified using the New York Heart Association Functional Classification as class I–III, had stable clinical condition after optimized medical treatment, were able to perform basic daily activities independently, were ready to begin a cardiac rehabilitation as suggested by the physician, and passed the 6-Minute Walk Test (6MWT).

The main criteria for participating in this qualitative study were 1) being in the intervention group, 2) having experience with a 12-week individual-based contextual CR program for participants and caregivers combining in-hospital education and training for two days before discharge, along with home-based care and support after discharge using a combination of remote and in-person support, including daily LINE application and telephone follow-up in the first week, weekly follow-up from weeks 3 to 11, and in-person clinic visits at weeks 2 and 12 to assess progress and reinforce the intervention with clinical outcomes assessment at baseline and at

the completion of the 12-week, 3) willingness to participate in the interviews, and 4) being able to speak and understand Thai. Data saturation was reached when further data collection was unlikely to reveal new insights; therefore, ten participants were recruited for this study.

Ethical Considerations: The proposal was approved by the Human Ethics Committee of the Faculty of Medicine Ramathibodi Hospital, Mahidol University (COA MURA 2024/500), and the Ethics Committee of Sunpasitthiprasong Hospital (CA code 048/2567). Participants were informed about the aim and method of the study; that participation was voluntary; that the interview would not affect their care by the healthcare team; and that they could answer the questions freely. They signed a written informed consent form. Participants could withdraw from the study at any time. All data were kept confidential and anonymous. The findings of this study were presented in the overall overview, in line with the academic purpose.

Data Collection: The primary investigator (PI) was a female PhD student and played a key role in data collection and analysis, having completed a qualitative research course and gained experience collecting and analyzing qualitative data in doctoral classes under the supervision of professors. After participants completed the contextual CR program (12 weeks) of a larger sequential explanatory mixed-methods study, the PI scheduled two in-depth interviews with each participant: one face-to-face in a private room within the cardiology ward or clinic, and one by phone. Each interview lasted about 30 to 45 minutes. Before starting the interviews, the PI built rapport with the participants, answered their questions, and obtained permission to record the interviews using both handwritten notes and audio recordings. During the interviews, the PI listened to participants' stories without judgment or prejudice. The second interview with each participant was conducted two weeks after the first, using the same questions to confirm and clarify data and to gather additional information. The

open-ended questions used in this study were, “Please tell me about your feelings, experiences, or perspectives after participating in the CR program,” “I would like you to tell me your feelings toward the health providers who provide CR for you,” and “Please explain the factors that motivated you to participate in CR and the obstacles you faced in participating in CR program.” The researcher wrote reflective field notes during the study to identify any personal biases and ensure that data analysis and interpretation were grounded in the collected data.

Data Analysis: The PI transcribed the Thai audio recordings into written text after each in-depth interview. The transcripts were then read, with the tape recordings listened to twice, to ensure accuracy and a clear understanding of the patient’s overall perspective on the contextual CR participation. The field notes were used in conjunction with transcripts. The data were analyzed following the thematic analysis described by Sundler and colleagues.²⁷ Before analysis, the researcher read the entire transcripts multiple times to become familiar with the breadth of all participants’ experiences, and then carefully read each participant’s transcript, followed by initial coding. The assigned codes, reflecting the core meanings of participants’ words, aligned with the research objective. The meanings derived from each participant’s data were compared and contrasted to identify similarities and differences. Similar and related meanings were grouped into meaningful patterns (subthemes); while differing meanings were highlighted for discussion. After that, similar subthemes were analyzed and aggregated into broader themes. All the themes that emerged described the experiences of people with HF participating in the contextual CR program in real life. The analysis was discussed among the researchers to reach an agreement on subthemes and themes. Subsequently, the PI followed up with the participants and shared a draft of the findings to assess whether they resonated with their experiences and perspectives,

thereby ensuring accuracy and validity. Because this study involved Thai participants, the in-depth interviews, data analysis, and interpretation were conducted in Thai. To support the global dissemination of this study, all analyzed data were translated into English. Language accuracy was checked by the major advisor and the co-advisor, both of whom were bilingual. Finally, a native English-speaking professor reviewed and edited the translation of the qualitative study from Thai to English to ensure its accuracy and academic quality.

