WOMEN'S PERCEIVED BARRIERS AND CATALYSTS TO COMPLETING PHASE II CARDIAC REHABILITATION: A QUALITATIVE STUDY

by

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This dissertation is dedicated to those who walked beside me throughout this journey, and to the women whose stories gave this work meaning. It is also dedicated to my family, whose love carried me forward.

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Laura Eleanore Marchwinski

ABSTRACT

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Adviser: Dr. Sara Arena, PT, MS, DScPT.

Cardiovascular disease remains the leading cause of mortality among women in the United States, yet women continue to be underrepresented in Phase II cardiac rehabilitation (CR2), a critical component of secondary prevention following cardiac events. Although participation in CR2 is associated with significant reductions in morbidity, mortality, and rehospitalization, women are less likely than men to be referred, enroll, and complete these programs. While barriers to enrollment are well documented, less is known about women's experiences once engaged in CR2 and the factors that support sustained participation.

The purpose of this manuscript-style dissertation was to examine women's engagement in CR2 across the rehabilitation continuum, with particular emphasis on perceived barriers and catalysts to program completion. Guided by the Transtheoretical Model of behavior change, this work integrates three complementary studies: an examination of referral pathways and care transitions into CR2, a synthesis of gender differences in social support related to CR2 participation, and a qualitative phenomenological study exploring women's lived experiences of completing CR2.

In the qualitative study, semi-structured interviews were conducted with women who completed at least 25 CR2 sessions. Findings revealed that barriers and catalysts coexisted throughout the rehabilitation process, with program completion reflecting persistence rather than the absence of challenge. Women described an internal transformation over time characterized by shifts from fear and uncertainty toward confidence, self-efficacy, and internal motivation. Relational catalysts, including family support, staff encouragement, peer connection, and the experience of tangible progress, consistently facilitated progression through stages of change and sustained engagement. Collectively, these findings extend existing CR2 literature by elucidating the emotional, relational, and experiential mechanisms underlying women's behavior change. This work underscores the importance of gender-responsive, patient-centered approaches that strengthen relational support and address transitional vulnerabilities to enhance CR2 engagement and completion among women.

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LIST OF ABBREVIATIONS

CABG	Coronary Artery Bypass Grafting
CHD	Coronary Heart Disease
CR	Cardiac Rehabilitation
CR2	Phase II Cardiac Rehabilitation
CVD	Cardiovascular Disease
IRB	Institutional Review Board
PCI	Percutaneous Coronary Intervention
PHQ-2	Patient Health Questionnaire
TAVR	Transcatheter Aortic Valve Replacement
TTM	Transtheoretical Model

CHAPTER ONE

GENERAL INTRODUCTION

Background and Significance

Cardiovascular disease (CVD) remains the leading cause of mortality among women in the United States and is associated with substantial morbidity, functional decline, and reduced quality of life following cardiac events (Ritchey et al., 2020; Thakkar et al., 2021). Women experience higher mortality rates than men following myocardial infarction and heart failure and face an increased risk of recurrent cardiac events and rehospitalization. Consequently, effective secondary prevention strategies are essential for improving both survival and long-term health outcomes among women with cardiovascular disease.

Phase II cardiac rehabilitation (CR2) is a structured outpatient intervention program that integrates supervised exercise training, education, and lifestyle modification and is widely recognized as a cornerstone of secondary prevention. Participation in CR2 is associated with significant reductions in all-cause mortality, cardiovascular morbidity, and rehospitalization, along with improvements in functional capacity, psychosocial well-being, and health-related quality of life (Tessler & Bordoni, 2021).

Sex-Based Disparities in Cardiac Rehabilitation

Despite these well-established benefits, CR2 remains markedly underutilized, particularly among women. National data indicate that only a minority of eligible patients enroll in CR2, with participation rates well below recommended targets (Ritchey et al., 2020).

Across the CR2 continuum, women are consistently less likely than men to be referred, participate, or complete CR2, even when clinical eligibility and insurance coverage are comparable (Khadanga et al., 2021). These disparities reflect not only individual-level barriers but also systemic and structural features of healthcare delivery that influence access to and engagement in rehabilitation services.

Barriers and Catalysts to CR2 Engagement

Prior research has identified multiple barriers to CR2 enrollment and participation among women, including limited referral, lack of program awareness, transportation challenges, competing caregiving responsibilities, and time constraints (Grace et al., 2009; Khadanga et al., 2021). Women also report heightened emotional distress following cardiac events, including fear of physical exertion, anxiety regarding symptom recurrence, and uncertainty about physical capabilities during recovery. These psychosocial factors may influence both a women's willingness to initiate CR2 and their confidence in sustaining participation over time.

Much of the existing literature has focused on referral and enrollment disparities, often conceptualizing CR2 participation as a binary outcome (yes/no). While this work has been critical in documenting access gaps, it offers limited insight into how women experience CR2 once enrolled or how they persist through challenges across the rehabilitation trajectory. Completion of CR2 is clinically meaningful, as greater session attendance is associated with improved functional outcomes and long-term cardiovascular risk reduction (Ritchey et al., 2020). However, completion metrics alone do not capture the lived experiences, adaptive strategies, and ongoing barriers that women encounter during program participation. Women who complete CR2 frequently

do so in the presence of continued logistical, emotional, and relational challenges, suggesting that completion reflects persistence rather than the absence of difficulty.

Social support has consistently emerged as a key determinant of CR2 participation and adherence. Evidence suggests that both the type and function of support may differ by gender. Women more often emphasize emotional reassurance, empathy, and relational connection, whereas men frequently benefit from instrumental or task-oriented support (Grace et al., 2009). In a comprehensive review of gender differences in social support and cardiac rehabilitation, Marchwinski (2025) identified distinct patterns in how men and women experience and utilize support during CR2 participation. While spousal support was a strong facilitator of CR2 engagement among men, support for women was more variable and, in some cases, insufficient, leading women to rely more heavily on peers, adult children, or healthcare professionals for emotional reinforcement.

In addition to interpersonal influences, care transitions represent a critical yet underexamined determinant of CR2 engagement. The period between hospital discharge and initiation of outpatient CR2 constitutes a vulnerable window during which patients may disengage from rehabilitation. Referral pathways to CR2 often differ by clinical presentation. Procedural pathways, such as percutaneous coronary intervention or coronary artery bypass grafting, frequently activate automatic referral mechanisms. In contrast, patients with myocardial infarction or heart failure who do not undergo revascularization often depend on manual referral processes that are more susceptible to delay or omission, resulting in lower rates of CR2 participation (Adusumalli et al., 2021). Home healthcare professionals may play an important but under-recognized role during this transitional period. Many patients receive home health services or inpatient

rehabilitation prior to becoming eligible for outpatient CR2, positioning home healthcare clinicians to reinforce education, assess functional readiness, and support timely referral. Marchwinski (2025) highlighted the potential for home healthcare professionals to function as both a referral and motivational bridge between hospital discharge and CR2 participation. This transitional phase, sometimes conceptualized as a "Phase 1.5" of cardiac rehabilitation, represents a critical opportunity to support early engagement and prevent attrition.

Theoretical Framework

Understanding women's engagement in CR2 requires a broader, process-oriented perspective extending beyond referral and enrollment metrics. Participation in CR2 is dynamic and evolves over time, shaped by internal factors such as motivation, confidence, and readiness for change, as well as external influences including social support, healthcare interactions, and environmental context.

The Transtheoretical Model (TTM) provides a useful framework for conceptualizing CR2 participation as a progression through stages of behavior change. The model emphasizes the development of self-efficacy and internal motivation as individuals move from initiation toward maintenance of health behaviors. Although widely applied in health behavior research, the TTM has received limited qualitative exploration in the context of women's lived experiences of CR2 participation and completion.

Qualitative inquiry is particularly well suited to addressing these gaps, as it allows for in-depth examination of how women interpret, navigate, and adapt to the challenges of CR2 over time. Phenomenological approaches center women's perspectives and illuminate the meanings ascribed to rehabilitation, support, and recovery. By capturing these

experiences directly, qualitative research can move beyond documenting disparities to clarifying how barriers and catalysts interact and how internal transformation occurs throughout the rehabilitation process.

Rationale and Purpose of the Dissertation

This dissertation presents a program of scholarship examining women's engagement in CR2 across multiple levels of inquiry. The first study examines transitional care processes and the role of home healthcare professionals in facilitating access to CR2. The second study synthesizes existing literature on gender differences in social support related to CR2 participation. The third study presents an original qualitative investigation of women's perceived barriers and catalysts to completing CR2, guided by the TTM. Together, these studies aim to advance understanding of how women engage in CR2 over time and to inform gender-responsive, patient-centered strategies that support sustained engagement and completion.

