European Journal of Cardiovascular Nursing

EUROPEAN SOCIETY OF CARDIOLOGY®

Original Article

European Journal of Cardiovascular Nursing 1–10

DOI: 10.1177/1474515116651977
cnu.sagepub.com

SAGE

The lived experience of individuals in cardiac rehabilitation who have a positive outlook on their cardiac recovery: A phenomenological inquiry

Sheeba R Nadarajah[1], Susan W Buchholz[2], Debra L Wiegand[3] and Ann Berger[4]

Abstract

Background: Cardiac rehabilitation is often under-utilized despite its well-known benefits. Individuals with cardiac disease who exhibit a positive outlook often experience improved health outcomes. This study tried to explore the question: "What are the lived experiences of cardiac recovery in cardiac rehabilitation individuals with a predominantly positive outlook in the context of an acute cardiac event?"

Aims: Our primary aim explored the experiences of cardiac recovery in cardiac rehabilitation participants with a predominantly positive outlook, within the context of an acute cardiac event, including exploring barriers and facilitators of cardiac recovery. Our secondary aim explored how a positive outlook impacted completion of phase two of the cardiac rehabilitation program.

Methods: Husserlian phenomenology guided this study. A purposive sample of 10 individuals who had experienced an acute cardiac event and had a predominantly positive outlook were interviewed. Data were analyzed using Colaizzi's method.

Results: Three themes emerged from the data. The first was "choosing life over death," where participants discussed how they made a decision to improve their health. The second theme was "learning to live a new self," where participants described the changes they had to make in order to improve their health. The third theme was "a life-transforming cardiac event" where participants shared how the cardiac event had changed their life.

Conclusion: The participants' decisions to choose to live, led them to embrace their cardiac recovery. It is important for nurses to identify individuals in cardiac rehabilitation that need additional support. In addition, alternative models of cardiac rehabilitation programs need to be explored.

Keywords

Cardiac rehabilitation, cardiac recovery, positive outlook, facilitators, psychological distress, barriers, lifestyle changes, phenomenology

Date received: 1 November 2015; revised: April 1 2016; accepted: 4 May 2016

Introduction

Cardiovascular disease is the leading cause of death globally. More than 17.5 million men and women died of cardiovascular disease in 2012 worldwide.[1] The economic cost of cardiovascular disease was over $863 billion in 2010 and it is projected to increase to $1044 billion by 2030.[1]

Because of high mortality, morbidity, and disability in individuals after a cardiac event, cardiac rehabilitation (CR) programs were established four decades ago.[2,3]

[1]Department of Nursing, Bowie State University, USA
[2]Adult Health and Gerontological Nursing, Rush University College of Nursing, USA
[3]Department of Organizational Systems and Adult Health, University of Maryland, Baltimore, USA
[4]Pain and Palliative Care, Clinical Center, National Institutes of Health, USA

Corresponding author:
Sheeba Raaj Nadarajah, Department of Nursing, Bowie State University, 14000 Jericho Park Road, Bowie MD 20715, USA.
Email: snadarajah@bowiestate.edu

People with existing cardiac disease can be referred to CR by their health care provider. CR is a secondary prevention program that aims to improve the health and quality of life for people with cardiac disease.[4] CR programs are offered in three phases. Phase one is initiated during the hospitalization period. Phase two is a 12-week program that individuals attend as an outpatient.[5] After phase two ends, participants have an option to continue in the CR program by enrolling in phase three CR where they will be encouraged to participate in every activity at the CR center except for telemonitoring of their heart.[3,6,7]

Benefits of participation in a CR program are well demonstrated by decreasing mortality, morbidity, and disability, and increasing quality of life.[8–13] Despite these benefits however, phase two CR is often under-utilized. In fact, only 15–30% of eligible individuals participate in the second phase of the CR program.[14] Drop-out is also common, with 30–50% of individuals leaving before the end of phase two.

Barriers to CR programs have typically been investigated by comparing the characteristics of completers and non-completers of CR programs. Many reported barriers of CR participation include: system level factors (lack of referral, lack of physician involvement, no local CR center), individual level factors (lack of self-motivation, misconceptions about CR, work commitments, depression and anxiety, lack of familial support, lack of insurance), and organization level factors (dislike of group setting, dislike of participating in a program with the elderly, women may dislike being in the same group setting with men).[15–26] System, individual, and organization level factors all potentially affect participation in a CR program. Therefore, it is important to understand the individuals' perspectives of these factors and the influence that these factors have on completion or drop-out of the CR program.

However, it is a well-known fact that when individuals face a life-threatening event, such as a myocardial infarction, psychological distress is the common result.[27–29] Individual reactions vary; some take the whole situation as a negative experience, whereas others may be able to view part of this experience more positively. Participants with a positive outlook tend to overcome the challenges posed by their cardiac disease, and make necessary changes to live a healthier life. Researchers are now exploring the impact of a positive attitude on survival in individuals with cardiac disease.[30–32] In a recent study, for example, individuals with cardiac disease who had a positive approach toward their recovery were found to exercise more and had a lower five-year, all-cause mortality as compared with individuals who had cardiac disease but were less positive about their experience during recovery.[33]

The assumption of the researchers of this study was that participants with a positive outlook would have better cardiac recovery experiences. The term "cardiac recovery" refers to the period of time when a person recovers in physical, emotional, social, and spiritual aspects after an acute cardiac event. Patients with a positive outlook will overcome barriers and obtain support through facilitators to successfully complete phase two of the CR program. Therefore, our study focused on participants who not only completed phase two CR but who also had a positive outlook on their cardiac event. Our primary aim was to explore the experiences of cardiac recovery in CR participants with a predominantly positive outlook, in the physical, psychological, social, and spiritual domains, within the context of an acute cardiac event, including exploring barriers and facilitators of cardiac recovery. Our secondary aim was to explore how a positive outlook impacted completion of phase two of the CR program. This study tried to explore the question: "What are the lived experiences of cardiac recovery in CR individuals with a predominantly positive outlook in the context of an acute cardiac event?"