Trustworthiness: The four criteria proposed by Lincoln and Guba, including credibility, transferability, dependability, and confirmability, were used in this study.²⁸ Credibility was strengthened through prolonged engagement with participants, as each in-depth interview lasted 30–45 minutes, fostering trust and eliciting authentic experiences. Two in-depth interviews were conducted to obtain a rich description of experiences. The second interview allowed participants to verify, add to, or remove data. The findings were returned to participants for verification of accuracy, allowing for member checking. For dependability, data collection and analysis followed the same rigorous procedures, using the same interview guide and data analysis methods. The researcher also used a tape recorder and took field notes during the in-depth interviews. For transferability, the researchers collected detailed data and reported them alongside the findings, providing a rich, comprehensive knowledge base that enabled other researchers to replicate the study. To enhance confirmability, peer debriefing was used to validate the analysis and interpretation. Four experts (advisors) individually analyzed the data and discussed it with the researcher until they reached a consensus on the emerging themes. To avoid potential bias at any stage of the research process, the researchers followed the data-collection steps, adhered to the interview guide, and interpreted the data based on the obtained information.

Findings

Ten participants took part in this study with a mean age of 57.70. Most participants were male ($n = 9, 90\%$) and married ($n = 9, 90\%$). All participants had been hospitalized within the past year, with a length of stay of 2–3 days, and all had family caregivers. All participants were diagnosed with heart failure with reduced ejection fraction (left ventricular ejection fraction [LVEF] $\leq 40\%$). Four out of ten (40%) of participants came from rural areas, and the rest came

from urban areas in Northeast Thailand. Almost all participants (90%) were Buddhist. The participants' occupations were diverse, including three farmers (30%), with the remainder comprising a taxi driver, a merchant, an instructor, a state enterprise officer, a self-employed person, an unemployed person, and a retired person. The mean duration of HF was 19.1 (range 8–84 months). Most participants had a 6-minute walk distance (6 MWD) of more than 300 meters. Participants' characteristics were summarized in **Table 1**.

Table 1. Description of the characteristics and contexts of ten participants

ID	Age	Sex	Education levels	Marital status	Religion	Occupation	Local context	HF duration (months)	LVEF (%)	6 MWD (meters)
1	63	Male	Secondary school	Married	Buddhist	Farmer	Rural	9	34	452
2	63	Male	Secondary school	Married	Buddhist	Taxi driver	Urban	10	25	370
3	41	Male	Secondary school	Married	Christian	Merchant	Urban	13	35	450
4	48	Male	Bachelor	Married	Buddhist	State enterprise officer	Urban	11	26	350
5	67	Female	Primary school	Married	Buddhist	Unemployed	Rural	84	26	320
6	48	Male	Master	Divorced	Buddhist	Instructor	Urban	12	29	480
7	65	Male	Secondary school	Married	Buddhist	Farmer	Urban	9	25	300
8	48	Male	Primary school	Married	Buddhist	Self-employed	Rural	19	26	400
9	70	Male	Master	Married	Buddhist	Retired government officer	Urban	8	40	200
10	57	Male	Secondary school	Married	Buddhist	Farmer	Rural	16	38	400

Note. HF = Heart failure, LVEF = Left ventricular ejection fraction, 6 MWD = 6-minute walk distance

Six main themes emerged, reflecting the experiences of people with HF living in Northeast Thailand after participating in a contextual CR program, as described below.

Theme 1: Receiving multidisciplinary care refers to the care patients with HF receive from various healthcare disciplines. They felt well cared for by a multidisciplinary team, as shown in the following sub-themes.

Sub-theme 1.1: Care from physicians

referred to any advice or consultation from doctors about health information, including taking medication, stopping smoking, and drinking, and performing light exercise. Several participants described:

“... The doctor advised me to quit smoking and drinking and to take the medication as prescribed...to take anticoagulant medication

after the cardiac catheterization and stent insertion to prevent the coronary artery from clogging again. I have to do light activities in the first period after the stent insertion. I can walk and do sports, but I am not allowed to lift heavy objects yet.” (P1)

“... He [The doctor] said that the coronary catheterization did not show any blockage in the coronary arteries. However, the heart could no longer contract properly, and I had to take the medication continuously. I could not stop taking the medication.” (P7)

Sub-theme 1.2: Care from nurses was defined as comprehensive care, including advice, encouragement, health monitoring, alerting patients to seek information related to HF, and education. Some participants shared their experiences:

“Nurses advise me to reduce a high salt diet, a sweet diet, exercise, and follow-up visits after discharge...I think telephone follow-up is good, not too frequently, to prevent forgetting anything... If I get worse, I can ask on the phone. ...” (P1)