Purpose of the Dissertation

Therefore, the purpose of this manuscript-style dissertation is to examine women's engagement in CR2 across the rehabilitation continuum, with particular attention to women's perceived barriers and catalysts influencing sustained participation and program completion. This work seeks to move beyond documentation of sex-based disparities in referral and enrollment by clarifying how women persist through CR2 over time and how relational, structural, and experiential influences shape motivation, confidence, and readiness for change throughout the rehabilitation process.

Research Questions

This dissertation is guided by the following research questions: What barriers do women perceive as influencing their engagement in CR2 across the rehabilitation trajectory? What catalysts do women perceive as supporting their sustained participation and completion of CR2? How do women describe changes in motivation, confidence, and readiness for behavior change across CR2 participation?

Operational Definitions

For the purposes of this dissertation, the following definitions are used:

Phase II cardiac rehabilitation (CR2): A structured outpatient cardiac rehabilitation program that includes supervised exercise training, education, and lifestyle modification following hospitalization for a cardiac event or diagnosis.

***Completion*:** While CR2 completion is often operationalized as attendance of 36 sessions, this dissertation defines completion as participation in at least 25 CR2 sessions. This threshold ensures sufficient program exposure to reflect meaningfully on barriers and catalysts across time, while also aligning with evidence that clinically meaningful benefits of CR2 may occur prior to the full 36-session dose.

***Barriers*:** Perceived factors that hinder engagement, persistence, or participation in CR2, including structural, emotional, relational, or system-level influences.

Catalysts: Perceived factors that support engagement, persistence, or participation in CR2, including relational support, program features, healthcare interactions, and experiences of progress or improvement.

Significance of the Dissertation

This dissertation contributes to cardiac rehabilitation research and practice in several important ways. First, it integrates evidence across referral pathways, care transitions,

and social support to clarify how women's engagement in CR2 is shaped by system-level processes and relational experiences. Second, it extends the literature by shifting focus from enrollment disparities alone to the lived experience of sustained participation and completion, highlighting completion as a process of persistence through ongoing barriers. Third, by applying the TTM to women's experiences of CR2, this work provides a behavior-change framework for understanding how self-efficacy, internal motivation, and readiness evolve throughout rehabilitation. Finally, the findings offer practical implications for developing gender-responsive, patient-centered CR2 strategies that strengthen relational support, address transitional vulnerabilities, and reduce structural barriers that disproportionately affect women. Collectively, this work supports efforts to improve equitable access to CR2 and to enhance sustained engagement and completion among women.

Overview of Dissertation Chapters

This dissertation is organized into five chapters. Chapter One provides the general introduction, establishes the clinical and public health significance of CR2 for women, and presents the conceptual framework guiding the dissertation. Chapter Two presents a published article examining transitional care processes and the role of home healthcare professionals in supporting access to CR2. Chapter Three presents a published narrative review synthesizing gender differences in social support and CR2 participation. Chapter Four presents the qualitative phenomenological study exploring women's perceived barriers and catalysts to completing CR2, interpreted through the TTM. Chapter Five concludes the dissertation with an integrated discussion of key findings, clinical implications, and recommendations for future research.

CHAPTER TWO

TRANSITIONING FROM HOME HEALTH CARE TO PHASE 2 CARDIAC REHABILITATION

Phase 2 cardiac rehabilitation (CR2) is an important element of recovery for individuals who have experienced a cardiac event or have undergone heart surgery. These medically supervised programs are designed to enhance cardiovascular health, reduce the risk of future cardiac events, and improve overall quality of life (Tessler & Bordoni, 2023). Given the well-documented benefits of CR2, the role of home healthcare professionals in supporting a person's transition to this program is paramount. Home healthcare professionals are uniquely positioned to assess patients' needs and readiness for CR2, as they have ongoing access to individuals in their home environment. This proximity allows them to facilitate a smooth entry into CR2, thereby optimizing recovery outcomes for those who have experienced a cardiac event (Arena et al., 2012).

CR2 is a structured program that typically includes three core components: supervised exercise training, education on heart-healthy living, and psychological support (Tessler & Bordoni, 2023). It is designed for individuals recovering from events such as myocardial infarction (heart attack), coronary artery bypass surgery, cardiac stent placement, or heart failure. Research indicates that CR2 significantly improves cardiovascular fitness, promotes healthier lifestyles, and reduces the likelihood of future cardiac issues (CDC, 2021). Traditionally, CR2 takes place in clinical settings, where patients benefit from direct supervision and a controlled environment. However, home-based adaptations of cardiac rehabilitation are becoming increasingly important as they address barriers that

some patients face in accessing in-person care, such as transportation challenges or mobility limitations (Wang et al., 2024). While the rehabilitation provided in the home environment shares some elements of CR2, it is essential to recognize that it is different from the structured program found in clinical settings. Instead, home-based care serves as a supportive bridge that prepares individuals for the transition into a formal CR2 program (Arena et al., 2012).

There are numerous benefits to completing CR2. Patients who engage in these programs experience notable improvements in physical function, reduced mortality rates, and fewer hospital readmissions (CDC, 2021). According to Racette et al. (2022), CR2 helps patients regain strength and manage symptoms effectively. However, participation rates remain disappointingly low (Adusumalli et al., 2021). Many patients, especially those from underserved populations, do not attend CR2 due to logistical barriers such as transportation issues or lack of awareness about available programs (Suaya et al., 2007). Home healthcare professionals can play a critical role in overcoming these challenges by facilitating access to CR2 and supporting patient adherence during their recovery journey (Arena et al., 2012).

Home healthcare professionals often step in after a patient's discharge from the hospital following a cardiac event or surgery. They are ideally positioned to connect patients with cardiac rehab programs and ensure they adhere to lifestyle changes and medication regimens promoted by CR2 (Arena et al., 2012). By reinforcing CR2 recommendations and monitoring patient progress, these professionals can address any complications that may arise during recovery. They also serve as advocates for patients who have not yet been referred to CR2, by recognizing the need for, and ensuring that eligible individuals

receive this essential intervention. Many patients face additional challenges in accessing CR2 due to physical limitations or difficulties traveling to appointments (Bakhshayeh et al., 2019). Home healthcare professionals can identify these barriers and collaborate with CR2 care teams to find alternative solutions (Arena et al., 2012).

Home healthcare professionals are essential in recognizing potential candidates for cardiac rehabilitation (CR2) who may not yet have been referred (Arena et al., 2012). Healthcare providers and patients need to be aware of the common criteria for referral, which typically include recent events such as myocardial infarction, coronary artery bypass surgery, heart valve repair or replacement, cardiac stent placement, or significant heart failure. Additionally, patients experiencing persistent symptoms such as angina or those with risk factors such as obesity, hypertension, or diabetes may also benefit from CR2. Home healthcare professionals should remain vigilant for physiological and functional indicators that a patient may need more structured support. If a patient is recovering from a cardiac event but has not been referred to CR2, home healthcare professionals can consult with physicians to ensure an appropriate plan of care is provided, including CR2 transition when home healthcare goals are met (Arena et al., 2012). For those already referred but struggling with participation barriers such as transportation issues or lack of motivation, home healthcare professionals can help identify solutions (Bakhshayeh et al., 2019). Additionally, home healthcare professionals can support patients in making heart-healthy lifestyle changes by providing education on dietary adjustments and medication adherence (Feinberg et al., 2017).

CR2 is vital for recovery after a cardiac event or surgery. Home healthcare professionals are crucial in facilitating access to CR2 and ensuring continuity of care from hospital

discharge to home recovery. Advocating for patient participation and recognizing the importance of cardiac rehab can significantly enhance long-term outcomes for individuals recovering from heart conditions (Tessler & Bordoni, 2023). Collaboration between home healthcare providers and cardiac rehabilitation teams is essential for comprehensive care, as home healthcare professionals often provide valuable feedback on patient progress and identify barriers to recovery (Arena et al., 2012). Their support and encouragement can greatly boost patient motivation and

CHAPTER THREE

EXPLORING GENDER DIFFERENCES IN SOCIAL SUPPORT IN CARDIAC REHABILITATION: A COMPREHENSIVE REVIEW

Introduction and Background

Overview of heart disease and cardiac rehabilitation

Heart disease is the leading cause of death in the United States, accounting for 919,032 deaths in 2023. This represents roughly one in every three deaths nationwide and affects people across nearly all racial and ethnic groups (Center for Disease Control and Prevention (CDC), 2025). These complications often require medical interventions such as angioplasty, coronary bypass surgery, stent placement, or even heart transplantation. Following these qualifying cardiac events, individuals are often referred to cardiac rehabilitation (CR), a comprehensive program designed to aid their recovery (Khadanga et al., 2021).

