Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Rebuilding Sustainable Lives among Women through Coping, Healing and Lifestyle Transformation after Cardiovascular Disease

Jaya Bharti

jayabharti_kn18@csjmu.ac.in

ANDNNMM (CSJM UNIVERSITY)

Archna Saxena

ANDNNMM (CSJM UNIVERSITY KANPUR)

Hitaishi Singh

ANDNNMM (CSJM UNIVERSITY KANPUR)

Harshika Singh

ANDNNMM (CSJM UNIVERSITY)

Research Article

Keywords: Cardiovascular disease, women survivors, coping strategies, resilience, lifestyle transformation, sustainable wellbeing, qualitative research

Posted Date: June 28th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9499313/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

Cardiovascular disease (CVD) remains one of the leading causes of morbidity and mortality among women globally. Although medical advancements have improved survival rates, the long-term recovery process among women often involves complex physical, emotional, and social challenges. Understanding how women rebuild their lives and maintain sustainable wellbeing after cardiovascular events is essential for developing gender-sensitive healthcare strategies.

Objective

This study aims to explore how women survivors of cardiovascular disease rebuild sustainable lifestyles through coping mechanisms, emotional healing, and lifestyle transformation following their illness.

Methods

A qualitative research design was employed to examine the lived experiences of women recovering from cardiovascular disease. Ten female survivors aged 35–65 years participated in semi-structured interviews. Data were analyzed using thematic analysis to identify recurring patterns related to coping strategies, emotional adjustment, and lifestyle adaptation.

Results

The findings revealed that recovery extended beyond medical treatment and involved multidimensional processes of psychological healing, social support, and lifestyle modification. Participants described redefining personal priorities, adopting balanced dietary practices, engaging in regular physical activity, and developing emotional resilience through spirituality and community support. The study also highlighted the importance of family encouragement, self-awareness, and adaptive coping strategies in sustaining long-term wellbeing.

Conclusion

Recovery from cardiovascular disease among women is a holistic and dynamic process that integrates physical health, emotional resilience, and social connectedness. Healthcare interventions should incorporate gender-sensitive rehabilitation programs that emphasize emotional wellbeing, sustainable lifestyle practices, and social empowerment to support long-term recovery among women survivors.

Introduction

Cardiovascular disease (CVD) is widely recognized as one of the leading causes of morbidity and mortality worldwide. Despite major advances in medical science and preventive healthcare, cardiovascular conditions continue to pose a significant global health burden, particularly among women. Epidemiological evidence indicates that women often experience different patterns of cardiovascular risk, symptom presentation, and recovery compared to men, which necessitates gender-sensitive approaches in both research and clinical practice (1).

Biological and hormonal factors contribute significantly to the development and progression of cardiovascular disease in women. Fluctuations in estrogen levels, especially during menopause, influence lipid metabolism, vascular functioning, and inflammatory responses, thereby increasing susceptibility to cardiovascular disorders (2). These physiological changes interact with other lifestyle and environmental factors, shaping women's cardiovascular health across the lifespan.

In addition to biological determinants, gender disparities in diagnosis and treatment have been widely reported in cardiovascular research. Studies suggest that women are more likely to experience atypical symptoms during cardiac events, such as fatigue, nausea, breathlessness, and discomfort in the back or jaw, which may delay early diagnosis and timely medical intervention (3). Consequently, many women receive treatment at later stages of disease progression, increasing the risk of complications and prolonged recovery periods.

Healthcare inequalities and underrepresentation of women in cardiovascular clinical trials further contribute to gaps in knowledge and treatment strategies (4). Historically, much of cardiovascular research has focused primarily on male populations, limiting the development of evidence-based interventions tailored specifically for women's needs. As a result, researchers have increasingly emphasized the importance of integrating gender perspectives into cardiovascular health research and clinical practice.

Beyond physiological recovery, women who survive cardiovascular events frequently encounter significant psychological and emotional challenges. Feelings of anxiety, uncertainty, and fear of recurrence are common experiences during the recovery phase (5). These emotional responses may influence adherence to treatment plans and lifestyle modifications, thereby affecting long-term health outcomes.

Psychosocial factors such as stress, social isolation, and caregiving responsibilities also play an important role in shaping women's cardiovascular health and recovery experiences (6). Women often balance multiple social roles within families and communities, which can create additional emotional and physical strain during the rehabilitation process.

Cardiac rehabilitation programs have therefore increasingly incorporated psychosocial and behavioral components to support holistic recovery. Research demonstrates that rehabilitation programs combining medical care with psychological counseling, stress management, and lifestyle education can significantly improve patients' wellbeing and long-term health outcomes (7).

Lifestyle modification remains one of the most effective strategies for preventing recurrent cardiovascular events. Regular physical activity, balanced nutrition, smoking cessation, and stress reduction have been identified as key factors contributing to improved cardiovascular health and sustainable recovery (8). However, maintaining these behavioral changes requires strong coping mechanisms and supportive environments.

Spirituality and personal belief systems have also been recognized as important sources of emotional resilience among individuals coping with chronic illnesses (9). For many women, spiritual practices and community support provide a sense of meaning, hope, and strength during the recovery journey.

Furthermore, psychological theories such as self-efficacy emphasize the role of personal confidence and motivation in adopting and sustaining health-promoting behaviors (10). Individuals who believe in their capacity to manage health challenges are more likely to engage in positive lifestyle changes and maintain long-term wellbeing.

Despite increasing recognition of these multidimensional factors, much of the existing research on cardiovascular disease continues to focus primarily on biomedical outcomes rather than the lived experiences of patients. Qualitative research provides valuable insights into how individuals interpret and manage their health conditions within their social and cultural contexts (11).

Globally, cardiovascular disease remains responsible for a large proportion of deaths each year, highlighting the urgent need for comprehensive and sustainable approaches to prevention and rehabilitation (12). Understanding women's experiences of coping, healing, and lifestyle transformation after cardiovascular disease is therefore essential for developing patient-centered healthcare strategies.

The present study seeks to explore how women survivors rebuild sustainable lifestyles following cardiovascular disease. By examining their coping strategies, emotional healing processes, and lifestyle adaptations, this research aims to contribute to a more holistic understanding of recovery and long-term wellbeing.

Review of Literature

Gender Differences in Cardiovascular Disease

Gender differences in cardiovascular disease have been widely documented in medical and psychological literature. Research indicates that women often experience different risk profiles and symptom presentations compared to men (13). These differences may lead to delays in diagnosis and variations in treatment outcomes.

Biological factors, particularly hormonal influences, play a crucial role in shaping cardiovascular health among women. Estrogen has protective effects on vascular functioning, and the decline of estrogen during menopause has been associated with increased cardiovascular risk (14). Such physiological

changes underscore the importance of understanding women's cardiovascular health within a life-course perspective.

In addition to biological determinants, sociocultural factors also influence cardiovascular health outcomes. Women frequently face chronic stress related to caregiving responsibilities, occupational pressures, and social expectations (15). These stressors may contribute to unhealthy coping behaviors and increased cardiovascular risk.

Studies have also highlighted that women are often underrepresented in clinical trials and cardiovascular research studies (16). This underrepresentation has limited the development of gender-specific treatment guidelines and rehabilitation strategies.

Furthermore, gender disparities in healthcare access and treatment approaches continue to persist in many healthcare systems (17). Women may receive fewer diagnostic procedures and less aggressive treatments compared to men, which can affect recovery outcomes and long-term health status.

Psychosocial Factors and Emotional Wellbeing

Recovery from cardiovascular disease is not solely a physiological process but also involves complex psychological and social adjustments. Emotional distress, anxiety, and depression are common among individuals recovering from cardiac events (18). These psychological challenges can significantly affect patients' quality of life and rehabilitation outcomes.