“Nurses talk to me and give me advice like this, which encourages me. I feel they are taking good care of me, which gives me more encouragement...Nurses encourage me to CR practice...I feel reassured.” (P5)

Sub-theme 1.3: Care from physical therapists was advice, counseling, or training that physical therapists provide to participants to improve their ability to move. Some participants said that physical therapists provided them with education and guidance on exercises, such as:

“The physical therapist talks to me about exercise...I have learned to exercise and control my medication and my diet...Now, I know how to exercise and take medication continuously.” (P1)

“The physical therapist also gives good explanations about exercise and self-care behavior after cardiac catheterization.” (P3)

Sub-theme 1.4: Care from pharmacists referred to advice or suggestions of pharmacists on medication adherence, side effects of medication, and problems related to medication management. Some participants said:

“The pharmacist was excellent and gave me good advice on medication in the first few days of my hospital stay and before I went home.” (P6)

“At that time, the pharmacist asked about the drugs, how to take them, and whether I had taken all of them. The day I left the hospital, she then explained to me how to take each medication and what effects they had on my body and emphasized that I should take my medication regularly.” (P7)

Theme 2: Gaining more essential knowledge referred to acquiring the additional knowledge necessary to live with HF, including HF knowledge, symptom monitoring, and self-care. This theme was divided into three categories:

Sub-theme 2.1: Getting knowledge about the disease referred to gaining more disease-related knowledge. Participants knew the causes, stages, signs, and symptoms of HF. As the participants said:

“After joining the project [CR program] and reading the booklet, I know what causes this disease and what symptoms it starts with.” (P3)

“I have learned about the cause of HF disease... I think this project [CR program] helped me gain knowledge” (P10)

Sub-theme 2.2: Learning about symptom monitoring meant learning how to observe signs and symptoms in daily life, including dyspnea, weight

checking, pitting edema checking, and other symptoms in daily life. Some participants shared their experiences as follows:

"I press my shin every day to check swelling caused by fluid buildup in my body's tissues, if any, in my legs. It means I have water excess." (P6)

"I weigh myself every morning after going to the bathroom and before having breakfast. My weight is the same as before." (P10)

Sub-theme 2.3: Obtaining knowledge about self-care referred to gaining lots of self-care knowledge beneficial to practice in daily life, including exercise, nutrition, and medication. As the participants said:

"I have learned to take care of oral water intake, diet, and exercise." (P9)

"I gained a lot of knowledge that advises me on many things. I took it to take care of myself. Everything that was recommended was helpful to me." (P6)

Theme 3: Changing way of life meant altering daily lifestyle by modifying behaviors and habits after receiving knowledge from the CR program. This theme was divided into five sub-themes as follows:

Sub-theme 3.1: Tracking abnormal symptoms meant detecting any symptoms or behaviors believed to be related to HF, including fatigue, dizziness, breathlessness, tiredness, ankle swelling, and other symptoms in everyday life. As some participants said:

"I am not tired, and I don't have pulmonary edema after joining this project." (P1)

"I check my legs for swelling every day, but there is none." (P6)

Sub-theme 3.2: Exercising more referred to increasing physical activity more than ever. Most participants began exercising after completing the CR

program, and some increased the frequency, intensity, and duration of their exercise. As the participants said:

"I didn't exercise, so I used to ride my motorcycle to the nearby market because I was tired. Now, I walk for about 30 minutes every morning before I go to work as a cab driver. I take my pulse before and after exercise and write it down in my handbook." (P2)

"Now I can run up the stairs without breathlessness. I'm not as tired as I used to be. I play badminton for 30 minutes every evening. I used to do a bit of sport, but I didn't know how to exercise properly." (P3)

Sub-theme 3.3: Controlling diet was regulating it by being aware of what to eat, how much to eat, what foods to avoid, and cooking at home. Most participants shared their personal experiences to restrict their intake of salt, fat, and sugar as follows:

"I exercise, control medication taking, and control diet after joining this project." (P1)

"...I avoid greasy foods and prefer steamed vegetables, steamed fish, boiled eggs, and steamed chicken. I try to avoid fried food and cook my meals as much as possible, though not often. I also avoid fatty and sweet food." (P6)

Sub-theme 3.4: Taking medicine regularly meant that the medication was taken on time every day as prescribed by the doctor. Participants knew that by taking their medication regularly, they could control the signs and symptoms of their disease. As described by some participants:

"I continue taking the medicine as the doctor told me." (P4)

"I take medicine regularly after joining this project because I knew that I had to take medicine to get better." (P8)