The importance of cardiac rehabilitation phase 2 (CR2)

CR is typically divided into three phases. Phase 1 begins in the hospital setting immediately following a cardiac event, focusing on early mobilization and education. Phase 2 (CR2), the focus of this review, is most commonly structured as a 12-week outpatient program involving supervised exercise three times per week, ongoing education, and lifestyle modification support. While this model is widely adopted, program length and frequency may vary by institution, country, and insurer. Phase 3 then emphasizes long-term maintenance and continuation of health behaviors. CR2 has shown numerous benefits, including improved cardiovascular fitness, reduced risk of future

cardiac events, enhanced quality of life, and improved psychological well-being (Khadanga et al., 2021).

Gender disparities in CR2 participation

Despite CR2's clear benefits, participation rates remain low, particularly among women (Brown et al., 2024). Fewer than 30% of eligible individuals engage in CR2 programs (Brown et al., 2024), and women are 9-13% less likely than men to enroll and complete CR2 (Firoozabadi et al., 2023). This disparity has been linked to caregiving responsibilities, transportation barriers, cultural expectations, and lower referral rates from providers (Firoozabadi et al., 2023). One key factor influencing both participation and adherence is social support, which encompasses emotional, informational, and practical assistance from family, friends, and healthcare providers (Langford et al., 1997).

Social Support Theory

This review was guided by Social Support Theory, which served as the conceptual framework for categorizing and interpreting findings. It was selected because it provides a well-established model for understanding emotional, informational, and practical support and how these forms of support influence health behaviors (Langford et al., 1997), including CR2 participation. Social Support Theory proposes that individuals who perceive strong support networks are better able to cope with challenges, manage stress, and maintain overall well-being (Langford et al., 1997). Emotional support offers comfort and reassurance, informational support provides knowledge and guidance, and practical support assists with daily tasks and logistics (Langford et al., 1997). Together, these dimensions buffer stress, reduce the negative effects of illness, and increase adherence to health programs like CR2.

Dimensions of social support

Emotional support refers to the expressions of empathy, love, trust, and caring that individuals receive from their social network (Langford et al., 1997; Deb et al., 2020). This support often comes from listening, comforting, and encouraging (Langford et al., 1997; Deb et al., 2020). For example, a spouse offering reassurance or a close friend providing a listening ear can deliver the emotional stability needed to navigate the challenges of rehabilitation.

Informational support involves providing advice, guidance, and knowledge to help individuals make informed decisions about their health (Langford et al., 1997; Deb et al., 2020). In the context of CR2, this could include medical advice from healthcare providers, educational materials about lifestyle changes, or insights from peers who have had similar experiences. Informational support is essential for helping patients understand their condition and the importance of adhering to program protocols, such as exercise regimens and dietary recommendations (Deb et al., 2020).

Practical support includes tangible help with everyday tasks, such as transportation to and from CR2 sessions or financial assistance. For many individuals, practical support can significantly reduce barriers to participation, especially for those with physical limitations after a cardiac event (Deb et al., 2020). This dimension of support may ensure that individuals can regularly attend CR2 sessions and continue in the program without unnecessary setbacks (Deb et al., 2020).

Purpose

Understanding the role of social support is essential for addressing barriers to participation and ensuring that all individuals can benefit from CR2 (Deb et al., 2020).

Gender differences in how social support is perceived and utilized during CR2 may help explain why certain groups, particularly women, have lower engagement rates (Milner et al., 2016). Examining these dynamics is important for improving patient outcomes and ensuring equitable access to CR programs (Collado-Mateo et al., 2021). This comprehensive narrative review synthesizes literature published from 2005 to the present, examining how social support influences CR2 participation, with attention to gender differences.

Review

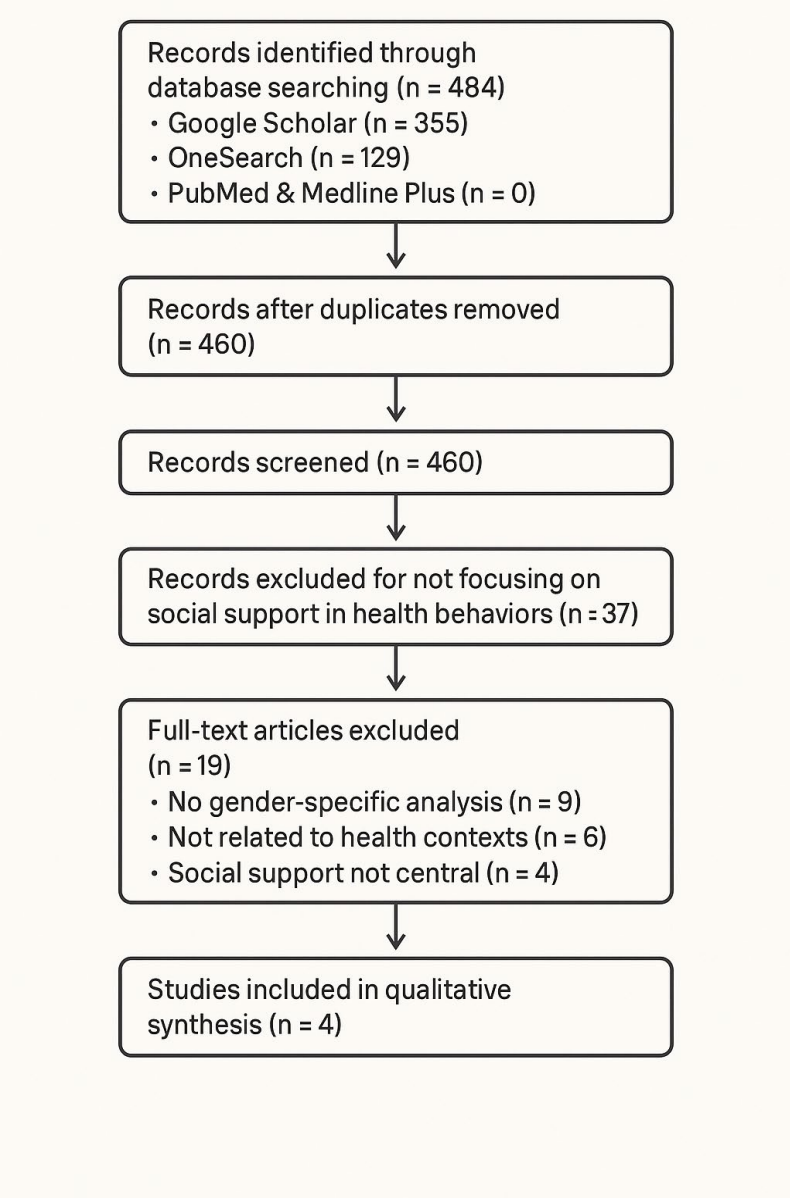
Methods

This comprehensive narrative review examined the role of social support in Phase 2 cardiac rehabilitation (CR2) and explored gender differences in how support is experienced and utilized. A systematic search was performed across four databases: Google Scholar, PubMed, MedlinePlus, and the Library OneSearch tool. The search covered publications from 2005 to the present and used the Boolean string ("cardiac rehabilitation" OR "CR2") AND ("social support") AND ("gender differences" OR "sex differences") AND ("participation rates" OR "program adherence"). The search identified 484 citations: 355 from Google Scholar, 129 from Library OneSearch, and none from PubMed or MedlinePlus. After removing duplicates, 460 unique records remained for screening. Titles and abstracts were reviewed for relevance, followed by full-text assessment of potentially eligible studies. Four studies ultimately met the inclusion criteria. All screening and data extraction were conducted by the author. A structured matrix was used to extract study design, population, sample size, setting, social support dimensions examined, and key findings. A formal risk-of-bias or quality

appraisal was not performed because of the small number and heterogeneity of included studies. Findings were integrated using a narrative synthesis approach. Data were grouped according to the three dimensions of emotional, informational, and practical support outlined by Social Support Theory. The four included studies represented a range of designs (observational, cohort, and meta-analysis) and sample sizes, from small qualitative studies to large cohorts involving more than 6,000 participants, providing a diverse foundation for identifying key themes and knowledge gaps (see Figure 3.1).

Figure 3.1

PRISMA-style study selection flow diagram



Note. Flow diagram of study selection process. Relevant data were extracted from the selected studies, with a focus on social support dimensions (emotional, informational, and practical), gender-specific experiences, and participation outcomes in CR2 or analogous rehabilitation settings. The findings were analyzed using Social Support Theory as a guiding framework to identify common themes, highlight differences across studies, and reveal gaps in literature. The analysis informed conclusions about the impact of gendered

experiences of social support on CR2 participation, emphasizing the need for gender sensitive strategies in future program design and research.

Role of Social Support in CR2 Participation

Social support encompasses various forms of assistance that individuals receive from their social networks (Langford et al., 1997; Mathews et al., 2024). It has been well established that social support is significant in promoting adherence to health programs and improving health outcomes (Purcell et al., 2023; Teleki et al., 2022). Studies consistently demonstrate that individuals with strong social support systems are more likely to participate in rehabilitation programs and experience better recovery trajectories (Mathews et al., 2024; Purcell et al., 2023). However, the nuances of how social support functions in CR2, particularly regarding gender differences, remain less understood.