Methods

A qualitative approach with Husserlian phenomenology was used to investigate the research question. This study was conducted under the principles of Declaration of Helsinki[32] and approved by institutional review boards at the National Institutes of Health, Bethesda and University of Maryland, Baltimore. The consolidated criteria for reporting qualitative research (COREG) was used to organize the details and quality of this study.[34]

Setting

Participants for the study were recruited from an outpatient CR center in the Mid-Atlantic area. The CR program was affiliated with a community hospital and it had phase two, and phase three programs. Phase two at the research facility had four main components that included medical evaluation, physical activity opportunities, lifestyle education, and psychosocial support. Phase two and phase three had set times during which they were open on weekdays, but they were not open on weekends. Classes were offered on the importance of exercise, eating a heart healthy diet, managing stress, and smoking cessation. Occupational therapists' services were also offered to participants. Psychologists were available to provide one-on-one personal counseling and support. Thus, a multi-disciplinary team that included cardiac nurses, cardiologists, exercise physiologists, diabetes educators, psychologists, nutritionists, and other health care team members, provided care for CR participants in both phase two and phase three programs.

Design

Descriptive phenomenology was used in this study to understand the lived experience of CR participants who had a positive outlook after their cardiac event.[35] Specifically, the Husserl approach, which is a descriptive phenomenology

approach, guided this study, incorporating the concepts of "intentionality," "essence," and "reduction." Husserl's concept of "intentionality" was used to describe the conscious experience (understanding and interacting with the world) of CR participants possessing positive outlooks. The "essence" or true meaning of experience was sought from individuals who have had this experience. Even though the essence or the experience of participants can be similar, it is not universal. "Reduction" was employed by descriptively reporting participants' experience in its original form without the researchers interpretation.[35–37]

Participants and procedure

A purposive sampling strategy was used to recruit participants for this study. Three to 15 individuals are typically needed in order to have data saturation using phenomenology.[38] A sampling approach was intentionally used to recruit participants who had experienced the phenomena of investigation: the lived experience of CR participants with a predominantly positive outlook in the context of an acute cardiac event. The CR director and staff identified potential research participants that had: (a) an acute cardiac event and (b) completed phase two of the CR program. The research staff provided letters with a synopsis of the study, which were given to potential participants. Interested participants were asked to provide their name and phone number, which was given to the research team. Participants were then contacted to discuss the study and asked if they were interested in participating. If they expressed an interest in the study, participants were scheduled for a session at the CR center for further screening and data collection. The first author and the fourth author conducted the interviews.

Upon arrival, participants were seated in a private conference room. Informed consent and Health Insurance Portability and Accountability Act (HIPPA) forms were given to the participants to read, and then further questions about the study were answered. The data collection session began with obtaining demographic information. Health information was obtained regarding the diagnosis and duration of the cardiac illness, and the time since initial treatment (including CR). Inclusion criteria for this study included participants that: (a) had experienced an acute cardiac event; (b) had completed phase two CR; (c) had reported a predominantly positive outlook post cardiac event; (d) were able to read and write in English; and (e) were willing to participate in an audio-recorded interview. The exclusion criteria were: (a) having a congenital cardiac disease diagnosed <18 years of age; (b) being < 18 years of age; and/or (c) having a distress thermometer score >3. A checklist was used to assess if the participant had met inclusion criteria for the study.

In order to determine if participants met inclusion criteria #3, an experiential questionnaire was used in order to assess a "predominantly positive outlook" in individuals. A prior research team comprised of five clinical experts and two researchers developed the experiential questionnaire that was used in the current study. The experiential questionnaire had been used previously with individuals who were cancer survivors.[39] The researchers adapted the questionnaire to explore a positive outlook for individuals who had cardiac disease. Two questions were used to screen individuals for the presence of a predominantly positive outlook. The assumption was that participants who were less than six months from their cardiac event would report more negative experiences than participants who were more than six months from their cardiac event. Scores on the experiential questionnaire were interpreted differently depending on how much time had elapsed between the study and the cardiac event. The questions were as follows.

> Question one: "Overall, how much has having your illness or condition affected your views about yourself and your life?" A Likert scale was used (0=not at all, 1=a little bit, 2=somewhat, 3=quite a bit, 4=very much). Participants who were <6 months from the acute cardiac event with a score ⩾2 were asked to proceed to question two. Participants who were ⩾6 months from the acute cardiac event with a score ⩾3 were also asked to proceed to question two. Otherwise, participants were thanked for their time and were excluded from participating in the study.
>
> Question two: "How positive or negative has the overall impact of your illness or condition been on your views about yourself and your life?" A Likert scale was used (1=completely positive, 2=mostly positive, a little negative, 3=a little more positive than negative, 4=equally positive and negative, 5=a little more negative than positive, 6=mostly negative, a little positive, 7=completely negative). Participants who were <6 months from the acute cardiac event with a score ⩽6 were asked to proceed to the interview session. Participants who are ⩾6 months from the acute cardiac event with a score ⩽4 were asked to proceed to the interview session. Otherwise, participants were thanked for their time and were excluded from participating in the study.[36]

In order to determine that participants did not meet the third exclusion criteria, participants' psychological distress was assessed using a distress thermometer (0=no distress and 10=extreme distress) before the interview session.[40] Participants were asked to circle the number on a printed distress thermometer scale. If a participant circled a score >3, they were not included in the study. This was done so that these participants did not incur additional psychological distress while answering questions related

to their cardiac event. In addition, these participants were then referred to the CR services director for a discussion of available counseling services. If a participant circled a score of ⩽3, they remained in the study.