Sub-theme 3.5: Quitting tobacco smoking and alcohol drinking referred to giving up on cigarette smoking and alcohol consumption. After learning that smoking and drinking alcohol worsened their heart disease, participants tried to reduce or stop those two things as described:

“I have been free of alcohol for about 3 months since I joined this project. When I first quit drinking, I was frustrated and craving. Now that I’ve quit, I’ve stopped completely and have no more cravings to drink.” (P7)

“I used to drink alcohol and smoke, but I’ve tried to cut down on that a lot, and now I try not to smoke at all. As for cigarettes, I’ve reduced smoking to about six cigarettes a day, whereas I used to smoke about two packs a day... But now I’ve managed to reduce smoking.” (P8)

Theme 4: Improving body functions referred to making the body functions stronger. Participants reported improvements in physical functioning and reductions in physical symptoms of HF. Two sub-themes reflected the patients’ feelings as described below:

Sub-theme 4.1: Positive outcomes of body functions were defined as experiencing clinically significant physical improvements. Two positive outcomes, including feeling bodily functions, and the heart becoming stronger, were experienced by participants as follows:

“... I have the feeling that my heart is beating more strongly. Recently, I went to the doctor to have an echocardiogram, and I found that my heart is contracting better, from 13% to 35%, and that my heart muscle has gotten smaller. The doctor said, “Wow, your heart is squeezing much better.” (P3)

“The results of the second round of physical performance testing showed that it was much better than the first test because I regularly exercised and followed the doctor’s recommendations.” (P4)

Sub-theme 4.2: Positive outcomes of symptoms referred to having positive symptoms after following the CR program and applying the knowledge gained to perform in daily life. Participants shared their positive symptom outcomes, that is, being fit, feeling fine, having no HF symptoms, and maintaining a healthy body, as follows:

“I feel good, I’m not as tired as before, my body is fit and good.” (P6)

“Now, I take a diuretic drug regularly and limit drinking water to about one liter. I am fine, breathing normally, I don’t have water in the lungs, I can lie down.” (P8)

Theme 5: Perceiving project benefits referred to participants’ views about the positive outcomes or value derived from the CR program. All participants reported improvements in clinical, physical, and mental outcomes, as well as support from others, as a benefit of participating in the program. This theme was divided into eight categories:

Sub-theme 5.1: Decreasing hospital readmissions referred to reducing the number of repeat hospitalizations for the same disease. Some participants perceived the benefits of the CR program in that it led to fewer repeat hospital admissions, and some described them:

“I think I follow this project, and it can reduce my hospital visits.” (P9)

“I think this project is a treatment, and I read this manual; it gives me more knowledge to prevent re-hospitalization. When I followed the manual, I avoided re-hospitalization.” (P10)

Sub-theme 5.2: Reducing hospital visits meant a decrease in inpatient, outpatient, observation stay, or ER visits. Participants experienced the benefits of reducing hospital visits as follows:

"Now I'm in better health. I don't feel tired as much lately. I don't have to go to the hospital repeatedly." (P8)

"I try to follow all the advice given because I believe it would help me avoid having to spend time in a hospital bed." (P10)

Sub-theme 5.3: Not getting sick referred to feeling healthy and without illness or disease. Participants valued the CR program, which could prevent further illness and help them avoid becoming sicker, as stated:

"I joined this project because it made my body better. When I did it, I felt that my body was better, I didn't feel tired, and I didn't want to get sick again." (P4)

"I think this project is beneficial to me. It is useful in terms of knowledge and practical principles for those suffering from this disease. I would rather not get sick again or get sicker than this." (P10)

Sub-theme 5.4: Reducing the taking of medicine was decreasing medication intake after attending the CR program. Some participants explained that joining the CR program helped them reduce their drug use as follows:

"After I joined the project...I think I might be able to reduce the dosage of medication." (P3)

"I joined this project because I thought it was good... Finally, I would like to use the word prayer to ask for things to get better and help me reduce my intake of prescription drugs." (P10)

Sub-theme 5.5: Obtaining benefits from project materials referred to receiving advantages from printed educational materials, such as the CR

handbook. Most participants stated that the CR program manual was clear, simple, and easy to understand, as well as easy to pick up and read, as described by participants:

"The manual is easy to read and understand. It has everything in it, the first symptoms before pulmonary edema and the gradual onset of symptoms, as well as the medications." (P3)