Gender Differences in Social Support Experiences

Research has shown that gender differences significantly influence stress perceptions and coping strategies, shaping how individuals utilize social support (Kneavel, 2021). A quantitative internet survey by Kneavel et al. of 1,080 adults assessed the quality and quantity of social support alongside gender, age, and perceived stress (Kneavel, 2021). The study found that women reported higher levels of stress, broader support networks, and greater perceived quality of social support, while men reported narrower networks and more task-oriented coping (Kneavel, 2021). Although not CR2-specific, it provides context for gendered stress and support-seeking patterns.

Impact of Gender on CR2 Participation

A peer-reviewed observational study by Deb et al. examined 844 CR2 patients (607 men and 237 women) at the University of Michigan between 2017 and 2019 (Deb et al.,

2020). “Graduation” was defined as completing at least 75% of prescribed CR2 sessions. Participants rated their perceived social support on a 0-10 scale (0-6 low support; 7-10 high) (Deb et al., 2020). Both men and women with high support had significantly higher graduation rates ($p<0.01$) (Deb et al., 2020). For men, support from family and friends (a category that included spouses) most strongly influenced graduation ($p<0.01$), while for both genders, non-traditional support networks, including neighbors and structured volunteer programs, were also linked to higher completion (each $p<0.01$) [6]. Notably, marital status and relationship quality were not associated with completion for either gender (Deb et al., 2020).

Molloy et al. conducted a meta-regression of 11 studies including 6,984 CHD patients (Molloy et al., 2008). They found that being married or partnered was associated with 1.72 times higher odds of CR attendance (95% CI: 1.50-1.97) (Molloy et al., 2008). Taken together, these findings underscore the complexity of social support in CR2. Programs should consider both traditional networks (e.g., spouses) and non-traditional supports (e.g., peers, volunteers, neighbors, healthcare providers) when designing interventions. For some men, provider encouragement and practical support may serve as a key motivator; for women, emotional reassurance and relational support may matter more. These nuances, along with intersectional factors like age, socioeconomic status, and culture, highlight the need for gender-sensitive and inclusive CR2 strategies. A summary of the articles reviewed can be seen in Table 3.1.

Table 3.1

Summary of Studies on Gender Differences and Social Support in Cardiac Rehabilitation

Study (Author, Year)	Sample / Setting	Social Support Dimensions	Key Findings
Deb et al., 2020	844 participants; University of Michigan; CR2 setting	Emotional, Informational, Practical	Higher perceived social support was associated with higher CR2 completion. Men benefited most from family/friends support. Non-traditional networks (e.g., neighbors, volunteers) were significant for both genders.
Mathews et al., 2024	Older adults; Medicare beneficiaries	Emotional, Practical	Greater social support was associated with higher CR2 participation. Social isolation reduced engagement.
Kneavel et al., 2021	Mixed-gender chronic illness patients	Emotional, Practical	Men demonstrated more task-oriented coping and relied more on practical support. Women sought emotional reassurance, which influenced CR2 engagement.
Molloy et al., 2008	Meta-regression; 6,984 CHD patients	Emotional, Practical	Married/partnered individuals were 72% more likely to attend CR, highlighting the importance of marital support.

Note. This table summarizes four key studies included in the review focusing on social support and gender differences in cardiac rehabilitation phase 2 (CR2).

CR2 is a 12-week outpatient program emphasizing exercise and education. Social support dimensions include emotional (empathy, reassurance), informational (advice, guidance), and practical (tangible assistance). The studies employ various research methods such as observational studies, survey-based research, and meta-regression analysis. Reference citations for these studies are provided in the main text.

CHD: coronary heart disease.

Discussion

The insights gained from understanding social support and gender differences have important implications for how CR2 programs are designed and delivered. Communication skills training could help participants more effectively express their

needs. Providers can involve families by inviting relatives to select education sessions or milestone updates, offering options for virtual attendance when needed. Concrete examples of gender-sensitive interventions include women's peer support groups, logistical support programs for men, and hybrid in-person and digital mentorship models. Digital supports could expand reach and help overcome barriers for women balancing caregiving or work schedules. This review used a narrative approach guided by Social Support Theory but did not include a formal quality assessment.

Conclusions

Social support plays a vital role in participation and success during CR2, influencing how individuals engage with programs and recover. Recognizing gender differences in support needs helps remove barriers, strengthen connections, and enhance overall outcomes for participants.

CHAPTER FOUR

WOMEN'S PERCEIVED BARRIERS AND CATALYSTS TO COMPLETING PHASE II CARDIAC REHABILITATION

Introduction

Cardiac rehabilitation (CR) is a cornerstone of secondary prevention following major cardiac events and is associated with significant reductions in mortality, morbidity, and rehospitalization (Thakkar et al., 2021). Phase II cardiac rehabilitation (CR2), a structured outpatient program integrating supervised exercise, education, and lifestyle modification, is widely recognized as the most impactful phase for supporting sustained behavior change (Tessler, 2021). Despite its well-documented benefits, participation in CR2 remains substantially below national targets, with persistent disparities affecting women (Ritchey et al., 2020).

Women are consistently underrepresented in CR2 and experience lower referral and enrollment rates compared with men, even when clinical eligibility is comparable (Khadanga et al., 2021; Grace et al., 2009). These disparities cannot be fully explained by individual choice and instead reflect a complex interaction of structural, psychosocial, and gender-specific factors. Women report higher levels of fear, anxiety, and emotional distress following cardiac events, as well as greater caregiving responsibilities and logistical strain, all of which may influence engagement in CR2 (Grace et al., 2009). While much of the existing literature has focused on referral and enrollment gaps, less attention has been given to understanding women's experiences once they enter CR2, particularly the catalysts that support persistence and program completion (Khadanga et

al., 2021). Completion is clinically meaningful, as greater session attendance is associated with improved functional outcomes and long-term cardiovascular risk reduction (Ritchey et al., 2020). However, completion rates alone fail to capture the lived experiences that shape women's engagement across the rehabilitation process (Alhazmi & Kauffmann, 2022).

The Transtheoretical Model (TTM) provides a useful framework for examining behavior change within CR2 (Prochaska & DiClemente, 1983). The TTM conceptualizes change as a progression through stages influenced by both internal factors, such as readiness and self-efficacy, and external influences, including social support, health care interactions, and environmental context (Prochaska & DiClemente, 1983). Prior research suggests that women may encounter distinct barriers and catalysts at different stages of change, yet the mechanisms through which these factors influence successful CR2 completion remain underexplored (Grace et al., 2009). Because CR2 requires sustained engagement in exercise and lifestyle modification over time, the TTM is particularly well suited to understanding how women move from initial apprehension toward maintenance of health behaviors within the program.

Qualitative inquiry is well suited to addressing this gap by capturing women's perspectives and contextualizing their experiences within the behavior change process. Therefore, the purpose of this qualitative study was to explore women's perceived barriers and catalysts to completing CR2 and to examine how these factors influenced readiness for change and supported successful program completion, using the TTM as a conceptual framework.

Methods

This qualitative study used a descriptive phenomenological approach to examine women's lived experiences of barriers and catalysts to completing CR2. Colaizzi's descriptive phenomenological method guided analysis to systematically derive themes while preserving participant voice (Morrow et al., 2015). The TTM served as the conceptual framework and informed interview guide development and interpretation of findings across stages of behavior change (Prochaska & DiClemente, 1983).

Sample

Institutional Review Board approval was obtained through Oakland University (IRB-FY2024-292; exempt; May 2, 2024). The approved protocol permitted recruitment of up to 20 participants. Participants were recruited from September 2024 to February 2025. Four CR2 programs were approached, and one program approved recruitment. Convenience sampling was used to obtain practical access to eligible participants within the recruitment window. Recruitment concluded when thematic saturation was achieved. Inclusion criteria were women aged ≥18 years, completion of ≥25 CR2 sessions within the prior 12 months, English fluency, and access to Zoom and email (Ritchey et al., 2020). Exclusion criteria included diagnosis of dementia or Alzheimer's disease, serious illness that would interfere with participation, or identification as transgender.

Procedures

All eligible individuals received an email describing study requirements and then a follow-up phone call was made to confirm eligibility and interview scheduling. Participants provided signed consent and completed a brief demographic survey (Qualtrics, 2024-2025) prior to the interview. The survey included age, race/ethnicity, employment, marital status, insurance, diagnosis, and number of CR2 sessions

completed. Appendix A provides a complete list of the demographic survey questions. One-on-one semi-structured interviews were conducted via Zoom (Zoom, 2024-2025) (30–60 minutes) and audio/video recorded with permission. The interview guide was TTM-informed and included questions addressing pre-program awareness, decision-making, and experiences that supported ongoing attendance and completion. Appendix B provides the interview questions guide. Interviews concluded with an open-ended prompt to capture additional perspectives.