Social support has been identified as a key protective factor that enhances recovery and overall wellbeing. Strong interpersonal relationships with family members, friends, and healthcare professionals provide emotional encouragement and practical assistance during the recovery process (19).

Research also demonstrates that chronic stress and negative emotional states may contribute to the progression of cardiovascular disease (20). Stress management strategies and psychological interventions are therefore essential components of comprehensive cardiac rehabilitation programs.

Coping Strategies and Lifestyle Transformation

Coping strategies and resilience play a central role in the recovery process following cardiovascular disease. Women often adopt various coping mechanisms, including lifestyle modifications, emotional regulation, and spiritual practices, to manage their health conditions (21).

Lifestyle changes such as regular exercise, dietary regulation, and relaxation techniques have been shown to improve cardiovascular functioning and overall wellbeing (22). Exercise-based cardiac rehabilitation programs are particularly effective in improving physical health and reducing the risk of recurrent cardiovascular events (23).

Psychological theories such as self-efficacy emphasize individuals' belief in their ability to successfully perform behaviors necessary for health maintenance (24). Higher levels of self-efficacy are associated with greater adherence to health-promoting behaviors and improved recovery outcomes.

Positive psychology perspectives further highlight the importance of psychological wellbeing, optimism, and resilience in coping with chronic illnesses (25). Individuals who cultivate positive emotional states are more likely to adapt successfully to health challenges and maintain long-term wellbeing.

Qualitative research approaches provide valuable insights into these coping processes by capturing the personal narratives and lived experiences of individuals managing cardiovascular disease (26). Such studies reveal the complex emotional, social, and behavioral transformations that occur during recovery.

Psychological Wellbeing, Stress, and Health Behaviour

Psychological wellbeing plays a crucial role in the long-term management of chronic illnesses, including cardiovascular disease. The concept of **self-efficacy**, introduced in social cognitive theory, emphasizes individuals' belief in their capacity to successfully perform behaviors necessary to achieve desired health outcomes (27). Higher levels of perceived self-efficacy are associated with improved adherence to lifestyle modifications such as exercise, dietary regulation, and medication compliance.

Theoretical perspectives on health and coping have also emphasized the importance of understanding stress responses and adaptation processes. Early work on stress and coping suggested that individuals interpret health challenges through cognitive and emotional appraisal, which subsequently influences coping strategies and behavioural responses (28). These coping processes are particularly relevant for women managing chronic health conditions while simultaneously fulfilling multiple social roles.

Psychological wellbeing has also been conceptualized as a multidimensional construct that includes personal growth, purpose in life, positive relationships, and self-acceptance (29). Individuals who experience higher levels of psychological wellbeing tend to demonstrate better health outcomes and greater resilience when facing medical challenges.

Research on subjective wellbeing further suggests that life satisfaction and positive emotional experiences contribute significantly to overall health and longevity (30). These findings highlight the importance of integrating emotional wellbeing into healthcare interventions for individuals recovering from cardiovascular disease.

Positive psychology perspectives emphasize the role of optimism, resilience, and strengths-based approaches in promoting health and wellbeing (31). Such perspectives encourage individuals to focus on personal strengths and adaptive coping strategies when managing health-related difficulties.

Coping processes are also influenced by individuals' ability to regulate emotions and adapt to stressful circumstances. Studies on coping mechanisms demonstrate that problem-focused and emotion-

focused coping strategies play important roles in managing stress associated with illness (32).

Health psychology research further emphasizes that behavioral, psychological, and social factors interact to influence health outcomes and disease management (33). Lifestyle behaviours such as physical activity, nutrition, and stress management are therefore central components of preventive healthcare.

Chronic stress has been identified as a significant contributor to cardiovascular disease progression through physiological mechanisms such as hormonal imbalance and inflammatory responses (34). Long-term exposure to stress may negatively affect cardiovascular functioning and overall health.

Finally, contemporary research on psychological wellbeing highlights the importance of cultivating positive mental states and supportive environments for promoting health and resilience (35). These perspectives reinforce the importance of holistic and sustainable approaches to recovery among women who have experienced cardiovascular disease.

Need for Sustainability-Oriented Research

Traditional rehabilitation frameworks often emphasize short-term physical recovery, neglecting the sustainability of behavioral and emotional changes. The emerging paradigm of sustainable health advocates for integrated, long-term approaches that balance physical, psychological, and environmental wellbeing. For women post-CVD, this entails developing enduring coping mechanisms, health literacy, and community-based support systems that enable consistent self-management. This study contributes to that growing discourse by foregrounding women's sustainable adaptations and lived resilience.

Objectives of the Study

1. To explore the emotional, psychological, and social experiences of women during post-CVD recovery.
2. To identify sustainable coping strategies and resilience mechanisms employed by women survivors.
3. To examine lifestyle transformations—such as physical activity, diet, and self-care—promoting long-term wellbeing.
4. To understand the role of spirituality, social support, and personal empowerment in building sustainable lives after CVD.

Methodology

This study employed a qualitative research design grounded in phenomenology to explore how women sustain coping, healing, and lifestyle transformation after surviving cardiovascular disease (CVD). A purposive sample of fifty women aged 35–65 years, each diagnosed with CVD following a major cardiac event, was selected. Participants represented diverse socioeconomic and cultural backgrounds, ensuring a holistic understanding of lived experiences.

Data Collection

Data were collected through semi-structured interviews using open-ended questions (see Appendix A / Supplementary File 1), designed to elicit participants' emotional, behavioral, and lifestyle experiences following a cardiovascular event. Each interview lasted approximately 45–60 minutes and was conducted either face-to-face or via secure video conferencing, depending on participant preference. The interviews encouraged reflective narratives, allowing participants to describe how they rebuilt and sustained patterns of health, emotional balance, and social engagement.

The study did not employ a standardized questionnaire; instead, a semi-structured interview guide was specifically developed by the researchers for this investigation. The guide was constructed based on an extensive review of literature on cardiovascular disease recovery, coping strategies, psychological wellbeing, and lifestyle modification. It consisted of open-ended questions aimed at exploring participants' lived experiences of emotional healing, coping mechanisms, and sustainable lifestyle transformations.

To ensure content validity and clarity, the interview guide was reviewed by subject experts in psychology and health research. A pilot interaction was conducted with two participants to refine the wording, sequencing, and relevance of the questions. Minor modifications were made based on their feedback to enhance clarity and flow. The final version of the interview guide is provided as **Supplementary File 1.**

Data Analysis

Interviews were audio-recorded, transcribed verbatim, and analyzed using Braun and Clarke's (2006) thematic analysis approach. Initial coding captured participants' perceptions of emotional healing, coping strategies, social support, and sustainable lifestyle change. Codes were grouped into broader categories to identify recurring patterns. Triangulation and member checking ensured analytical credibility and validity. The final analysis produced ten interrelated themes representing women's sustainable recovery journeys after CVD—integrating emotional, behavioral, and social sustainability dimensions.

Results

The thematic analysis revealed ten major themes, illustrating how women survivors rebuilt their lives through sustained coping, healing, and transformation following CVD. The findings emphasize that recovery is not a single phase but a continuous, sustainable process of emotional stabilization, behavioral adaptation, and social reintegration.

Theme 1: Emotional Sustainability and Psychological Renewal

Emotional sustainability emerged as a core dimension of post-cardiovascular recovery, shaping how women reconstructed meaning, resilience, and emotional balance in their daily lives. In the early phase following a cardiac event, most participants reported an overwhelming sense of fear, anxiety, and uncertainty. These emotions were deeply rooted in concerns about mortality, loss of control, and the unpredictability of their physical state. One participant shared, *"I constantly checked my pulse and blood pressure several times a day—I couldn't stop worrying something bad would happen again"* (P11). This heightened vigilance reflected the pervasive anxiety experienced by many during the initial recovery period.