"This manual is fine, very effective, and contains advice on diet, exercise, self-monitoring, and medication.... This is a good booklet because I can open it up and read it repeatedly. If it were a file, I wouldn't open it. It's easier to handle because most patients are older and have trouble reading on their phones. It's better to have a booklet like this." (P6)

Sub-theme 5.6: Continuous telephone monitoring, alerting, and motivating were defined as providing ongoing telephone follow-up, reminders, and encouragement to patients after discharge from the hospital. As a result, this could promote long-term adherence and improved health outcomes. All participants indicated that patient monitoring by healthcare providers, especially nurses, was the most key factor in promoting patient adherence to the CR program. They could directly ask nurses by telephone if they had any questions about self-care. Some participants described this as follows:

"I think telephone follow-up is good, not too frequently, to prevent them forgetting anything. ...If I get worse, I can ask on the phone. ... a follow-up once a week is fine." (P1)

"I think it needs to follow up with patients after discharge. That might be better done by phone calls or via a LINE app, as I sometimes encounter problems over a long period and can consult with nurses. (P9)

Sub-theme 5.7: Receiving support from caregivers meant providing support from caregivers, including family members and relatives. Most participants felt well supported by their family members and relatives. Caregivers supported participants by cooking for them, reminding them to take medication, encouraging them, accompanying them to the doctor, and recording exercise and medication intake in the CR booklets. As participants mentioned:

“My wife encourages me, and my relatives give me the low salt diet and a diet that is good for heart disease.” (P2)

“My mother cooks for me, warns me not to eat this or that, and reminds me to take medicine every day.” (P6)

Sub-theme 5.8: Receiving psychological benefits referred to experiencing positive effects on mental health after participating in the CR program, such as feeling warmth, not feeling abandoned, feeling encouraged, feeling confident in practice, and feeling cared for. As some participants described:

“Taking part in this project has made my life with this disease easier because I now know how I should behave during rehabilitation, which gives me more self-confidence.” (P3)

“Patient follow-up like this is good. The nurse asked how the symptoms were and gave advice. ... I feel warmth that nurses are taking care of me. When someone asked how the symptoms were, I felt warm.” (P9)

Theme 6: Perceiving obstacles referred to recognizing and identifying barriers or challenges that interfere with implementing the CR program to live with heart disease. Two sub-themes reflecting the experiences of HF patients were:

Sub-theme 6.1: Environmental obstacles referred to physical barriers, including the natural

environment, the built environment, and personal factors such as weather obstacles, lack of places to exercise, and lack of time for exercise. As participants stated:

“The obstacle is the weather, because sometimes it rains, which makes it impossible to go out for exercise.” (P4)

“Some days, I work late into the night, which leaves me with no time to exercise, so I don’t have time for exercise because I have to write academic papers.” (P6)

Sub-theme 6.2: Forced situations were defined as unforeseen situations, situations beyond one’s control, unavoidable situations, or situations that were done with consideration for others’ feelings. A few participants reported having trouble controlling unhealthy diets due to daily life circumstances forcing them to do so. As the participants said:

“I have difficulty controlling my diet because I often have no choice in what I eat. I have to eat what is provided in meetings or by my workplace, which makes it difficult to avoid certain foods.” (P4)

“Sometimes I have to eat out. I can’t cook, and have to order food from restaurants... But I try not to overeat and tell them not to add fish or soy sauce. ...But sometimes they [cookers] make it together because they have ordered for many people. They can’t separate it because it has to be made all at once.” (P8)

Discussion

Based on the findings, six themes emerged from the experiences of Northeast Thai people with HF regarding participation in the contextual CR program. Individual discussion of each theme was as follows:

The multidisciplinary aspect of the contextual CR program was not addressed in other studies, yet participants who received this holistic and comprehensive care reported significant benefits from the collaborative approach, which improved clinical outcomes. This study involved a multidisciplinary CR intervention comprising a physician, a nurse, a pharmacist, and physical therapists, with the PI, a nurse researcher, serving as a nurse who provided patient care education and training and coordinated with the program's healthcare team. Although the multidisciplinary team was part of their routine care, the contextual CR program in this study involved close collaboration between team members to develop a systematic workflow by having a nurse researcher serve as a nurse in the team to manage the contextual CR program, fostering effective care, including monitoring and follow-up HF patients, with the expectation that the success of this intervention research may put the real-world impact by implementing this contextual CR program to care for people with HF in the future. This was supported by a previous study that showed participants were supervised by nurses, psychologists, and CR program staff.¹² Nursing support was crucial when problems arose during implementation of the recommended behaviors. Patients expressed a need to use a multimedia chat to access accurate information and receive professional advice for their conditions while staying at home. They felt that interactions with the nurse encouraged them to initiate conversations about their health and made them feel comfortable asking for help. This also gave nurses time to listen to patients' concerns. Cardiologists encouraged patients to participate in CR and advised them on it, including diet, risk factor control, and exercise. Patients perceived this information as a positive influence on their participation in CR.^{13,16} For physical therapists, they were seen as the main source of information about physical exercise.¹⁴ Pharmacists provided patient education, conducted medication reviews, resolved drug-related problems, and encouraged medication