Data Analysis

Zoom-generated transcripts were reviewed line-by-line against audio/video recordings to correct transcription errors and enhance contextual accuracy (Zoom, 2024–2025). Transcripts were de-identified, stored securely, and managed using participant identification codes. Data were analyzed using Colaizzi's seven-step method, including repeated transcript reading; extraction of significant statements related to perceived barriers and catalysts; formulation of meanings; clustering into theme groups across cases; development of an exhaustive description; synthesis of the fundamental structure; and validation (Morrow et al., 2015). Participant validation was incorporated by offering participants the opportunity to clarify or amend transcript content; no participants requested edits or clarification. Analytic credibility was further supported through review of the developing codebook and thematic structure with two qualitative researchers**Trustworthiness and Reflexivity**

Trustworthiness strategies included reflexive journaling, peer debriefing, and documentation of analytic decisions to support dependability and confirmability (Lincoln & Guba, 1985). Peer debriefing was conducted through regular analytic discussions,

during which emerging codes, theme development, and interpretive decisions were critically examined. The primary investigator maintained reflexive notes throughout data collection and analysis and used bracketing to identify and minimize the influence of prior clinical assumptions. Transferability was supported through clear description of sampling context and use of representative quotations in the results.

AI Tool Use

Artificial intelligence tools were used to assist with grammar, wording, punctuation, and formatting to align the manuscript with journal style requirements. No AI tools were used for data collection, data analysis, or generation of research findings. The authors retain full responsibility for the content and integrity of the manuscript.

Results

Demographic Results

Twenty-seven women meeting eligibility criteria agreed to be contacted. Of the 20 successfully reached by phone, 13 expressed interest and 10 completed interviews. One declined participation and two withdrew due to scheduling conflicts.

Ten women completed the demographic survey and participated in semi-structured interviews exploring perceived barriers and catalysts to completing CR2. Participants ranged in age from 48 to 79 years (M = 64.7, SD = 10.5). All participants completed at least 25 CR2 sessions and participated in CR2 for the first time. Participant characteristics are summarized in Table 4.1.

Table 4.1

Participant Characteristics (N = 10)

Variable	Category	n (%)

Variable	Category	n (%)
Age, year	Mean ± SD	64.7 ± 10.5
	Median (IQR)	68 (57–72)
Race	White	9 (90)
	East Indian	1 (10)
Marital status	Married	8 (80)
	Divorced	1 (10)
	Widowed	1 (10)
Education	High school diploma/equivalent	1 (10)
	Some college, no degree	2 (20)
	Bachelor's degree	5 (50)
	Master's degree	2 (20)

Clinical and program-related characteristics, including CR2 diagnosis, referral patterns, and program completion metrics, are presented in Table 4.2.

Table 4.2

Clinical and Program Characteristics (N = 10)

Variable	Category	n (%)
Index diagnosis	Myocardial infarction	3 (30)
	Coronary Artery Bypass Grafting (CABG)	3 (30)
	Percutaneous coronary intervention (PCI)	3 (30)
	Transcatheter Aortic Valve Replacement (TAVR)	1 (10)
First-time CR participant	Yes	10 (100)
Physician referral to CR	Yes	8 (80)
	No	2 (20)
Number of CR2 sessions	25–29	3 (30)
	30–35	7 (70)
Program completion timeframe	3 months	5 (50)
	4 months	4 (40)
	5 months	1 (10)

Social, psychosocial, and health-related factors that contextualize women's experiences in CR2, including caregiving responsibilities, comorbidities, and depressive symptoms, are summarized in Table 4.3.

Table 4.3

Social, Psychosocial, and Health Context (N = 10)

Variable	Category	n (%)
Household income	$30,000–39,999	1 (10)
	$90,000–99,999	2 (20)
	$100,000–149,999	6 (60)
	>$150,000	1 (10)
Insurance copay required	Yes	5 (50)
	No	5 (50)
Transportation assistance needed	Yes	1 (10)
	No	9 (90)
Number of children	0	3 (30)
	1–2	5 (50)
	≥3	2 (20)
Comorbidities*	Hypertension	7 (70)
	Family history of cardiovascular disease	7 (70)
	Hyperlipidemia	5 (50)
	Obesity	4 (40)
	Diabetes	3 (30)
	Chronic kidney disease	1 (10)
Depressive symptoms (PHQ-2)	Positive	5 (50)
	Negative	5 (50)

Note. Participants could report more than one comorbidity

Qualitative Results

Analysis yielded two overarching categories, barriers and catalysts, with multiple interrelated themes. Themes, definitions, and representative quotations are summarized in Table 4.4.

Table 4.4

Barriers and Catalysts to Completing Phase II Cardiac Rehabilitation (CR2)

Category	Theme	Definition	Representative Quote
Barriers	Fear	Emotional fear following a cardiac event that limited confidence and willingness to engage in physical activity during early CR2 participation.	"I was scared to do anything after surgery. I was afraid of hurting myself." (P4)
	Limited awareness and preparation	Lack of knowledge or understanding about CR2 prior to enrollment, contributing to uncertainty and anxiety when entering the program.	"I'd never heard of it before all this happened to me. I was aware of nothing cardiac related whatsoever." (P7)
	Logistical challenges	Practical constraints such as transportation needs, caregiving responsibilities, work schedules, and time burden that complicated attendance.	"My daughter drove me every time. I would not have gone had she not gone with me." (P5)
	Staff conflict	Perceived negative or dismissive interactions with staff that reduced feelings of safety, trust, or support.	"It requires a lot of assertiveness to be seen and heard; that's just part of the system." (P8)
	Physical discomfort	Pain, injury, fatigue, or symptom exacerbation that interfered with exercise participation or required modification.	"I couldn't get past level four on the NuStep because that's when I would start to get chest pain." (P7)
Catalysts	Family support	Emotional encouragement and practical assistance from spouses, children, or family members that promoted attendance and persistence.	"My daughter especially was like, 'You can do it, Mom!'" (P7)
	Internal motivation	Personal determination to improve health, survive, or remain present for family, often evolving from initial fear.	"I want to live a long time. I want to be here." (P1)
	Physician referral and guidance	Trust in physician recommendations that legitimized CR2 participation and initiated enrollment.	"My doctor said, 'You can start,' and I just enrolled." (P10)

Category	Theme	Definition	Representative Quote
	Staff and peer encouragement	Supportive interactions with CR2 staff and peers that fostered reassurance, confidence, and a sense of belonging.	"They are very supportive, very friendly. I felt I was in a very warm and cozy place." (P10)

Barriers to Participation and Completion

Five themes emerged related to barriers: fear, limited awareness and preparation, logistical challenges, staff conflict, and physical discomfort.

Fear was the most pervasive early barrier. Many participants described fear of physical activity following their cardiac event or surgery. One participant stated, "I was scared to do anything after surgery. I was afraid of hurting myself" (P4), while another recalled, "When I went into cardiac arrest… I didn't want to die again" (P2). For some women, fear was compounded by the social context of entering CR2, including being one of few or the only women in a predominantly male program environment. As one participant explained, "I was aware of cardiac rehab because I work in healthcare, but I wasn't prepared for what it would feel like walking in and seeing all these older men…" (P9). Fear often persisted into early CR2 sessions but diminished for many women as participation continued. Limited awareness and preparation further compounded fear. Several participants reported having no prior knowledge of CR2 before hospitalization. As one woman explained, "I'd never heard of it before all this happened to me" (P7). Even participants with health care backgrounds reported feeling unprepared for the environment and expectations of CR2.

Logistical challenges related to transportation, caregiving, and work schedules were commonly reported. One participant stated, "My daughter drove me every time. I would

not have gone had she not gone with me" (P5), while another described adjusting work hours to attend sessions (P7). Caregiving responsibilities further complicated attendance for some participants.

Staff conflict, though infrequently reported, influenced participants' perceptions of safety and support. One participant described feeling dismissed during a session when experiencing pain (P7), while another noted the need for assertiveness to be heard within the system (P8).

Physical discomfort also disrupted participation. Participants described chest pain, musculoskeletal injury, fatigue, and weather-related challenges. One woman explained, "I couldn't get past level four on the NuStep because that's when I would start to get chest pain" (P7). Despite these challenges, most participants adapted and continued attending.

Catalysts to Participation and Completion

Four themes emerged as catalysts: family support, internal motivation, physician referral and guidance, and staff and peer encouragement.

Family support was the most frequently cited catalyst. Participants relied on spouses and adult children for transportation, encouragement, and accountability. One participant shared, "My daughter especially was like, 'You can do it, Mom!'" (P7).