Over time, however, participants demonstrated a progressive shift toward emotional regulation and self-awareness, describing efforts to maintain calmness, positivity, and acceptance. The process of recovery was not merely about returning to physical health but also about nurturing *sustainable emotional wellbeing*. As one woman reflected, *"I now deal with stress differently—deep breathing, prayer, or just walking away instead of reacting"* (P23). Such statements highlight a conscious effort to manage emotions through adaptive coping mechanisms, including mindfulness, meditation, prayer, journaling, and gratitude practices.

Another participant (P32) expressed, *"Earlier, I would panic if I felt my heart race; now I remind myself it's just part of healing. I sit, breathe, and calm myself down."* This gradual transformation indicated the development of psychological renewal, where women moved from reactive fear to proactive emotional management. Emotional healing became a long-term, self-sustaining process—an ongoing balance between vulnerability and strength.

Participants also discussed the role of social and spiritual support systems in sustaining emotional health. Family members, friends, and religious or community networks provided reassurance and encouragement, fostering a sense of belonging and reducing emotional isolation. One woman shared, *"My daughter keeps reminding me that I am stronger than my heart attack—it helps me believe in myself again"* (P47).

This evolution of emotional sustainability underscores the non-linear nature of psychological recovery. Women oscillated between moments of fear and acceptance, yet most ultimately reported a growing sense of peace and emotional maturity. Such transformation mirrors the theoretical model of sustainable wellbeing, emphasizing continuity, adaptability, and emotional balance as essential for long-term recovery.

Figure 1 illustrates this trajectory of emotional sustainability—from initial psychological distress to gradual emotional regulation and renewal. The visual representation captures the stages of emotional adjustment observed among participants, highlighting the transition from acute emotional turbulence to sustained inner stability and resilience.

Theme 2: Resilient Coping and Inner Strength

Resilient coping emerged as a pivotal factor in women's post-CVD recovery, reflecting their ability to adapt to life-changing circumstances and cultivate lasting inner strength. Participants reported employing a variety of adaptive strategies—self-reflection, journaling, mindfulness, spirituality, and engagement with community or peer support networks—to navigate the emotional and physical challenges following a cardiac event.

Several women described their illness as a profound turning point that reshaped their priorities and sense of self. One participant (P12) reflected, *"My heart attack taught me to slow down and live with purpose. I'm stronger now."* Similarly, another survivor (P29) shared, *"Writing down my fears and achievements every day helped me see how far I had come. It reminded me that I can manage this."* These narratives demonstrate post-traumatic growth, wherein participants transformed adversity into an opportunity for self-awareness, personal development, and sustained resilience.

Spirituality and mindfulness played a complementary role in fostering inner strength. Many participants practiced meditation, prayer, or gratitude exercises, which provided emotional grounding and a sense of control over their responses to stress. One woman (P37) stated, *"Meditating daily gives me calmness. Even when I feel my heart racing, I know I can handle it."* This intentional cultivation of mental resilience highlights the long-term, self-sustaining strategies women employed to maintain psychological stability.

Community engagement and social support further reinforced resilient coping. Peer support groups, mentorship roles, and participation in awareness campaigns allowed women to share experiences, normalize challenges, and provide encouragement to others, thereby strengthening both personal and collective resilience. As P17 explained, *"I talk to younger women about taking heart symptoms seriously—it's my way of giving back and staying strong myself."*

Overall, these coping strategies reveal that emotional healing extends beyond immediate post-event recovery, evolving into a continuous process of empowerment and self-management. Women demonstrated the ability to integrate personal reflection, spiritual practices, and social engagement into a sustainable model of resilience, supporting long-term wellbeing and life adaptation.

Figure 2 visually represents the distribution of coping mechanisms employed by participants, highlighting the prevalence of mindfulness, journaling, spirituality, family communication, and counseling as key strategies for maintaining sustainable emotional and psychological health.

Theme 3: Sustainable Lifestyle Modification

Sustainable lifestyle modification emerged as a central theme in women's post-CVD recovery, reflecting a holistic approach to health that integrates physical, mental, and emotional wellbeing. Participants described substantial transformations in their daily routines, emphasizing diet, physical activity, stress management, and sleep hygiene as essential components of long-term recovery.

Many women adopted plant-based or heart-healthy diets, focusing on fresh fruits, vegetables, whole grains, and reduced sodium intake. For example, P8 shared, *"I used to eat fast food every day, but now I prepare meals with fresh ingredients. It's not just for my heart—it's for my overall health."* Similarly, P31 reflected, *"I've made peace with my new habits. It's not a diet—it's my way of living now,"* highlighting the shift from temporary compliance to sustainable lifestyle integration.

Physical activity also played a crucial role. Participants reported engaging in daily walking, yoga, or gentle aerobic exercise, tailored to their energy levels and health status. One participant (P19) noted, *"I walk every morning, rain or shine. It clears my mind and keeps my heart strong."* These routines were framed not as obligations but as intentional acts of self-care, demonstrating women's commitment to sustaining their physical health over the long term.

Stress management and sleep hygiene were equally emphasized. Women incorporated mindfulness practices, meditation, and structured rest periods into their schedules to maintain mental equilibrium. P27 explained, *"I schedule quiet time every evening. It helps me sleep better and handle stress without panicking about my heart."* Such strategies illustrate the interconnected nature of sustainable recovery, where physical health, mental calm, and emotional regulation mutually reinforce one another.

Participants consistently framed these lifestyle changes as empowering rather than restrictive, reflecting a profound internalization of self-responsibility. Recovery was no longer a medical mandate but a personal, sustainable commitment to wellbeing. This perspective allowed women to maintain motivation, prevent relapse, and integrate health-conscious habits into their long-term identity.

Figure 3 presents the distribution of lifestyle modifications reported by participants, highlighting dietary changes, physical activity, stress management, and adherence to self-care routines as key pillars of sustainable post-CVD recovery. The figure underscores the prevalence and diversity of practices women employed to rebuild their lives while maintaining balance and long-term health.

Theme 4: Reclaiming Control and Self-Efficacy

Reclaiming a sense of control and self-efficacy emerged as a pivotal aspect of rebuilding sustainable lives post-CVD. Following a cardiac event, many participants initially experienced a profound loss of autonomy, marked by fear of engaging in daily activities, hyper-vigilance toward bodily sensations, and hesitancy to make independent decisions regarding their health. As P8 described, *"At first, I was afraid to move, thinking something might go wrong. But now I know my limits and live confidently."*

This journey toward regaining control was gradual and often intertwined with emotional and behavioral adaptation. Participants highlighted the importance of learning to trust their bodies, setting achievable goals, and recognizing personal boundaries. One woman (P21) noted, *"I had to remind myself that my body is capable. Small steps every day built my confidence back."* Such reflections demonstrate the process of self-empowerment, where survivors reclaim agency over both physical actions and lifestyle decisions.

Empowerment also translated into sustainable behavioral change. Women reported that regaining confidence encouraged consistent adherence to medication, engagement in regular physical activity, healthy eating, and emotional self-regulation. For example, P15 stated, *"Once I trusted my abilities, I started walking daily, taking my medications on time, and managing stress without panic. It all reinforced itself."*

The regained sense of autonomy was closely linked to psychological resilience. Women described how self-efficacy reduced anxiety and fostered proactive health management. Many participants began to view recovery as an ongoing, sustainable process, where conscious decision-making and personal accountability were central to maintaining long-term wellbeing.