adherence.²⁹ Importantly, incorporating a multidisciplinary team in the CR program improves exercise capacity, reduces symptoms, and enhances health-related quality of life (HRQOL).³⁰

The findings showed that HF patients gained more essential knowledge from individual teaching and learning materials, which was consistent with previous qualitative studies in patients with coronary artery disease (CAD), in that the CR programs were valuable sources of information and appreciated learning about the disease, self-care needs after cardiac events, skills related to heart disease, self-management,¹⁵ and monitoring and controlling symptoms.^{11,19} They described the materials containing the content as helpful for reviewing knowledge.¹² Furthermore, it is important to tailor the educational approach to each patient's diverse needs.³¹ In this study, effective approaches included demonstrating cultural sensitivity with appropriate training for patients and their caregivers, understanding their cultural beliefs, and incorporating their goals and literacy levels.

Increased knowledge gained through participation in the contextual CR program helped participants with HF attempts to watch out for noticeable symptoms, increase their physical activity, control their diet, take regular medication, and quit smoking and drinking alcohol. Previous studies supported our findings, showing that the CR program led to various behavioral changes, such as performing self-monitoring,¹⁹ a desire to change exercise behavior,¹¹ following dietary recommendations to change healthy eating habits, motivation to quit or reduce smoking, reduce alcohol consumption, and medication adherence.^{15,16} Moreover, most patients focused on dietary information because changing their diet was the most difficult lifestyle change for them. They need personalized guidance on incorporating a healthy diet into their daily lives.^{16,17}

The contextual CR program contributed to improvements in bodily functions and symptoms among participants with HF in this study. These findings aligned with previous studies, most patients

experienced improvements in both physical and mental well-being. They perceived better performance in daily, recreational, and occupational activities, reduced HF symptoms, and increased physical mobility.^{11,15,32} Therefore, the contents of the CR program included knowledge and skills, especially exercises tailored to patients' needs, which could improve body functions and help patients restore and enhance their ability to perform daily activities and tasks.³³

The contextual CR program had a positive impact, as participants with HF reported reduced readmissions, fewer hospital visits, and fewer recurrent illnesses. These results were consistent with previous studies showing that the CR's comprehensive, multidisciplinary approach significantly benefited patients, including improved physical functioning, HRQOL, and better management of cardiovascular risk factors, leading to fewer readmissions and hospitalizations³⁴ and prevention of future illness.³² Additionally, an existing study³⁵ supported the findings of this study in that the CR significantly influenced patients' medication adherence.

The involvement of family caregivers in the contextual CR program was a key component for improving patient outcomes. The findings showed that family caregivers applied the knowledge they gained from the contextual CR program to care for participants with HF at home by helping participants manage daily activities, diets, and medication; modifying the home environment to enhance safe CR; motivating participants to engage in CR; health monitoring; and providing psychological support. It aligned with a previous study suggesting that participants' families played a crucial role in providing support during the CR program, as they helped participants feel confident that they were being supported in remembering important information.¹² Additionally, integrating family caregivers into the CR program could motivate and support patients, leading to enhanced adherence to medication, dietary restrictions, attendance at CR, symptom monitoring, and ultimately improving patients' clinical outcomes and quality of life.³⁶

One key takeaway from this study was the significant benefit of nurses closely monitoring patients' conditions. After participating in the CR program at the hospital and having a nurse follow up for three months via telephone and the LINE application to support participants after discharge, participants felt warmth, encouragement, care, and confidence to exercise, rather than abandonment. This finding was consistent with previous studies,^{11,14,15} which showed that patients with CVD and myocardial infarction perceived the benefits of CR for emotional health, including restored self-esteem, improved social relationships, and renewed confidence to return to daily activities and work. Additionally, patients described how providers' reassurance and information about the CR reinforced their perception of its usefulness and importance, and they indicated that this information positively influenced their participation in the CR.¹³ Despite the time required per participant in the contextual CR program—delivered individually by a multidisciplinary team to each HF participant, it was substantial in this study. However, the program was considered highly beneficial for both patients and healthcare systems, as it significantly reduced the readmissions and hospitalization rates. As reflected in the findings, the key sub-themes related to perceiving project benefits included decreased hospital readmissions and reduced hospital visits. Consistent with previous studies, investment in multidisciplinary CR was found to be cost-effective, as it reduced expensive hospitalizations and improved patient outcomes, leading to lower total healthcare costs over time and more efficient resource utilization.^{37,38}