Remaining participants were eased into the interview process by asking a general question about the weather or their commute, and then the researcher proceeded onto asking questions from the interview guide. The research team created a semi-structured interview guide based on a literature review as well as previous work with cancer survivors.[39] The literature used had examined experiences of individuals in CR focused on the physical, emotional, social, and spiritual aspects, as well as facilitators and barriers of cardiac recovery. Additional probe questions were asked to clarify or obtain more information on what participants had said.

Data analysis

The audio files recorded during the interview sessions were transcribed by a third-party transcription company into text. The first author verified the accuracy of the text. The first author and the third author conducted initial data analysis. All participants were assigned a code and individual data were de-identified to protect their confidentiality. An inductive data analysis was guided by using Colaizzi method.[41] The transcript of each participant was read several times to get a sense of the whole. From there, significant statements were extracted, and meanings were created from those statements. After two researchers independently coded the meanings, they then met and carefully reviewed and compared them. Differences in meaning assignment were discussed until an agreement was reached. The data was then organized into a table: participant codes were entered into the columns and meanings were entered across the rows. Related meanings were clustered into theme clusters. Participant summaries were also developed. All analytical decisions were recorded in an audit trail.

Trustworthiness was achieved through credibility, dependability, and confirmability.[42] Credibility of the findings was achieved through member checking. A synopsis of the study was sent to six participants via email and participants were asked to review the synopsis and send in their comments and suggestions. Four participants responded to the email. Three did not have any suggestions or comments and said that the study reflected their experiences. One participant wanted to know more about the outliers and suggested that the researchers focus on those outliers in future research. Peer debriefing was done with the qualitative expert to ensure that the findings emerged from the data, as well as to gain new perspectives of the data. Dependability was achieved through development of an audit trail and a qualitative expert reviewed the findings. Confirmability was achieved through maintaining memos, notes, and reflective journals during the entire process of data analysis.

Results

The study sample consisted of 10 CR individuals. The researchers achieved data redundancy after interviewing eight individuals, and interviewed an additional two individuals to assure that no new themes evolved. Data was collected over a period of eight months (2011–2012). Two of the authors conducted the interviews, which spanned from one to two hours. None of the individuals was excluded due to high distress scores. Six of the individuals were men. Two of the individuals were between 46–55 years old, five were between 56–65 years old, and three were between 66–75 years old. Six of the individuals worked full-time and four had retired. Eight of the individuals were married/partnered, with the remaining two being single/divorced. Only one individual was Asian, and the other nine were Caucasian. Three individuals were Jewish, one was Greek Orthodox Presbyterian, one was Islam, one was Presbyterian, two were Catholic, and two participants reported no religion. At the time of the interview, three individuals had experienced their cardiac event less than six months previously, with seven having experienced their cardiac event one to three years prior to that time. Four individuals were treated with stents, four were treated with coronary artery bypass graft (CABG) surgery, and two were managed medically. All of the individuals completed phase two of CR. Seven individuals continued into phase three of the CR program.

Themes

Three themes emerged from the data. The first to emerge was “choosing life over death”, where participants discussed how they made a decision to improve their health. The second theme was “learning to live a new self,” where participants described the changes they had to make in order to improve their health. The third theme was “a life-transforming cardiac event” where participants shared how the cardiac event had changed their life.

Choosing life over death. The theme “Choosing life over death” describes an increased awareness of mortality that led individuals to make improving their health a priority. After participants were stabilized medically from their acute cardiac event, they began processing and reflecting on their experience, ultimately deciding that they wanted to live. The majority of participants decided to make important changes while they were still in the hospital after the cardiac event. One participant explained this process by stating “Life. Choosing life over death. Really, it becomes that simple… Life and death is a really good

motivator, at least for me… So I chose life over death." The spontaneous, self-decision to continue living was a key factor in deciding whether to attend CR and make necessary lifestyle changes. In some cases, a participant's decision seemed to be influenced by healthcare providers. One male participant explained,

> Well, I mean they [the cardiologist] recommended the Cardiac Rehabilitation Program, either this one or the one at – which is run by the [Medical Facility] … but this is closer and more convenient and so I did this, I enrolled in this.

When participants recalled their serious cardiac event, there were a variety of responses, describing it as "hitting rock-bottom," "frightening," "oh my God," "scary," "fearful," "angry," "wake-up call," "interesting," "lucky," "fortunate," "blessed," "a gift," and "a miracle." Because of the traumatic nature of a sudden, life-threatening condition, most participants described feeling scared and fearful. During the cardiac event, many of the participants experienced a flashback of their life. They were thinking about their loved ones, and asking themselves whether it was acceptable to die at that moment. After the event, it took a while for some participants to process the experience. The event forced participants to confront their mortality and made them more aware of the temporality of life. One participant responded, for example, "I think it emotionally, just to realize being so fragile, and then life being so fragile, realizing that can change so quickly in an instant, and forever. That was clearly something that dawned on me, so to speak, afterwards."