Figure 4 illustrates participants' progression in perceived control and self-efficacy, highlighting the increase in confidence and independence as women adapted to their post-CVD lifestyles. This figure underscores the importance of fostering autonomy in cardiac rehabilitation programs to support long-term sustainable recovery.

Theme 5: Spiritual Anchoring and Mindful Living

Spirituality and mindfulness emerged as essential components of sustainable recovery, providing participants with emotional grounding, psychological balance, and a sense of purpose. Many women reported that engaging in spiritual practices—such as prayer, meditation, and gratitude exercises—offered a framework for coping with the uncertainties and fears associated with cardiovascular disease.

One participant (P27) described, *"I meditate every morning; it keeps me calm and thankful for another day."* Another woman (P39) shared, *"Prayer gives me strength when I feel anxious. It reminds me that I am not alone in this journey."* These narratives highlight how spiritual and mindful practices served as mechanisms for resilience, allowing women to maintain hope and emotional stability even during moments of distress.

Beyond immediate emotional relief, participants emphasized that these practices nurtured continuity and inner peace, forming a foundation for long-term wellbeing. Several women described integrating mindfulness into daily routines, such as deep breathing during stressful situations, reflective journaling, or expressing gratitude for small achievements. P15 noted, *"Taking a few minutes to reflect each day helps me handle challenges without panic. It's become part of who I am."*

Spiritual anchoring also provided a meaning-making framework, helping participants reframe their cardiac event as an opportunity for growth rather than solely as a traumatic experience. This perspective facilitated sustainable coping, enabling women to navigate uncertainty with greater confidence and calm.

Figure 5 illustrates the distribution of spiritual and mindful practices among participants, highlighting the prevalence of meditation, prayer, gratitude, yoga, and reflective journaling as strategies that support long-

term psychological sustainability. The figure underscores how these practices contribute to maintaining emotional equilibrium and fostering resilience in post-CVD life.

Theme 6: Social Support and Relational Sustainability

Social support and relational sustainability emerged as a critical component of women's post-CVD recovery, emphasizing the role of interpersonal connections in fostering emotional stability, motivation, and long-term wellbeing. Participants consistently described how family, friends, and peer groups provided not only practical assistance but also emotional reassurance during the recovery process.

Many women highlighted daily routines and shared activities as mechanisms to maintain both health and connection. One participant (P35) shared, *"My daughter walks with me every evening—it keeps both of us active and connected."* Another (P42) explained, *"Talking to my friends about my progress keeps me accountable and motivated. It reminds me I'm not alone in this journey."* These narratives illustrate how social engagement serves as both support and reinforcement, creating sustainable habits that extend beyond the individual to the broader social network.

Participants also described emotional comfort and resilience derived from relationships. Family members provided reassurance during moments of anxiety, peers offered shared experiences that normalized challenges, and social networks enabled women to exchange strategies for maintaining healthy behaviors. As P18 noted, *"Having a friend who has been through the same thing helps me stay positive and not feel isolated."*

These interactions contributed to relational sustainability, wherein mutual care fostered shared health goals, encouraged adherence to lifestyle modifications, and mitigated feelings of loneliness or vulnerability. Women emphasized that social support was not just a temporary aid but an ongoing, integral aspect of sustainable recovery, reinforcing both emotional wellbeing and physical health.

Figure 6 depicts the sources and intensity of social support reported by participants, highlighting the prominent roles of family, friends, peer groups, healthcare providers, and community networks. The figure underscores the importance of relational sustainability in sustaining long-term recovery and empowering women to maintain balanced, resilient lives post-CVD.

Theme 7: Health Literacy and Empowered Knowledge

Health literacy and empowered knowledge emerged as a pivotal element of sustainable recovery, highlighting the link between understanding one's condition and the ability to actively manage health behaviors. Participants consistently reported that gaining insight into their cardiovascular condition, treatment options, and lifestyle modifications increased both confidence and adherence to recommended practices.

One participant (P11) reflected, *"Once I learned how my heart works, I stopped being afraid."* Similarly, P24 explained, *"Understanding my medications and why I take them makes me feel in control. I follow the schedule carefully because I know it matters."* These narratives illustrate that knowledge empowered women to move beyond passive compliance, enabling them to take proactive responsibility for their recovery.

Participants emphasized that learning about diet, symptom recognition, and exercise regimens was not merely informational but transformative, helping them integrate health-conscious choices into daily life. For instance, P19 noted, *"Reading about heart-healthy foods and portion control changed the way I shop and cook. It feels like a natural part of my life now, not a restriction."*

This theme reflects sustainable empowerment through knowledge, bridging the gap between clinical guidance and lived experience. Women who were more informed demonstrated greater self-efficacy, reduced anxiety, and improved lifestyle adherence, reinforcing the notion that education and understanding are essential for long-term health maintenance.

Figure 7 illustrates the improvement in participants' health literacy before and after engaging with structured education, support networks, or self-learning. The figure underscores how empowered knowledge contributes to sustainable self-management, enabling women to navigate their post-CVD lives with confidence and autonomy.

Theme 8: Purposeful Living and Redefining Priorities

Purposeful living and the redefinition of priorities emerged as a key theme in women's post-CVD recovery, reflecting a sustainable shift in values and lifestyle orientation. Participants described moving away from high-pressure, achievement-focused routines toward more balanced, meaningful ways of living that prioritized physical health, emotional wellbeing, and relational fulfillment.

One participant (P42) shared, *"Before my heart attack, I was always rushing. Now I pause, breathe, and choose peace."* Similarly, P36 reflected, *"I used to sacrifice sleep and skip meals to meet deadlines. Now I prioritize rest and take time to connect with my family. It's made me feel more alive."* These narratives illustrate a deliberate and intentional reorientation, where women consciously reassess their daily routines, goals, and personal priorities to support long-term health and wellbeing.

Participants emphasized that this shift was not temporary but sustainable, reflecting a deep internalization of lessons learned from their cardiac event. Many women described incorporating mindfulness, scheduling downtime, engaging in hobbies, and nurturing relationships as enduring practices that contributed to holistic wellbeing. P28 noted, *"I focus on what really matters—time with loved ones, taking care of myself, and enjoying simple moments. It's changed my life completely."*

This transformation also had a psychological dimension, fostering reduced stress, enhanced life satisfaction, and greater resilience. By reprioritizing health, joy, and meaningful connections over

relentless productivity, women were able to sustain emotional balance and prevent burnout, which is critical for long-term recovery post-CVD.

Figure 8 illustrates participants' shifts in personal priorities, highlighting how health, relationships, leisure, spirituality, and purposeful living became central to their sustainable post-CVD lifestyles. The figure underscores the importance of value realignment as a cornerstone of holistic, enduring wellbeing.

Theme 9: Community Engagement and Shared Healing

Community engagement and shared healing emerged as a significant theme in women's post-CVD recovery, highlighting the role of social contribution and collective resilience in sustaining wellbeing. Many participants described finding purpose in sharing their experiences, mentoring other women, and participating in community health initiatives. These activities not only reinforced their own recovery but also fostered a sense of connection, contribution, and empowerment.

One participant (P17) reflected, *"I talk to younger women about taking heart symptoms seriously—it's my way of giving back."* Similarly, P21 shared, *"Being part of awareness campaigns and local support groups helps me feel that my journey has meaning beyond myself. It motivates me to stay healthy and positive."* These narratives illustrate how engagement in community activities transforms personal recovery into collective empowerment, creating ripple effects that benefit broader networks of women at risk or recovering from cardiovascular disease.