Obstacles to CR practice were important, including environmental factors and constraints imposed by daily life. This was partly consistent with previous studies that identified common CR barriers such as unsuitable weather,⁶ lack of exercise space,³⁹ and insufficient time for exercise.⁴⁰ An earlier study reported that men had limited control over family meals because their spouses were primarily responsible

for meal preparation.⁴¹ The traditional gender roles in many Asian cultures may constrain patients' ability to independently implement dietary changes recommended during CR at home.⁴¹ However, most participants revealed that their caregivers gave them a low-salt diet and a diet good for heart health; some took on the responsibility of cooking for them and warned them to restrict certain foods that were not good for their health.

In addition, the findings highlighted variations in the participation levels among people with HF in the contextual CR program. In this study, participants who demonstrated high levels of engagement reported strong family support, a clear understanding of the benefits of rehabilitation, and the ability to integrate the program into their daily routines. The use of accessible communication channels, such as the LINE application and telephone follow-up, also facilitated continuous engagement and adherence. Therefore, strong family support was a key facilitator of improved patient motivation and engagement in CR programs.³⁶ This study strongly suggested that caregiver involvement in the contextual CR program was essential and should be encouraged, as this approach enhanced patient adherence to the contextual CR program, provided vital support for patients during transitions from hospital to home, and sustained health gains.

The interesting points of the contextual CR program of this study focused on the personal and local context. For the personal context, the program provided individualized care by tailoring education to the Thai people's personalities, abilities, language, and environment, ensuring self-care was actionable at the hospital and home. In the local context, the program's education incorporated people with HF's cultural backgrounds (Northeastern culture), religious beliefs (Buddhist), and traditional practices by adjusting diets to Northeastern dietary practices, making Thai lifestyle modifications, and managing disease, thereby increasing adherence to advice and self-reliance. This was consistent with an existing study suggesting that an effective CR program

required adapting programs to a patient-centered focus, a personalized approach, tailored to the local context and available resources, and program flexibility that combined hospital-based and home-based care to increase accessibility, particularly in rural areas.^{42,43}

Limitations of the Study

The findings of this study are limited because 90% of the participants were male. The lack of women may impact the differences in healthcare-seeking behavior. The findings derived from the participant interviews primarily reflect male experiences and should therefore be interpreted with caution and not transferred to female populations. In addition, the participants showed limited variation in illness duration, with most being newly diagnosed and few having long-term HF, which limits our ability to make inferences for patients with longer illness trajectories. Furthermore, the imbalance in gender and illness duration restricted our ability to determine whether tailored CR programs were needed for specific subgroups, such as female patients or those with longer disease duration. Future studies should include a more diverse group of participants to better inform context-specific CR program development.

Conclusions and Implications for Nursing Practice

This study showed the experiences of people with HF participating in the contextual CR program in Northeast Thailand, with multiple benefits, including improved knowledge and self-management skills, greater symptom awareness, and enhanced motivation through family caregiver support and ongoing nurse follow-up. The findings highlighted the critical roles of nurses in facilitating patient engagement, coordinating multidisciplinary care, and providing continuous monitoring through telephone or LINE applications and face-to-face meetings at the cardio clinic, which

contributed to improved physical functioning, reduced hospital readmissions, fewer hospital visits, improved self-care behaviors, feeling healthy, decreased medication intake, and improved HF symptoms. Importantly, participants' experiences indicated that individualized support, consistent follow-up, and family involvement were key to sustaining participation in contextual CR programs.

Based on these findings, nursing practice should incorporate patient-centered strategies, such as motivational interviewing, structured follow-up systems, and active engagement of family caregivers, to enhance adherence and long-term self-management. In addition, CR programs should be adapted to reflect better contextual and sex-specific needs, particularly for female patients who were underrepresented in this study. These findings may inform the refinement of evidence-based practice guidelines and the development of more responsive nurse-led CR programs within hospital and community settings. Future research should focus on longitudinal intervention studies to evaluate the sustained impact of these program improvements and explore sex-specific differences in outcomes.