Some participants began spiritual quests immediately while others experienced this later, leading them to explore the existence of God, life after death, reasons for being alive, and asking God for more life. Spiritual search was comforting to most of the participants as they were hopeful to meet God, go to heaven, and meet family members who had died before them. However, it was not comforting for others. For example, one woman did not believe in God before or after her acute cardiac event.

Participants made a conscious decision to improve their health after their cardiac event, and were able to overcome personal dislikes of exercise and healthy eating. All participants significantly reprioritized their daily routines to accommodate for a healthier lifestyle, and many described a subsequent enhancement to their post-cardiac lives. Most of the participants prioritized self-care over work and other activities.

Interestingly, participants who had experienced their cardiac event less than six months prior were more frustrated with spending the time necessary for making lifestyle changes, as compared to those who had experienced their cardiac event at least six months prior to the interview. For example, one woman participant who was less than six months from her cardiac event described,

> Well, since I've gotten the cardiac condition, … I am now coming down with all this stuff [rosacea, five prescriptions, having to attend CR, doctor's appointment] it's a little depressing … sometimes I just can't stop myself from getting this feeling of wanting to explode and just calming down and sort of just being off by myself.

In contrast, participants, who were six months or more from the cardiac event and had completed phase two CR, were worried about maintaining the routine of exercise and eating a healthy diet. For instance, one of the men lost 33 pounds but regained part of the weight after he completed phase two CR. He thought it was due to lack of exercise and not coming to CR after completing phase two CR. He explained,

> Now, I have gained back 12–13 pounds. 'Cause it was erratic. I had my weight really well balanced until three months ago. Now, it is gone up five pounds a month. So, this is why I have to get in here [phase three CR program] every day. That makes the difference. It's really the exercise.

Learning to live a new self. The theme "Learning to live a new self" was used to describe participants' experience of changing their lifestyle, and the usage of facilitators to overcome barriers. All of the participants described CR as one of the important first steps towards successful cardiac recovery. Participants identified several key benefits of CR, including: a safe place to exercise, improved self-confidence, beginning a personal exercise routine, staff support, peer group support, and nutritional and psychological counseling. Many of the participants had not exercised previously and the CR program gave them the understanding, training, and confidence to exercise. Participants felt stronger and reported being in much better shape than before. One person explained,

> You see a lot of people who are a lot older than I am who have been doing this for some number of years and that leads you [to] think that, 'well, of course, everybody dies eventually, but it's not imminent.'

Despite these positives, however, phase two of the CR program does not separate veteran CR individuals from new participants. This can create a discouraging environment, prompting embarrassment over feeling like a frail, elderly person, feeling physically inferior to older participants, and feeling intimidated by participants who were more comfortable using exercise machines. One of the women explained, "I didn't know this was going to be a mental test. Every one of them [the machines] turns on differently… I was absolutely frightened. I saw all these people who seemed to know what they were doing." Some participants, especially women, were frustrated with the male-dominated, fast-paced setting when they began CR.

In addition, many had trouble managing the time demands of the CR program, such as commute delays related to traffic and parking, the length of program/recovery activities, and the imposition of other life priorities. Employed participants were particularly affected due to the time commitment of the CR program. One of the employed individuals said, "While I really, really enjoyed it, and [I had] huge positives from the [CR] program, it was a three-hour window out of my day… So it was a significant time commitment."

After completion of phase two CR, some participants had difficulty overcoming previous lifestyle problems because of lifestyle barriers, such as inconsistent dieting and exercise. One of the employed men reported, "I'm pretty good now on other [exercise] metrics but the meeting and the snacks, and the food just kills me. I don't have the willpower to push it away." Most participants participated in exercise programs, for example, but many had difficulty with making healthy diet changes. Some participants were anxious and depressed because of concern over their inability to exercise, and therefore decided to participate in phase three CR. Almost all persons were worried about having another cardiac event: "[The] hardest part to live with… [is] knowing it's going to happen again." Most individuals were worried about family security, as one participant explained, "I have a 22-year-old son, and I have a wife and all that kind of stuff, so you worry about your mortality." In addition, some worried about finances, specifically about making less money after their cardiac event and spending more money for medications, out-of-pocket phase three CR, and losing life insurance.

Despite the negative emotions after their cardiac event, participants adopted a more positive outlook on their lives, regardless of challenging life circumstances. One of the men explained it like this,

> I think attitude is key. I think it really is important to have a good attitude, and I think that sets the stage for a lot of positives in terms of trying to deal with the challenges that a heart attack or a critical illness might bring.

Most of the participants believed that a positive attitude expedited their emotional and physical recovery from the cardiac event. Some participants quickly adopted a positive attitude immediately after the cardiac event. For others, it happened after facing some negative experiences. For example, one of the men was not healthy when he began CR, and could not exercise at the same level of other people in his age group. However, he was able to see the other side of the experience and said, "And it's also… [about] learning that the glass is half-full, or even if it feels half-empty, it won't be half-empty forever."

Most participants also used different mind-body interventions, such as yoga and deep breathing, in addition to daily usage of religious symbols, music, nature walks, group games, and visualized biofeedback to overcome negative emotions. After attending a yoga class in CR, one man said, "I had never done this yoga before and always sort [of] 'pooh-poohed' it and found it enormously challenging, as well as satisfying." Most participants talked about meditating while they were exercising on the treadmill and walking in the park, as one woman explained,

> I can just kind of almost take myself on a little meditation [during a walk in the park] and I went so far as to put an addition on my house that is all windows so that I can look out into the green because I find greens and blues very calming.