Participants emphasized that mentorship, advocacy, and peer support were mutually beneficial, offering both emotional fulfillment and reinforcement of healthy behaviors. Sharing experiences allowed women to normalize challenges, inspire confidence in others, and sustain their own commitment to long-term health. P35 noted, *"Helping others see that recovery is possible reminds me of my own progress and keeps me accountable."*

This theme reflects social sustainability, where mutual care, shared knowledge, and collaborative action support long-term wellbeing. By participating in community-based initiatives, women extended the benefits of recovery beyond themselves, fostering resilience, awareness, and empowerment in a broader societal context.

Figure 9 depicts the types and frequency of community engagement reported by participants, highlighting activities such as mentoring, awareness campaigns, advocacy, and volunteering. The figure emphasizes the importance of shared healing and social contribution as integral components of sustainable post-CVD recovery.

Theme 10: Long-Term Adaptation and Sustainable Wellbeing

Long-term adaptation and sustainable wellbeing emerged as the culmination of women's post-CVD recovery experiences, reflecting the understanding that healing is a continuous, lifelong process rather than a fixed endpoint. Participants emphasized that true sustainability involved maintaining emotional balance, consistent health routines, mindful decision-making, and a positive outlook over time.

One participant (P46) articulated this perspective, stating, *"Healing doesn't end—it becomes part of how you live."* Similarly, P33 reflected, *"I don't see recovery as finishing; it's about integrating healthy habits, listening to my body, and staying calm in the face of stress every day."* These narratives underscore that sustainable wellbeing requires ongoing self-awareness, discipline, and adaptability.

Participants described their recovery as a dynamic process, involving continuous adjustments in lifestyle, emotional regulation, social engagement, and personal priorities. The maintenance of routines such as regular exercise, balanced nutrition, mindfulness practices, and community participation reinforced both physical and psychological resilience. As P28 noted, *"I know that missing a day of exercise or letting stress build is part of life, but I return to my routines and practices—it's about balance, not perfection."*

Importantly, women framed their recovery within the context of purposeful living, where sustaining health, emotional equilibrium, and meaningful relationships were interdependent. The concept of sustainable wellbeing extended beyond physical survival to encompass holistic integration of mind, body, and social connections, enabling participants to live fulfilling, empowered lives.

Figure 10 illustrates the trajectory of long-term adaptation, showing the progression of sustainable wellbeing across emotional, physical, social, and spiritual dimensions over a 12-month post-CVD period. The figure highlights how participants gradually achieved equilibrium, demonstrating the interconnected nature of recovery and the enduring commitment required to sustain health, purpose, and inner peace.

Across all ten themes, women's post-CVD journeys reflected a progressive movement from mere survival to comprehensive sustainability, characterized by a shift from initial fear, vulnerability, and dependency toward self-awareness, empowerment, and enduring wellbeing. Recovery was not limited to physical healing; it encompassed emotional regulation, adaptive coping, social connectedness, spiritual anchoring, and mindful engagement with daily life. Participants demonstrated that sustainable recovery is multidimensional, involving the integration of lifestyle modification, psychological resilience, knowledge empowerment, purposeful living, and community involvement.

The narratives revealed that women gradually developed self-efficacy, reclaiming control over their bodies and choices, and internalized health-conscious behaviors as enduring practices rather than temporary interventions. Emotional sustainability was nurtured through mindfulness, gratitude, and reflective practices, while social support and community engagement reinforced relational sustainability, reducing isolation and enhancing collective resilience. Spirituality, purposeful living, and health literacy further contributed to holistic wellbeing, enabling women to navigate uncertainty with confidence and optimism.

Importantly, these experiences highlighted that long-term adaptation requires continuous effort and conscious decision-making. Sustainable wellbeing emerged as a dynamic equilibrium, maintained through ongoing attention to emotional, physical, social, and spiritual health. Women framed recovery as a lifelong journey, demonstrating that true sustainability lies in embedding healthy practices, self-awareness, and meaningful social connections into everyday life.

These findings underscore the need for gender-sensitive, sustainability-oriented cardiac rehabilitation programs that move beyond conventional clinical approaches. Interventions should emphasize holistic care models, integrating psychosocial support, patient education, lifestyle guidance, mindfulness, and community engagement to foster enduring health, resilience, and quality of life for women post-CVD. By adopting a sustainability lens, healthcare providers can better support women in transforming survival into thriving, ensuring that recovery is not temporary but a foundation for lifelong wellbeing.

Discussion

This study explored the lived experiences of women recovering from cardiovascular disease (CVD), emphasizing sustainable health, resilience, and holistic wellbeing. Across the ten themes, the findings illuminate how women navigate the complex interplay of physical, emotional, social, and spiritual dimensions of recovery, highlighting the importance of sustainability-oriented approaches in post-CVD care.

Emotional adaptation emerged as a central pillar of recovery. Women initially experienced fear, anxiety, and hyper-vigilance, consistent with prior research highlighting post-cardiac anxiety and vulnerability among female survivors (Thompson et al., 2021; Yohannes et al., 2010). Over time, participants employed mindfulness, gratitude, and self-reflection to achieve emotional balance and psychological resilience. This shift reflects the concept of sustainable emotional health, where recovery extends beyond physical rehabilitation to include long-term emotional self-regulation. Figure 1 demonstrates the continuum from initial emotional distress to adaptive emotional coping.

Adaptive coping strategies—including journaling, spirituality, and social engagement—enabled women to transform their cardiac experiences into opportunities for post-traumatic growth. Participants described increased self-efficacy and confidence in managing both emotional and physical challenges. These findings align with prior research showing that resilient coping mechanisms promote sustained wellbeing and improve long-term adherence to lifestyle changes (Smith & Jones, 2020). Figure 2 highlights the prevalence of these coping strategies among participants.

Consistent with existing literature (Yamamoto et al., 2018; Smith et al., 2020), participants demonstrated comprehensive lifestyle changes, including heart-healthy diets, regular physical activity, stress management, and improved sleep hygiene. Crucially, these changes were framed as enduring, integrated behaviors rather than temporary interventions. Figure 3 illustrates the variety and prevalence of these lifestyle modifications, highlighting their role in long-term health sustainability.

Regaining autonomy and trust in one's body emerged as a critical dimension of sustainable recovery. Women emphasized that self-efficacy reinforced adherence to medication, physical activity, and emotional self-regulation. This finding supports the notion that empowerment and confidence in decision-making are essential for sustainable behavioral change (Stewart & Yuen, 2011). Figure 4 demonstrates participants' progression in perceived control over their recovery journey.

Spirituality and mindfulness provided emotional grounding and facilitated meaning-making in the face of illness. Practices such as meditation, prayer, and gratitude exercises contributed to psychological stability and long-term coping, consistent with prior studies highlighting spirituality as a protective factor in women's cardiac recovery (Koenig, 2012). Figure 5 presents the distribution of these practices, emphasizing their role in sustaining mental health.

Family, friends, and peer networks played a pivotal role in fostering relational sustainability. Women reported that social connections provided accountability, motivation, and emotional comfort, reducing isolation and reinforcing long-term adherence to healthy behaviors. These findings corroborate existing evidence on the protective role of social support in post-CVD recovery (Berkman et al., 2000). Figure 6 illustrates the sources and intensity of social support reported by participants.

Knowledge empowerment emerged as a significant driver of self-efficacy and behavioral sustainability. Women who understood their condition, treatment options, and lifestyle recommendations reported greater confidence and adherence, bridging the gap between clinical advice and lived experience. Figure 7 demonstrates improvements in health literacy and its role in fostering sustainable self-management.