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Author Contributions

Study design: WPr, MA, AS, JGV, PS, PT, WPi
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Data analysis: WPr, MA, AS, JGV, PS
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ประสบการณ์ของผู้ที่เป็นโรคหัวใจล้มเหลวต่อการเข้าร่วมโปรแกรมฟื้นฟูสมรรถภาพหัวใจตามบริบท : การวิจัยปรากฏการณ์วิทยา

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ประพฤทธิ์ ธนกิจจารุ วรณนา พิมานแพง

บทคัดย่อ: การฟื้นฟูสมรรถภาพหัวใจได้รับการยอมรับอย่างกว้างขวางว่าเป็นแนวทางที่มีประสิทธิภาพในการป้องกันภาวะหัวใจล้มเหลวซ้ำ อย่างไรก็ตาม อัตราการเข้าร่วมโปรแกรมดังกล่าวยังคงอยู่ในระดับต่ำทั่วโลก รวมทั้งในประเทศไทยซึ่งโปรแกรมที่มีอยู่ยังไม่เหมาะสมกับบริบทของประเทศไทย ดังนั้น จึงได้มีการพัฒนาโปรแกรมฟื้นฟูสมรรถภาพหัวใจที่สอดคล้องกับบริบทวัฒนธรรมและวิถีชีวิตของคนไทยที่เป็นโรคหัวใจล้มเหลว และประสิทธิภาพของโปรแกรมนี้ได้รับการประเมินพบว่า สามารถช่วยทำให้ผลลัพธ์ด้านสุขภาพดีขึ้น การวิจัยปรากฏการณ์วิทยาซึ่งเป็นส่วนหนึ่งของการวิจัยเชิงผลานวิธินี้ จึงศึกษาประสบการณ์ของผู้ที่เป็นโรคหัวใจล้มเหลวที่เข้าร่วมในโปรแกรมฟื้นฟูสมรรถภาพหัวใจตามบริบท ซึ่งดำเนินการตั้งแต่วันที่ 1 ธันวาคม พ.ศ. 2567 ถึงเดือนมกราคม พ.ศ. 2568 ผู้เข้าร่วมการวิจัยจำนวน 10 ราย ได้รับคัดเลือกแบบเฉพาะเจาะจงจากโรงพยาบาลรัฐระดับตติยภูมิแห่งหนึ่งในภาคตะวันออกเฉียงเหนือของประเทศไทย การเก็บรวบรวมข้อมูลใช้การสัมภาษณ์เชิงลึก จำนวน 2 ครั้ง และบทสัมภาษณ์ได้รับการวิเคราะห์ด้วยวิธีการวิเคราะห์แก่นสาระ

ประเด็นหลัก 6 ประเด็นได้รับการค้นพบ ประกอบด้วย 1) การได้รับการดูแลแบบสหสาขาวิชาชีพ 2) การได้รับความรู้ที่จำเป็นมากขึ้น 3) การเปลี่ยนแปลงวิถีชีวิต 4) การทำงานของร่างกายดีขึ้น 5) การรับรู้ถึงประโยชน์ของโปรแกรม และ 6) การรับรู้ถึงอุปสรรค ผลการศึกษาได้สะท้อนให้เห็นถึงประสบการณ์ของผู้เข้าร่วมโปรแกรมการฟื้นฟูหัวใจตามบริบทและผลที่มีต่อวิถีชีวิต สุขภาพกาย และสุขภาพจิต รวมถึงประโยชน์และความท้าทายของการเข้าร่วมโปรแกรม ข้อมูลนี้ทำให้เข้าใจปรากฏการณ์ได้ลึกซึ้งยิ่งขึ้น และพยาบาลสามารถนำไปใช้เพื่อปรับปรุงแนวทางการปฏิบัติพยาบาลตามหลักฐานเชิงประจักษ์ และพัฒนาโปรแกรมฟื้นฟูหัวใจที่นำโดยพยาบาลและเน้นผู้ป่วยเป็นศูนย์กลาง โดยบูรณาการผู้ดูแลในครอบครัวเข้าสู่กระบวนการฟื้นฟู เป็นการส่งเสริมให้ผู้ที่เป็นโรคหัวใจล้มเหลวปฏิบัติตามการฟื้นฟูสมรรถภาพหัวใจได้อย่างต่อเนื่องในระยะยาวตั้งแต่โรงพยาบาลจนถึงบ้าน

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