More importantly, participants' families, friends, and health care personnel were crucial in their support during cardiac recovery. Specifically, spousal support was significant for participants who underwent CABG graft surgery. One of the men described his wife's support as being "Just unbelievable… I mean, she's [my wife] always been supportive but I never really treasured it as much as I did then [before cardiac surgery]." The support that they received included sharing activities of daily living, motivational encouragement to keep lifestyle changes, coaching when participants relapsed, and checking to make sure that their spouses were doing fine. Health care professionals that they encountered during the cardiac event and rehabilitation process, including nurses, physicians and paramedics, made participants feel that they were well taken care of and this helped to establish an interpersonal connection for the participants. One of the women described her experience with nurses: "So here [in CR] were people monitoring me so closely and doing research and coming back to me and saying, 'Here's why you're feeling the way you are.' I thought, 'How can I get better care than this?'" Another one of the men had to be transferred over to another hospital for cardiac surgery. The emergency physician performed an intra-aortic balloon pump procedure to protect his heart. After he learned this, he went back to thank the physician: "I went back to see the physician that took care of me at [the hospital] … I think he saved my heart [through intra-aortic balloon pump], because it was being perfused during the transition, it took another six hours."

However, some participant recoveries were slowed by a lack of support or unproductive attention from spouses, physicians, and nurses. Some participants experienced a lack of spousal support in areas of lifestyle changes such as exercise (sedentary lifestyle) and diet (not eating heart-healthy foods). One of the women, for example, felt frustrated with her husband's incompatible diet, "He [husband] loves sausages and all kinds of things that are terrible for you and it's a problem. It would be nice if he would… have a cooperative attitude." In addition, some physicians did not understand or recognize the effects of emotions, comorbidities, and other factors that affected cardiac symptoms, thereby causing frustration for some participants. Nurses in CR also did not consistently identify

participants with interpersonal support difficulties and were not always supportive of the participants during the beginning of the CR program. One of the women never exercised with machines before, for example, and so when she began CR she had difficulty performing her exercises. Nurses at CR did not recognize this issue, as this person explains, "One of the gals [CR nursing staff] said, 'we may have to find an easier machine for you.' And I thought, I'm not getting an easier machine."

A life transforming cardiac event. Despite the negative effects of cardiac event on participants' life, some participants described their cardiac event as a life transforming experience. Weight loss gave the participants a feeling of accomplishment, being physically fit and the confidence in managing the cardiac disease. Participants lost between 4–60 pounds. One of the women participants described her weight loss experience: "And once you got 30 pounds off of you and you felt good, you've got energy and you have a whole different outlook on life. It is very unusual, and you do stop and think about things."

Participants were not only transformative to their own life but also to their spouses. For example, even though one of the men had been married for 33 years, his wife began exercising with him after his cardiac event: "one of the side effects of this [cardiac event] is that my wife is now much more thoughtful about what she does, how she does it, she goes to exercise classes now." Another one of the women had a heart attack while she was flying to her brother's house for a Christmas celebration. After she was discharged from the hospital, she stayed at her brother's house for two weeks while she recovered. She later learned that her brother and his family changed their lifestyle because of her experience, and her brother lost 20 pounds. Another one of the men called himself a "poster child" of heart disease, since he was now using his experience of a cardiac event to educate others about heart diseases. He acted as an advocate to his colleagues to be provocative and not to ignore critical signs and symptoms of heart disease: "three people in the last year – my peers – have gone to the hospital with chest pains because they normally never would've gone to the hospital … I say I am a poster child for cardiac recovery."

In addition, most participants did not want to continue some of their friendships and the type of work that they did before the cardiac event. One of the men used his heart condition to focus on activities that mattered to him:

> But, a lot of this is also, you know, post-heart attack. I use it. People say, "What are you doing?" I said, 'I am doing what I think is important.' You know, and it is like, okay, they [my work administrator] are afraid to push me. So, I use it … You can always blame your heart. Then they back off, Oh yeah, yeah. 'Your health comes first.' Perfect.

One of the women used her cardiac event as an excuse to engage in a more active lifestyle:

> Because I went on this diet, I have an excuse to say to some of my friends [at a previous job], 'I don't want to go to lunch every week.' I go to exercise Monday, Wednesday, Friday, and I am in here [CR] from 11 am to 1 pm. Some of the things I was doing with them were not stimulating. They were just time consuming. Whereas it was like – this sort of gave me an excuse to back out of some of those relationships or to keep them down real low.

Another one of the male participants made self-care a top priority, and did not accommodate persons who were not willing to work with his schedule. Thus, participants used their cardiac event to refocus their life.

Discussion

Individuals in this study predominantly described the post-cardiac effects of recovery positively. Each individual's ability to choose life, to make lifestyle changes, and to attend CR, resulted in a positive outlook on cardiac recovery. Particularly, individual's positive attitude, self-commitment, and prioritization helped them to make the necessary lifestyle changes. However, they still experienced significant emotional challenges as well as challenges in maintaining lifestyle changes. The uniqueness of our sample with a positive attitude and outlook enabled them to overcome the challenges and successfully complete CR. Although CR was described as one of the key elements for cardiac recovery, individuals were challenged by embarrassment and frustration in the beginning of phase two CR, as well as the significant time commitment required.