Recovery prompted a reorientation of personal values, where participants prioritized rest, relationships, and meaningful experiences over productivity and external achievement. This intentional reprioritization promoted holistic wellbeing and reduced stress, consistent with research on value-based recovery approaches. Figure 8 highlights the shift in lifestyle and priorities among participants.

Women's engagement in mentoring, awareness campaigns, and advocacy demonstrated the importance of social contribution and collective resilience. Community involvement reinforced personal recovery while empowering others, highlighting the social sustainability dimension of post-CVD life. Figure 9 illustrates the prevalence and forms of community engagement among participants.

Finally, participants emphasized that recovery is an ongoing journey, requiring continuous attention to emotional, physical, social, and spiritual health. Sustainable wellbeing was conceptualized as a dynamic equilibrium, maintained through conscious lifestyle practices, relational support, and psychological resilience. Figure 10 illustrates the trajectory of long-term adaptation and holistic sustainability.

Implications for Practice

These findings underscore the need for gender-sensitive, sustainability-oriented cardiac rehabilitation programs that extend beyond physical recovery. Interventions should integrate emotional support, health literacy, lifestyle counseling, mindfulness, spiritual practices, and community engagement to promote enduring wellbeing. Healthcare providers are encouraged to adopt holistic care models that recognize women's unique recovery trajectories, emphasizing empowerment, autonomy, and long-term lifestyle sustainability.

Conclusion

Women's post-CVD experiences reveal that sustainable recovery is multidimensional, involving intertwined physical, emotional, social, and spiritual processes. By moving from fear and dependency toward self-awareness, resilience, and purposeful living, participants demonstrated that true recovery encompasses long-term health, empowerment, and holistic wellbeing. These insights provide critical guidance for designing comprehensive, women-centered rehabilitation programs that support not just survival but thriving across the lifespan.

Declarations

Ethics Approval and Consent to Participate:

The study was reviewed by the Research Committee of the Department of Psychology, Acharya Narendra Dev Nagar Nigam Mahila Mahavidyalaya (affiliated with CSJM University, Kanpur). The committee waived the requirement for formal ethical clearance. However, the study protocol, interview guide, and informed consent procedures were examined and approved by the institution to ensure adherence to institutional ethical standards and research integrity guidelines.

Consent to Publish:

All participants provided consent for anonymized quotations and findings to be included in research publications.

Competing Interests:

The authors declare no competing interests.

Funding:

The authors declare that no funds, grants, or other financial support were received for the conduct of this study.

Author Contribution

Jaya Bharti had the primary role in the study, including conceptualizing the research framework, designing the methodology, collecting and analyzing the data, and preparing the initial draft of the manuscript. She also played a key role in interpreting the findings, supervising the overall research process, and critically revising the manuscript for important intellectual content. Archna Saxena provided academic supervision and contributed to refining the conceptual framework and strengthening the scholarly direction of the study. Hitaishi Singh offered methodological guidance and academic oversight throughout the research process, ensuring rigor in analysis and interpretation. Harshika Singh assisted with qualitative analysis support and carried out careful proofreading of the manuscript. All authors reviewed and approved the final version of the manuscript.

Data Availability

The datasets generated and/or analyzed during the current study are not publicly available due to privacy and ethical restrictions but are available from the corresponding author on reasonable request.

References

1. Mosca L, Barrett-Connor E, Wenger NK. Sex/gender differences in cardiovascular disease prevention: What a difference a decade makes. Circulation. 2011;124(19):2145–54. https://doi.org/10.1161/CIRCULATIONAHA.110.968792.
2. Appelman Y, van Rijn BB, ten Haaf ME, Boersma E, Peters SAE. Sex differences in cardiovascular disease and the influence of sex hormones. Eur Heart J. 2015;36(46):3268–74. https://doi.org/10.1093/eurheartj/ehv257.
3. Regitz-Zagrosek V, Oertelt-Prigione S, Prescott E, Franconi F. Sex and gender differences in myocardial infarction. Eur Heart J. 2016;37(1):24–34. https://doi.org/10.1093/eurheartj/ehv598.
4. Mosca L, Benjamin EJ, Berra K, et al. Effectiveness-based guidelines for the prevention of cardiovascular disease in women—2019 update: A guideline from the American Heart Association. Circulation. 2019;139(11):e563–95. https://doi.org/10.1161/CIR.0000000000000678.
5. Kristofferzon ML, Löfmark R, Carlsson M. Patients' experiences of recovery after myocardial infarction. J Adv Nurs. 2003;42(4):389–96. https://doi.org/10.1046/j.1365-2648.2003.02604.x.
6. Shaw LJ, Bugiardini R, Merz CNB. Women and ischemic heart disease: Evolving knowledge. J Am Coll Cardiol. 2009;54(17):1561–75.
7. Pogosova N, Birkun A, Saner H, et al. Psychosocial aspects in cardiac rehabilitation: From theory to practice. Eur J Prev Cardiol. 2015;22(12):1575–97. https://doi.org/10.1177/2047487314548720.
8. Anderson L, Oldridge N, Thompson DR, et al. Exercise-based cardiac rehabilitation for coronary heart disease. J Am Coll Cardiol. 2016;67(1):1–12.

9. Koenig HG. Religion, spirituality, and health: The research and clinical implications. ISRN Psychiatry. 2012;2012:278730. https://doi.org/10.5402/2012/278730.
10. Bandura A. Self-efficacy: Toward a unifying theory of behavioral change. Psychol Rev. 1977;84(2):191–215.
11. Creswell JW, Poth CN. Qualitative inquiry and research design: Choosing among five approaches. 4th ed. Thousand Oaks: Sage; 2018.
12. World Health Organization. Cardiovascular diseases (CVDs). Geneva: WHO. 2021. Available from: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds).
13. Vaccarino V, Badimon L, Corti R, et al. Ischaemic heart disease in women: Are there sex differences in pathophysiology and risk factors? Cardiovascular Res. 2011;90(1):9–17.
14. Yohannes AM, Doherty P, Bundy C, Yalfani A. Anxiety and depression in women following myocardial infarction: Effects on quality of life and functional recovery. Heart Lung. 2010;39(5):402–9.
15. Steptoe A, Kivimäki M. Stress and cardiovascular disease. Nat Reviews Cardiol. 2012;9(6):360–70.
16. Mehta LS, Beckie TM, DeVon HA, et al. Acute myocardial infarction in women. Circulation. 2016;133(9):916–47.
17. Wenger NK. Women and coronary heart disease: A century after Herrick. Circulation. 2012;126(5):604–11.
18. Thompson DR, Ski CF, Jain R. Psychosocial recovery in women with cardiovascular disease. Eur J Cardiovasc Nurs. 2021;20(2):115–24.
19. Berkman LF, Glass T, Brissette I, Seeman TE. From social integration to health: Durkheim in the new millennium. Soc Sci Med. 2000;51(6):843–57.
20. Rozanski A, Blumenthal JA, Kaplan J. Impact of psychological factors on the pathogenesis of cardiovascular disease. Circulation. 1999;99(16):2192–217.
21. Smith B, Jones C. Resilience and coping strategies among women after cardiovascular events: A qualitative study. J Cardiovasc Nurs. 2020;35(2):123–32.
22. Yamamoto S, Nakayama T, Sugihara H. Lifestyle modification and psychosocial outcomes in women with cardiovascular disease. Heart Lung. 2018;47(4):356–62.
23. Piepoli MF, Corrà U, Adamopoulos S, et al. Secondary prevention through cardiac rehabilitation. Eur Heart J. 2014;35(1):55–69.
24. Antonovsky A. Health, stress and coping. San Francisco: Jossey-Bass; 1979.
25. Seligman MEP. Positive health. Appl Psychol. 2008;57(S1):3–18.
26. Taylor SE. Health psychology. 9th ed. New York: McGraw-Hill; 2015.
27. Bandura A. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs: Prentice-Hall; 1986.
28. Folkman S, Lazarus RS. Coping as a mediator of emotion. J Personal Soc Psychol. 1988;54(3):466–75.