Internal motivation, often originating from fear, became a sustaining force. Participants described a desire to live longer, remain independent, or witness family milestones. As one woman stated, "I want to live a long time. I want to be here" (P1).

Physician referral and guidance served as an important initiating catalyst. Participants described trusting their providers' recommendations and viewing referral as validation of the program's importance. "My doctor said, 'You can start,' and I just enrolled" (P10).

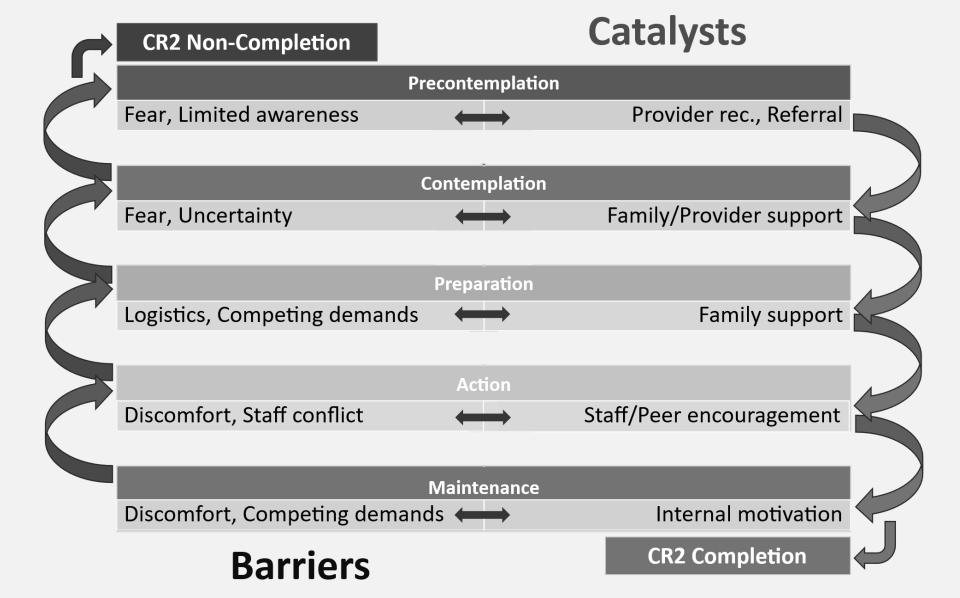
Staff and peer encouragement emerged as a powerful ongoing catalyst. Participants consistently described CR2 staff as supportive and attentive. One participant explained, "I felt I was in a very warm and cozy place" (P10). Peer interactions further enhanced motivation, fostering a sense of shared experience and accountability.

Discussion

The purpose of this qualitative study was to explore women's perceived barriers and catalysts to completing CR2 and to examine how these factors influenced readiness for change and supported successful program completion. Using a phenomenological approach informed by the TTM (Prochaska & DiClemente, 1983), this study provides insight into how women navigate emotional, logistical, and relational influences across the CR2 behavior change process. These findings highlight the dynamic interplay between barriers and catalysts across stages of behavior change, consistent with the TTM (Prochaska & DiClemente, 1983) (Figure 4.1).

Figure 4.1

Women's Barriers and Catalysts Across the CR2 Behavior Change Process - TTM



Note. Author-created conceptual illustration depicting the dynamic interaction of barriers and catalysts across stages of the Transtheoretical Model (TTM) as women progressed toward completion of Phase II cardiac rehabilitation (CR2).

Consistent with prior research, women in this study described fear, anxiety, and low confidence following a cardiac event as salient barriers early in the rehabilitation process (Grace et al., 2009). Previous studies have documented that women report higher levels of emotional distress and lower perceived self-efficacy following cardiac events compared with men, which can negatively affect engagement in cardiac rehabilitation (Grace et al., 2009). However, participants in this study demonstrated that fear did not function solely as a deterrent. Rather, fear often served as an initiating force that evolved into motivation as women progressed through CR2. This finding extends existing literature by illustrating how emotional responses may transform across stages of change, shifting from apprehension to confidence as women gained reassurance, physical capability, and self-efficacy.

Logistical challenges were also prominent, including transportation needs, work schedules, caregiving responsibilities, and environmental factors such as winter driving conditions. Importantly, these barriers were reported despite relatively high levels of education and household income within the sample. This contrasts with literature that often emphasizes financial hardship and resource scarcity as primary logistical barriers (Khadanga et al., 2021). Findings from this study suggest that logistical strain may be better understood as a reflection of women's life context and role expectations rather than economic limitation alone. Caregiving responsibilities, reliance on others for transportation, and competing demands persisted even among women with adequate financial resources, highlighting the need for CR2 programs to address time burden and role strain more explicitly. Notably, all participants in this study were insured, and household income levels were relatively high, which may have attenuated the salience of financial barriers in this sample. Insurance status and copay burden did not emerge as dominant themes; however, cost-related barriers remain well established in the broader CR2 literature and may disproportionately affect women with fewer financial resources (Khadanga et al., 2021).

Several findings represent meaningful contributions to the literature. By examining women who completed CR2, this study offers insight into mechanisms of persistence that are not captured by studies focused on referral, enrollment, or dropout. Findings illustrate how women continued to navigate fear, logistical strain, and relational demands while remaining engaged in rehabilitation, suggesting that completion reflects an adaptive process rather than the absence of barriers. Understanding how women persist despite

ongoing challenges may inform strategies aimed at sustaining engagement throughout CR2.

Prior literature suggests that women often report lower perceived social and partner support and greater family-related demands that may negatively influence cardiac rehabilitation participation (Grace et al. 2009; Resurrección et al., 2019). In contrast, many women in this study described strong spousal and family support that functioned as a key catalyst for completion. Family involvement provided both emotional reinforcement and practical assistance, including transportation and scheduling support. Together, these findings suggest that when present, partner and family support may play a more influential role in women's persistence in completing CR2 than previously emphasized, highlighting an opportunity for CR2 programs to more intentionally engage family members in the rehabilitation process.

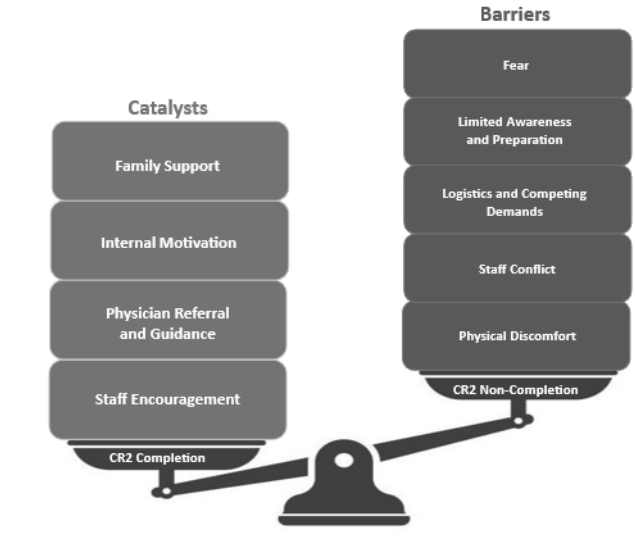
Another novel contribution of this study is the emphasis on internal transformation across CR2. Women described a progression from fear and uncertainty to confidence and self-determination. External reassurance from physicians, staff, peers, and family initially supported engagement, but over time this reassurance was internalized, leading to greater self-efficacy and autonomy. This internal shift aligns closely with the TTM, wherein individuals move from externally prompted action toward sustained maintenance driven by internal motivation. The findings suggest that CR2 completion may be supported not only by reducing barriers, but also by fostering conditions that allow women to develop confidence, identity as a capable exerciser, and belief in their ability to manage their health.

Staff interactions and the CR2 environment were also critical catalysts. Consistent with prior research, participants described staff encouragement, monitoring, and relational communication as essential for reducing fear and enhancing perceived safety. Positive staff–patient relationships contributed to emotional reassurance and trust, while peer interactions fostered a sense of belonging and shared experience. These relational elements appeared particularly salient for women and may represent modifiable program characteristics that support completion. These findings underscore the importance of staff communication, reassurance, and relational continuity as modifiable program characteristics that may influence women's persistence.

Taken together, these findings highlight the importance of viewing women's CR2 experiences as a dynamic process rather than a static set of barriers. The essence of women's CR2 completion was a process of persevering through fear, rebuilding confidence, and internalizing external support into sustained self-efficacy. Barriers and catalysts shifted across stages of change, and external support played different roles over time. Integrating the TTM into CR2 program design may help clinicians identify when women require reassurance, logistical assistance, or opportunities to build autonomy and confidence. Rather than functioning in isolation, barriers and catalysts coexisted throughout CR2 participation, with catalysts ultimately outweighing barriers among women who completed the program (Figure 4.2).