Even though participants in this study reported a predominantly positive attitude, they had significant challenges to maintain their lifestyle changes.[15,18,43] However, participants in this study overcame those barriers through commitment to a healthy lifestyle, positive attitude, support of mind-body activities, and interpersonal support. This finding reiterates the need for social support and other interventions, which can empower an individual to overcome barriers related to cardiac recovery.

The decision to make necessary lifestyle changes instigated cardiac recovery for participants in this study. This decision helped them to commit themselves to lifestyle changes and other cardiac recovery activities, such as participation in CR, a routine exercise program, eating a healthy diet, and stress management. In prior research, reasons have been explored as to why a person has decided not to participate in CR. These reasons include difficult access to CR, misbelief and lack of time.[44] However, not much attention has been given to the question as to why participants make a decision to participate. Further research is needed to answer why participants make the decision to participate in CR.

Spouses of cardiac individuals are often psychologically distressed themselves, which in turn affects the individuals' recovery and quality of life.[45–47] Spouses of married CR participants played a significant role in participant's cardiac

recovery in this study. Most of the participants' spousal support was positive. However, there were female participants who did not get that support from their spouses. A similar finding was reported in that women did not want to bother others by asking for support that they needed, and also tended to report less social support.[48] Future research on gender differences may provide insight into differences in social support after an acute cardiac event.

Even though CR was predominantly reported as a facilitator, some of the participants were frustrated and anxious because they could not exercise for long or at the same level as other CR participants. Some participants felt overwhelmed by the number of different exercise machines, particularly because they felt they were the only ones in CR who did not know how to use the machines. Likewise, exercises that seemed unusual to their normal exercise routine made some participants feel scared and embarrassed. This finding was noted over a decade ago in an earlier study that demonstrated how individuals needed to overcome the embarrassment of exercising with others in order to participate in CR.[49] Nurses play a crucial role in identifying individuals who need support, encouragement, and referral to support services while in CR. Therefore, nurses in CR need to be trained to identify these individuals early in order to avoid participant attrition due to embarrassment over the inability to exercise at a rate that the individual thinks is acceptable in a CR center.

Access to CR centers is one of the main barriers to CR participation.[50–53] Even though access to CR centers has been an issue for more than a decade, US CR programs have not adapted different models of delivery such as a home-based CR program. Home-based CR programs are offered in other countries including the UK, Europe, and Australia. Both working and retired participants in this study reported challenges with the time commitment of the program and in driving three times a week to CR centers. Currently, home-based,[54] technology-assisted,[55] and community-based[56,57] CR programs are being explored. We need more research in this area to offer a program that actually facilitates and does not hinder CR participation.

Limitations

As the researchers were interested in experiences of individuals in CR, persons interviewed in this study were recruited from a CR center. This center was located in a suburban area and individuals who were in different settings (i.e. rural) may have responded differently. This study also only examined the participants enrolled into this study who experienced predominantly positive outcomes from the cardiac event; therefore, not including experiences of people who may not have had as positive of an outcome. Further limitations include that almost all of the study participants were Caucasians. Individuals of other ethnicities may have had different experiences. This study used a purposive sample and, because of its qualitative nature, the findings cannot be generalized. While using Husserl concepts to guide the study, the researchers bracketed their own thoughts, which can be challenging for researchers who report the findings derived strictly from the participant's perspective, and not from the researcher's own perspective.

Conclusion

Participants in this study had a positive attitude and chose to make necessary lifestyle changes after an acute cardiac event. CR was one of the key elements of cardiac recovery in providing an exercise routine and setting participants onto a path of improved cardiac health. Participants' decision to participate in CR is crucial to making a commitment to a healthier lifestyle. Multiple factors play a role in completing for cardiac recovery. Future research studies on positive outlook, decision-making process of engaging in CR, gender differences in spousal support of individuals in CR, and alternative models of CR delivery are needed in order to overcome barriers of cardiac recovery and promote participation in CR programs.

Implications for practice

- Since patients make a decision to attend phase two cardiac rehabilitation while they are still in the hospital, a structured program to introduce cardiac rehabilitation and promote the benefits of participation to all patients experiencing cardiac events and undergoing cardiac procedures (i.e. percutaneous coronary intervention, cardiac surgery) is essential.
- Counseling patients about what to expect during cardiac rehabilitation may reduce the psychological distress they can experience in the beginning of the cardiac rehabilitation program.
- Patients who have not previously experienced exercising in a group-like setting may have difficulty in adjusting to the cardiac rehabilitation setting and could benefit from staff trained to identify and support these individuals in a timely manner.
- Working and retired participants are challenged by cardiac rehabilitation hours. Extending cardiac rehabilitation to weekend hours, as well as offering alternative models of cardiac rehabilitation programs, may offer participants the flexibility needed in order to participate more fully in cardiac rehabilitation programs.

Acknowledgements

The authors wish to thank National Institutes of Nursing Research for funding this study through the Graduate Partnership Program. They also thank the participants for their time, Sue Thomas for her support of this study, Perry Skeath for his mentoring, and

Tanner Underwood for editorial assistance. The first author was previously at National Institutes of Nursing Research Intramural Program, National Institutes of Health where the study was conducted.

Declaration of conflicting interests

None declared.

Funding

The first author received Graduate Partnership Program funding from National Institutes of Nursing Research Intramural Program, National Institutes of Health.