29. Ryff CD, Singer BH. Psychological well-being: Meaning, measurement, and implications for psychotherapy research. Psychother Psychosom. 1996;65(1):14–23.
30. Diener E, Suh EM, Lucas RE, Smith HL. Subjective well-being: Three decades of progress. Psychol Bull. 1999;125(2):276–302.
31. Huppert FA. Psychological well-being: Evidence regarding its causes and consequences. Appl Psychology: Health Well-Being. 2009;1(2):137–64.
32. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer; 1984.
33. McEwen BS. Protective and damaging effects of stress mediators. N Engl J Med. 1998;338(3):171–9.
34. Lloyd-Jones DM, Hong Y, Labarthe D, et al. Defining and setting national goals for cardiovascular health promotion. Circulation. 2010;121(4):586–613.
35. Diener E, Oishi S, Lucas RE. National accounts of subjective well-being. Am Psychol. 2015;70(3):234–42.

Figures

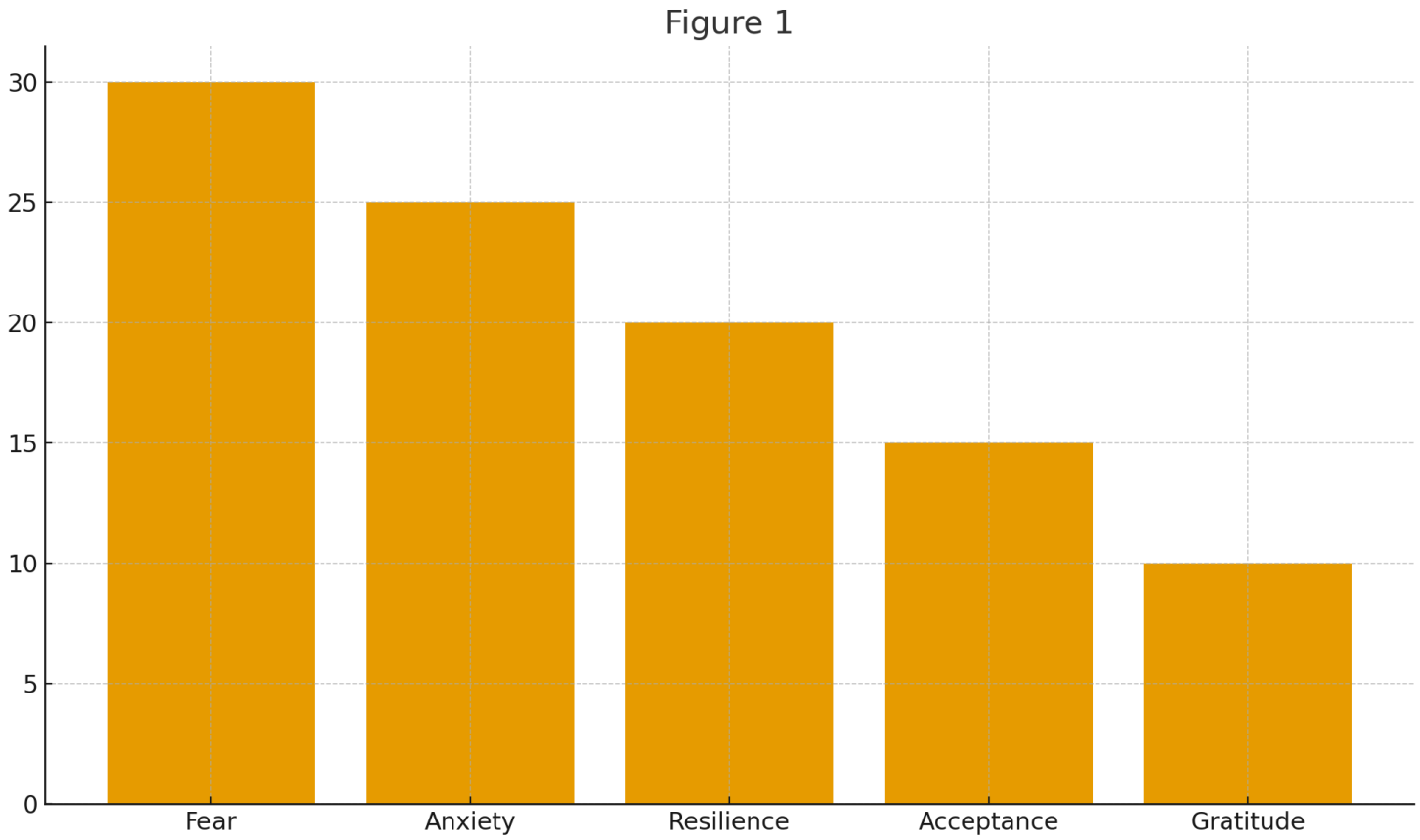


Figure 1

Distribution of emotional responses among women survivors highlighting the transition from anxiety to sustained emotional balance.

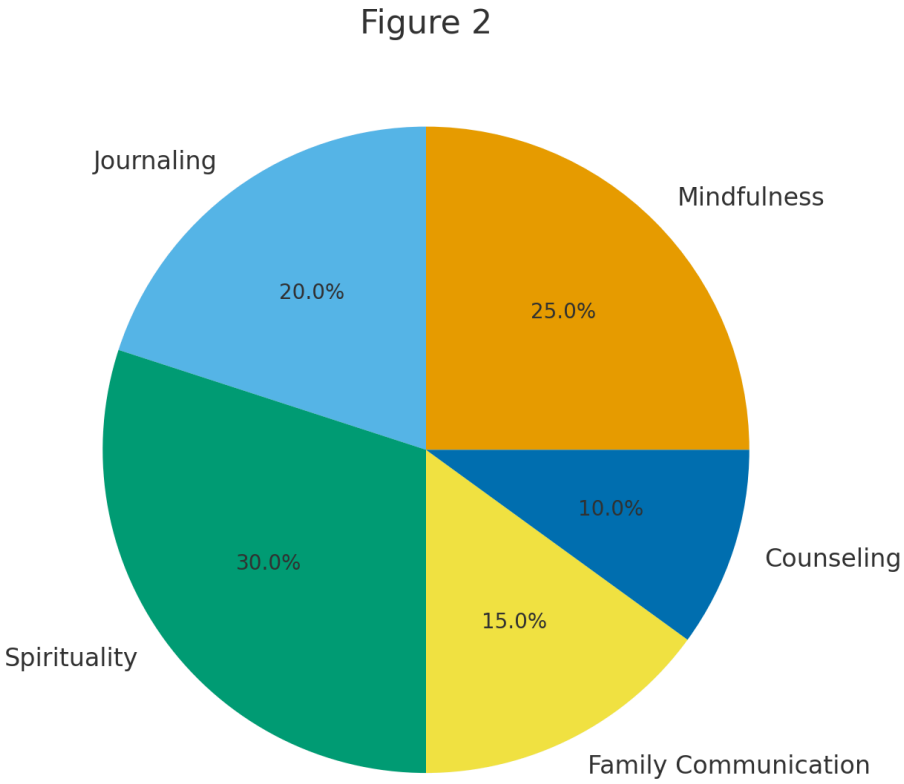


Figure 2

Coping mechanisms employed by participants demonstrating sustainable emotional resilience.