Figure 4.2

Balance of Barriers and Catalysts Influencing CR2 Completion



Note. Author-created conceptual representation illustrating how catalysts outweighed barriers among women who completed Phase II cardiac rehabilitation (CR2), despite the continued presence of emotional, logistical, and physical challenges.

Practical and Policy Implications

Findings from this study support the need for gender-responsive CR2 models that address emotional readiness, caregiving strain, and relational dynamics. Practical strategies may include pairing referrals with explicit reassurance, engaging family members early in the CR2 process, offering flexible scheduling options, and strengthening staff communication skills. Structured peer-mentoring programs may also enhance motivation and normalize challenges during rehabilitation.

Limitations

This study was conducted at a single CR2 site within one geographic region and included a relatively small, predominantly white sample with higher education and income levels, which may limit transferability. Experiences of women from more diverse racial, socioeconomic, and cultural backgrounds may differ. Additionally, all participants

completed CR2, and perspectives of women who discontinued participation were not captured.

Future Research

Future studies should examine psychosocial and relational interventions designed to strengthen catalysts for women in CR2, including peer mentorship and family-centered models. Research exploring staff–patient communication and emotional readiness screening at intake may further inform strategies to improve equitable engagement and completion.

Conclusions

Women completing CR2 described a dynamic process in which emotional, logistical, and relational factors influenced engagement across the behavior change continuum. Barriers such as fear and logistical strain often coexisted with catalysts including family support, internal motivation, and supportive interactions with clinicians and peers. Findings highlight the importance of addressing emotional readiness and relational support within CR2 programs. Gender-responsive strategies that strengthen catalysts may enhance women's persistence and successful completion of CR2.

Acknowledgments

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CHAPTER FIVE

CONCLUSION

Cardiovascular disease remains the leading cause of mortality among women in the United States (Centers for Disease Control and Prevention (CDC), 2025), and Phase II Cardiac Rehabilitation (CR2) represents a cornerstone of secondary prevention associated with significant reductions in morbidity, mortality, and hospital readmissions (Ritchey et al., 2020; Brown et al., 2024). Despite its well-documented benefits, women remain underrepresented across the CR2 continuum, with persistent disparities in referral, enrollment, and completion (Grace et al., 2009; Khadanga et al., 2021). While much of the existing literature has focused on documenting these access gaps, comparatively less attention has been devoted to understanding how women experience CR2 once enrolled and how they sustain participation over time (Resurrección et al., 2019). This manuscript-style dissertation sought to move beyond documenting disparities by examining women's engagement in CR2 across the rehabilitation continuum, with particular emphasis on perceived barriers and catalysts to sustained participation and completion.

Across three complementary investigations, an examination of transitional care processes, a synthesis of gender differences in social support, and qualitative phenomenological exploration guided by the Transtheoretical Model (TTM), this work provides a multidimensional understanding of women's engagement in CR2. Findings from the examination of transitional care processes highlighted the vulnerable period between hospital discharge and initiation of outpatient rehabilitation. Referral pathways, particularly the presence or absence of automatic referral systems, significantly influence

early engagement (Adusumalli et al., 2021; Suaya et al., 2007). Home healthcare professionals may serve as a critical bridge during this transition by reinforcing education, assessing readiness, and advocating for referral when systems fail to do so (Arena et al., 2012; Marchwinski, 2025). These findings emphasize that engagement in CR2 begins well before the first supervised exercise session and is shaped by structural and system-level determinants that influence opportunity.

The synthesis of literature examining gender differences in social support further clarified relational influences on CR2 participation. Emotional, informational, and practical support are consistently associated with increased participation and completion (Deb et al., 2020; Molloy et al., 2008; Mathews et al., 2024). Gender differences in perceived barriers and support utilization have been well documented, with women frequently reporting distinct relational and caregiving influences on participation (Grace et al., 2009; Firoozabadi et al., 2023). These findings underscore the importance of conceptualizing social support not as a uniform construct but as a dynamic, context-dependent influence on health behavior.

The qualitative phenomenological investigation extended this literature by centering on women's lived experiences of completing CR2. Women described barriers including fear, limited awareness, logistical strain, physical discomfort, and occasional interpersonal challenges with staff. Emotional distress following cardiac events has been well documented among women and is associated with lower engagement in secondary prevention behaviors (Thakkar et al., 2021; Khadanga et al., 2021). Notably, these barriers persisted even among women who successfully completed at least 25 sessions. Completion was not characterized by the absence of difficulty; rather, it reflected

persistence in the presence of ongoing challenges. Catalysts, including family encouragement, physician endorsement, supportive staff interactions, peer connection, and evolving internal motivation, functioned dynamically throughout participation. The critical role of relational and peer support in sustaining rehabilitation engagement is consistent withprior literature (Purcell et al., 2023; Teleki et al., 2022).

A central contribution of this work is the identification of internal transformation as a defining feature of completion. Women frequently entered CR2 with fear, uncertainty, and diminished confidence following a cardiac event. Early engagement was often sustained by external validation from physicians, rehabilitation staff, and family members. Over time, however, this reassurance was internalized. Women described growing confidence, improved self-efficacy, and a strengthened sense of autonomy in managing their health. This progression aligns closely with the TTM, which conceptualizes behavior change as movement through stages influenced by evolving self-efficacy and motivation (Prochaska & DiClemente, 1983). By applying the TTM to women's lived experiences, this dissertation advances the theoretical understanding of CR2 participation as a developmental and relational process rather than a binary outcome.

Clinically, these findings support the development of gender-responsive, patient-centered CR2 models that address both structural and relational determinants of engagement. Strengthening automatic referral systems and transitional care pathways may reduce early attrition (Adusumalli et al., 2021). Intentional engagement of family members and peer-support structures may enhance relational reinforcement (Deb et al., 2020; Molloy et al., 2008). Screening for emotional readiness and fear at intake may allow clinicians to

provide stage-appropriate reassurance, particularly given documented sex differences in psychosocial recovery after cardiac events (Thakkar et al., 2021). Additionally, flexible scheduling and hybrid participation models may mitigate logistical strain and improve equitable access (Wang et al., 2024). Collectively, these approaches acknowledge that improving women's participation requires attention not only to access but to the emotional and contextual environment in which rehabilitation occurs.

This work also contributes to the broader cardiac rehabilitation literature by reframing completion as a process of adaptive persistence. Rather than conceptualizing participation solely in terms of enrollment metrics, this dissertation highlights the dynamic interplay of barriers and catalysts across time. Women's engagement in CR2 is shaped by system-level processes, social networks, and personal transformation. Understanding how women persist despite fear, role strain, and physical discomfort provides valuable insight for designing interventions that strengthen catalysts rather than focusing exclusively on removing barriers.

Future research should expand this work to include more diverse populations and to capture the perspectives of women who discontinue CR2 participation, as dropout and nonparticipation remain significant concerns (Resurrección et al., 2019). Examination of targeted interventions designed to enhance relational support, peer mentorship, and emotional readiness may further clarify mechanisms of sustained engagement. Continued investigation into transitional care processes and system-level referral mechanisms may also inform strategies to reduce early disengagement and improve equity in CR2 participation.

In summary, women's completion of CR2 reflects a dynamic process in which emotional, relational, and structural influences intersect across stages of behavior change. Barriers persist, yet catalysts, particularly relational support and evolving internal motivation, ultimately facilitate sustained persistence. By integrating transitional care processes, social support dynamics, and lived experience through a behavior-change framework, this dissertation advances understanding of women's engagement in cardiac rehabilitation. Improving equitable participation in CR2 requires not only expanding access but strengthening the relational, emotional, and systemic conditions that enable women to move from fear toward confidence and sustained health ownership.

APPENDICES

APPENDIX A

Demographic Survey

Welcome to the research study conducted by Oakland University student Laura Marchwinski in the Human Movement Science Department, under the supervision of Dr. Sara Arena. Your participation in this study is entirely voluntary, and you have the freedom to withdraw at any time or skip any part of the study if you feel uncomfortable. Your decision will not affect your relationship with Oakland University, the researcher, or the Human Movement Science Department. If you are an Oakland University student or employee, your participation will not impact your grades or employment status. The purpose of this study is to explore the experiences of women who have undergone phase II cardiac rehabilitation (CR2) and identify the barriers and catalysts influencing their completion of the program. All information you provide will be treated confidentially, and your identity will be protected. If you have any questions or concerns, please don't hesitate to contact Laura Marchwinski at lmarchwinski@oakland.edu. Thank you for considering participation in this study, which has received ethical approval from the Institutional Review Board. Your contribution is greatly appreciated. The answers to the following questions will remain anonymous. Please initial below to continue to the demographics pre-survey.

Q1 What is your year of birth?