References

1. Bloom DE, Cafiero ET, Jané-Llopis E, et al. *The Global Economic Burden of Noncommunicable Diseases*. Geneva: World Economic Forum, 2011.
2. Certo CM. History of cardiac rehabilitation. *Phys Ther* 1985; 65: 1793–1795.
3. Wenger NK. Current status of cardiac rehabilitation. *J Am Coll Cardiol* 2008; 51: 1619–1631.
4. Balady GJ, Ades PA, Bittner VA, et al. Referral, enrollment, and delivery of cardiac rehabilitation/secondary prevention programs at clinical centers and beyond: A presidential advisory from the American Heart Association. *Circulation* 2011; 124: 2951–2960.
5. Balady GJ, Williams MA, Ades PA, et al. Core components of cardiac rehabilitation/secondary prevention programs: 2007 Update: A scientific statement from the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee, the Council on Clinical Cardiology; the Councils on Cardiovascular Nursing, Epidemiology and Prevention, and Nutrition, Physical Activity, and Metabolism; and the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2007; 115: 2675–2682.
6. American Association of Cardiovascular and Pulmonary Rehabilitation. *Guidelines for cardiac rehabilitation and secondary prevention programs*. 4th ed. Champaign, IL: Human Kinetics, 2004.
7. Squires RW, Gau GT, Miller TD, et al. Cardiovascular rehabilitation: Status, 1990. *Mayo Clin Proc* 1990; 65:731–755.
8. Balady GJ. Types of exercise. Arm-leg and static-dynamic. *Cardiol Clin* 1993; 11: 297–308.
9. Suaya JA, Shepard DS, Normand SL, et al. Use of cardiac rehabilitation by Medicare beneficiaries after myocardial infarction or coronary bypass surgery. *Circulation* 2007; 116: 1653–1662.
10. Clark AM, Hartling L, Vandermeer B, et al. Meta-analysis: Secondary prevention programs for patients with coronary artery disease. *Ann Intern Med* 2005; 143: 659–672.
11. Taylor RS, Brown A, Ebrahim S, et al. Exercise-based rehabilitation for patients with coronary heart disease: Systematic review and meta-analysis of randomized controlled trials. *Am J Med* 2004; 116: 682–692.
12. Leon AS, Franklin BA, Costa F, et al. Cardiac rehabilitation and secondary prevention of coronary heart disease: An American Heart Association scientific statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity), in collaboration with the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2005; 111: 369–376.
13. Goel K, Lennon RJ, Tilbury RT, et al. Impact of cardiac rehabilitation on mortality and cardiovascular events after percutaneous coronary intervention in the community. *Circulation* 2011; 123: 2344–2352.
14. Jackson L, Leclerc J, Erskine Y, et al. Getting the most out of cardiac rehabilitation: A review of referral and adherence predictors. *Heart* 2005; 91: 10–14.
15. Jones M, Jolly K, Raftery J, et al. 'DNA' may not mean 'did not participate': A qualitative study of reasons for non-adherence at home- and centre-based cardiac rehabilitation. *Fam Pract* 2007; 24: 343–357.
16. Cooper AF, Jackson G, Weinman J, et al. A qualitative study investigating patients' beliefs about cardiac rehabilitation. *Clin Rehabil* 2005; 19: 87–96.
17. Wyer SJ, Earll L, Joseph S, et al. Deciding whether to attend a cardiac rehabilitation programme: An interpretative phenomenological analysis. *Coronary Health Care* 2001; 5: 178–188.
18. Evenson KR and Fleury J. Barriers to outpatient cardiac rehabilitation participation and adherence. *J Cardiopulm Rehabil* 2000; 20: 241–246.
19. Dunlay SM, Witt BJ, Allison TG, et al. Barriers to participation in cardiac rehabilitation. *Am Heart J* 2009; 158: 852–859.
20. Grace SL, Gravely-Witte S, Brual J, et al. Contribution of patient and physician factors to cardiac rehabilitation referral: A prospective multilevel study. *Nat Clin Pract Cardiovasc Med* 2008; 5: 653–662.
21. Turk-Adawi KI, Oldridge NB, Tarima SS, et al. Cardiac rehabilitation patient and organizational factors: What keeps patients in programs? *J Am Heart Assoc* 2013; 2: e000418.
22. Yohannes AM, Yalfani A, Doherty P, et al. Predictors of drop-out from an outpatient cardiac rehabilitation programme. *Clin Rehabil* 2007; 21: 222–229.
23. Murray J, Craigs CL, Hill KM, et al. A systematic review of patient reported factors associated with uptake and completion of cardiovascular lifestyle behaviour change. *BMC Cardiovasc Disord* 2012; 12: 120.
24. De Angelis C, Bunker S and Schoo A. Exploring the barriers and enablers to attendance at rural cardiac rehabilitation programs. *Aust J Rural Health* 2008; 16: 137–142.
25. Gurewich D, Prottas J, Bhalotra S, et al. System-level factors and use of cardiac rehabilitation. *J Cardiopulm Rehabil Prev* 2008; 28: 380–385.
26. Brual J, Gravely-Witte S, Suskin N, et al. Drive time to cardiac rehabilitation: At what point does it affect utilization? *Int J Health Geogr* 2010; 9: 27–30.
27. Hamer M, Molloy GJ and Stamatakis E. Psychological distress as a risk factor for cardiovascular events: Pathophysiological and behavioral mechanisms. *J Am Coll Cardiol* 2008; 52: 2156–2162.
28. Rozanski A, Blumenthal JA and Kaplan J. Impact of psychological factors on the pathogenesis of cardiovascular disease and implications for therapy. *Circulation* 1999; 99: 2192–2217.
29. Larsen KK. Depression following myocardial infarction–an overseen complication with prognostic importance. *Dan Med J* 2013; 60: B4689.