Q2 What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree

- ○ High school graduate (high school diploma or equivalent including GED)
- ○ Some college but no degree
- ○ Associate degree in college (2-year)
- ○ Bachelor's degree in college (4-year)
- ○ Master's degree
- ○ Doctoral degree
- ○ Professional degree (JD, MD)

Q3 Are you Spanish, Hispanic, or Latino or none of these?

- ○ Yes
- ○ None of these

Q4 Choose one or more races that you consider yourself to be:

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native Hawaiian or Pacific Islander
- ☐ Other _____

Q5 Information about income is very important to understand. Would you please give your best guess? Please indicate the answer that includes your entire household income in (previous year) before taxes.

- ○ Less than $10,000
- ○ $10,000 to $19,999
- ○ $20,000 to $29,999
- ○ $30,000 to $39,999
- ○ $40,000 to $49,999
- ○ $50,000 to $59,999
- ○ $60,000 to $69,999
- ○ $70,000 to $79,999
- ○ $80,000 to $89,999
- ○ $90,000 to $99,999
- ○ $100,000 to $149,999

- $150,000 or more

Q6 What is your ZIP code?

Q7 Did you have a copay for cardiac rehab?

- No
- Yes

Q8 Did you have to find transportation to get to and from cardiac rehab?

- No
- Yes

Q9 What is your marital status?

- Married
- Widowed
- Divorced
- Separated
- Never married

Q10 Did a physician tell you about cardiac rehab?

- Yes
- No

Q11 What was you diagnosis for entering cardiac rehab? (check all that apply)

- ☐ Heart attack
- ☐ Coronary artery bypass surgery
- ☐ Angina/Chest pain
- ☐ Heart valve repair or replacement
- ☐ Heart transplant
- ☐ Heart Failure
- ☐ Other _____

Q12 What is the date of your last monitored session of cardiac rehab?

Q13 How many sessions of cardiac rehab did you complete?

- 25-30

- 30-35

Q14 How many times have you participated in a monitored cardiac rehab program?

- 1
- 2
- 3
- 4 or more

Q15 In what time frame did you complete cardiac rehab? (From the date you started to completion date)

- 3 months
- 4 months
- 5 months
- 6 or more months

Q16 Please indicate which of the following comorbidities you have by checking all that apply.

- Hypertension
- Diabetes
- Obesity
- Smoking
- High cholesterol
- Family history of heart disease
- Chronic kidney disease

Q17 How many children do you have?

Q18 What are your children's ages? (check all that apply)

- Young 0-12
- Teen 13-17
- Adult 18+

Q19 Over the last 2 weeks, how often have you been bothered by having little or no interest in doing things?

- Not at all
- Several days

- More than half the days
- Nearly everyday

Q20 Over the last 2 weeks, how often have you been bothered by feeling down, depressed, or hopeless?

- Not at all
- Several days
- More than half the days
- Nearly everyday

APPENDIX B

Interview Guide

1. Opening Script:
    a. “Hi, my name is Laura. I will be conducting your interview today. Thank you for taking the time to participate. Are you set up in a private location? (If yes) Okay, let's get started! If you have any questions about the study or the interview process, feel free to ask at any time. During the interview, I'll be asking you several questions, each with sub-questions. These questions are designed to explore your experiences and perspectives on completing CR2 or phase II cardiac rehab. You can refuse to answer any questions that you do not feel comfortable answering. Your insights are incredibly valuable, so please feel free to share as much detail as you can remember. Before we start, I'd like to remind you that there are no right or wrong answers, and your honest responses matter most. Additionally, if there's anything you're uncomfortable discussing or if you need to take a break at any point, please let me know. Are you ready to begin, or do you have any questions before we start?”
2. Precontemplation Stage:
    a. Can you describe your awareness of Phase II cardiac rehab before starting the program?
    b. Did you have any doubts or concerns about starting Phase II cardiac rehab? If so, what were they?
3. Contemplation Stage:

a. Can you identify any factors that influenced your decision to sign up to participate?
    i. What motivated you to actively consider participating in Phase II cardiac rehab?
b. Were there specific thoughts or feelings that made you more and less inclined to pursue Phase II cardiac rehab?

4. Preparation Stage:
    a. How did you prepare yourself mentally and emotionally for participating in Phase II cardiac rehab?
    b. Did you encounter any logistical or practical barriers before beginning the program?
        i. If so, please describe them.
    c. Were there any resources that helped you prepare for Phase II cardiac rehab?
    d. Did you have a support system that helped you prepare for Phase II cardiac rehab?
5. Action Stage:
    a. Can you describe your experience while actively engaging in Phase II cardiac rehab sessions? Did you have any specific challenges?
    b. If you had any challenges in engaging in CR2 what strategies or coping mechanisms did you use to overcome any challenges encountered during?
    c. Did you notice any changes in your mindset or behavior as you progressed through the program?
6. Maintenance Stage:

a. How do you sustain your commitment to attending Phase II cardiac rehab sessions over time?
b. What ongoing support or resources do you rely on to maintain your participation in the program?
c. Did you encounter any setbacks or relapses, and if so, how did you address them to continue participation in the program?

7. Relapse Stage:
    a. Have you ever experienced a decline in your participation in cardiac rehab?
    b. Have you ever experienced a decline in your motivation to continue cardiac rehab?
        i. If so, can you describe what triggered this relapse?
    c. How do you navigate setbacks or challenges that may lead to a relapse in your rehab efforts?
    d. What strategies do you find effective in regaining momentum and recommitting to your rehab goals after experiencing a relapse?
8. Reflection:
    a. Are you still engaging in activities learned at CR2?
    b. What areas are you maintaining recommended compliance with? What kept you active in these areas?
    c. What areas are you not maintaining recommended compliance with and what are the barriers or challenges to engaging in those areas?
    d. What advice would you give to a woman who has been referred to CR2 and is considering whether or not to participate?

9. Conclusion script:
    a. Anything you'd like to tell me about that I haven't asked related to your participation in CR2?
10. Closing script:
    a. "Thank you for sharing your experiences and insights with me today. Your participation has been incredibly valuable to this study. Before we conclude, I want to summarize what will happen next. I will review the transcript of our interview to ensure accuracy and completeness and once this review is complete, I will send you a copy of the transcript for your review. If you notice any discrepancies or would like to make any additional comments or clarifications, please don't hesitate to let me know. Additionally, as I continue with my research, I will be working on my dissertation. When I am finished with my dissertation, I will email you a link to view it in ProQuest. You will also receive an Amazon gift card as a token of appreciation for your time and contribution to this study which I will send to the email address you provided earlier. If you have any questions or concerns in the meantime, whether about the study or anything else, please feel free to contact me. Your feedback and input are always welcome. Once again, thank you for participating and sharing your insights with me. Your contribution is greatly appreciated."

APPENDIX C

Institutional Review Board Approval

Date: May 2, 2024

Study #: IRB-FY2024-292

Study Tile: Women's Perceived Barriers and Catalysts to Completing Cardiac Rehabilitation: A Qualitative Study

Submission Type: Initial

IRB Decision: Exempt

Research Team:
Laura Marchwinski
Sara Arena
Sara Arena, Kristine Thompson

Based on applicable federal regulations, the above referenced study has been determined to be Exempt, with the following categories:
Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

Notes for Researcher(s):
This submission includes the following approved documents:

- Recruitment Flyer and Oral Script

Letter and Consent Document:
This letter along with the IRB approved (date-stamped) consent document can be found in Cayuse in the Submission Details page under Letters and Attachments, respectively. Please make sure to use the most recent IRB approved version of the consent form in consenting participants.

Permission from Research Site(s):
Please note the following:

- This IRB exemption determination letter means that this research has met one or more of the federal criteria for exemption per 45 CFR 46.104- Exempt Research.
- Before the research is initiated, permission to conduct research at a given site must be obtained from all research locations listed in the IRB submission. You must keep copies of all such permission letters for your files.
- It is the responsibility of each researcher to follow all applicable policies and procedures of any outside institution where the research will be conducted.

Modifications:
Any changes to this exempt project must be reviewed by the IRB prior to initiation by submitting a MODIFICATION request. Do not collect data while the changes are being reviewed. Data collected during this time cannot be used in research.

Record Retention:
Exempt projects will be retained by the IRB office for three years after the last action on the project.

You are approved to start the research. Please retain a copy of this notification for your records.

If you have any questions, please contact the IRB office.

Thank you.

The Oakland University IRB

APPENDIX D

Wolters Kluwer Author Reuse Policy (Home Healthcare Now)

The following article was originally published as:

Marchwinski, L. (2025). Transitioning from home care to Phase II cardiac rehabilitation. *Home Healthcare Now, 43*(2), 48–49. https://doi.org/10.1097/NHH.0000000000001327

APPENDIX E

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Marchwinski, L. E. (2025). Exploring gender differences in social support in cardiac rehabilitation: A comprehensive review. *Cureus, 17*(8), e89333.

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