30. Boehm JK and Kubzansky LD. The heart's content: The association between positive psychological well-being and cardiovascular health. *Psychol Bull* 2012; 138: 655–691.
31. Davidson KW, Mostofsky E and Whang W. Don't worry, be happy: Positive affect and reduced 10-year incident coronary heart disease: The Canadian Nova Scotia Health Survey. *Eur Heart J* 2010; 31: 1065–1070.
32. Damen NL, Pelle AJ, Boersma E, et al. Reduced positive affect (anhedonia) is independently associated with 7-year mortality in patients treated with percutaneous coronary intervention: Results from the RESEARCH registry. *Eur J Prev Cardiol* 2013; 20: 127–134.
33. Hoogwegt MT, Versteeg H, Hansen TB, et al. Exercise mediates the association between positive affect and 5-year mortality in patients with ischemic heart disease. *Circ Cardiovasc Qual Outcomes* 2013; 6: 559–566.
34. Tong A, Sainsbury P and Craig J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007; 19: 349–357.
35. Husserl E. *The crisis of European sciences and transcendental phenomenology*. Evanston, IL: North Western University Press, 1962.
36. Schutz A. *The phenomenology of the social world*. Evanston, IL: North Western University Press, 1967.
37. Giorgi A, Barton A and Maes C. *Duquesne studies in phenomenological psychology*. Pittsburgh: Duquesne University Press, 1983.
38. Creswell JW. *Research design: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage, 2013.
39. Skeath P, Norris S, Katheria V, et al. The nature of life-transforming changes among cancer survivors. *Qual Health Res* 2013; 23: 1155–1167.
40. Jacobsen PB, Donovan KA, Trask PC, et al. Screening for psychologic distress in ambulatory cancer patients. *Cancer* 2005; 103: 1494–1502.
41. Colaizzi P. Psychological research as the phenomenologist views it. In: Valle R and King M, eds. *Existential phenemenologic alternative for psychology*. New York: Oxford University Press, 1978, pp. 48–71.
42. Lincoln YS and Guba EG. *Naturalistic inquiry*. New Bury Park, CA: Sage Publications, 1985.
43. Cooper AF, Jackson G, Weinman J, et al. Factors associated with cardiac rehabilitation attendance: A systematic review of the literature. *Clin Rehabil* 2002; 16: 541–552.
44. De Vos C, Li X, Van Vlaenderen I, et al. Participating or not in a cardiac rehabilitation programme: Factors influencing a patient's decision. *Eur J Prev Cardiol* 2013; 20: 341–348.
45. Randall G, Molloy GJ and Steptoe A. The impact of an acute cardiac event on the partners of patients: A systematic review. *Health Psychol Rev* 2009; 3: 1–84.
46. Leigh ES, Wikman A, Molloy GJ, et al. The psychosocial predictors of long-term distress in partners of patients with acute coronary syndrome. *Psychol Health* 2014; 29: 737–752.
47. Fast YJ, Steinke EE and Wright DW. Effects of attending phase II cardiac rehabilitation on patient versus spouse (proxy) quality-of-life perceptions. *J Cardiopulm Rehabil Prev* 2009; 29: 115–120.
48. Kristofferzon ML, Lofmark R and Carlsson M. Myocardial infarction: Gender differences in coping and social support. *J Adv Nurs* 2003; 44: 360–374.
49. Clark AM, Barbour RS, White M, et al. Promoting participation in cardiac rehabilitation: Patient choices and experiences. *J Adv Nurs* 2004; 47: 5–14.
50. Caldwell P, Arthur HM and Rideout E. Lives of rural women after myocardial infarction. *Can J Nurs Res* 2005; 37: 54–67.
51. Clark AM, Barbour RS and McIntyre PD. Preparing for change in the secondary prevention of coronary heart disease: A qualitative evaluation of cardiac rehabilitation within a region of Scotland. *J Adv Nurs* 2002; 39: 589–598.
52. Fernandez RS, Davidson P and Griffiths R. Cardiac rehabilitation coordinators' perceptions of patient-related barriers to implementing cardiac evidence-based guidelines. *J Cardiovasc Nurs* 2008; 23: 449–457.
53. Vishram S, Crosland A, Unsworth J, et al. Engaging women from South Asian communities in cardiac rehabilitation. *Br J Community Nurs* 2007; 12: 13–18.
54. Dalal HM, Zawada A, Jolly K, et al. Home based versus centre based cardiac rehabilitation: Cochrane systematic review and meta-analysis. *Br Med J* 2010; 340: b5631.
55. Forman DE, LaFond K, Panch T, et al. Utility and efficacy of a smartphone application to enhance the learning and behavior goals of traditional cardiac rehabilitation: A feasibility study. *J Cardiopulm Rehabil Prev* 2014; 34: 327–334.
56. Alharbi M, Bauman A, Neubeck L, et al. Validation of Fitbit-Flex as a measure of free-living physical activity in a community-based phase III cardiac rehabilitation population. *Eur J Prev Cardiol*. Epub ahead of print 23 February 2016. DOI: 10.1177/2047487316634883.
57. Canyon S and Meshgin N. Cardiac rehabilitation - reducing hospital readmissions through community based programs. *Aust Fam Physician* 2008; 37: 575–577.