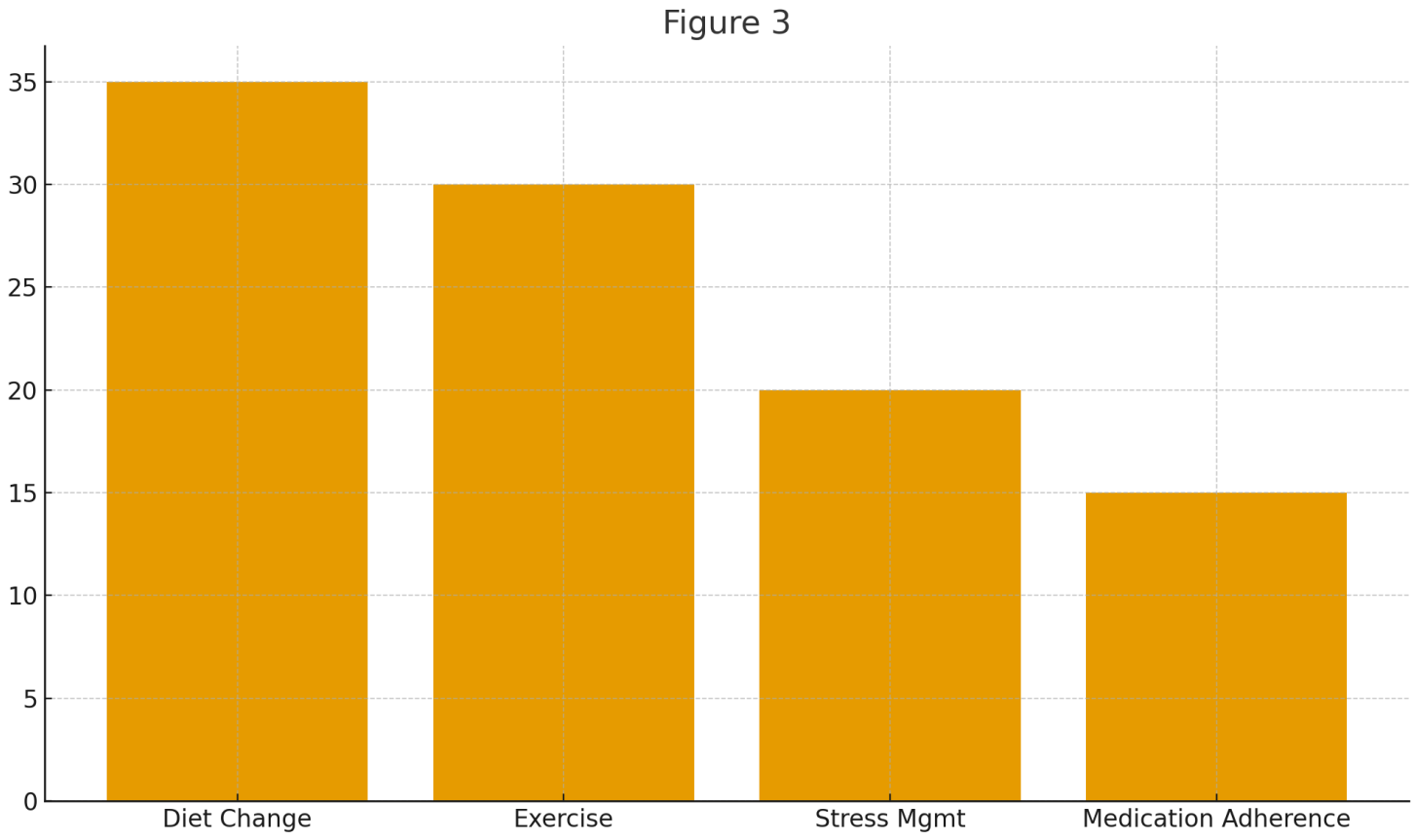


Figure 3

Lifestyle modifications contributing to sustained recovery and wellbeing among CVD survivors.

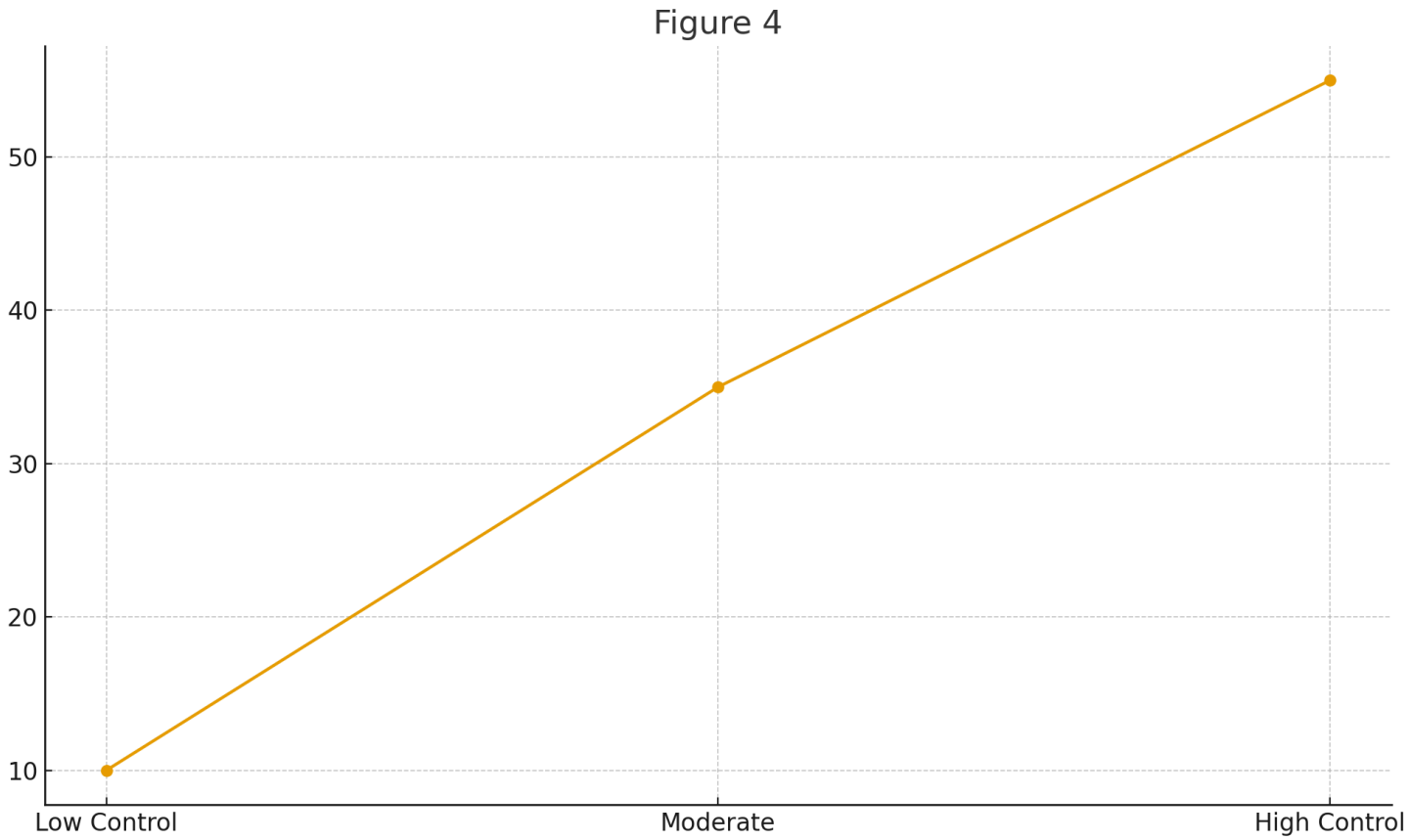


Figure 4

Growth in self-efficacy and perceived control following sustainable adaptation.

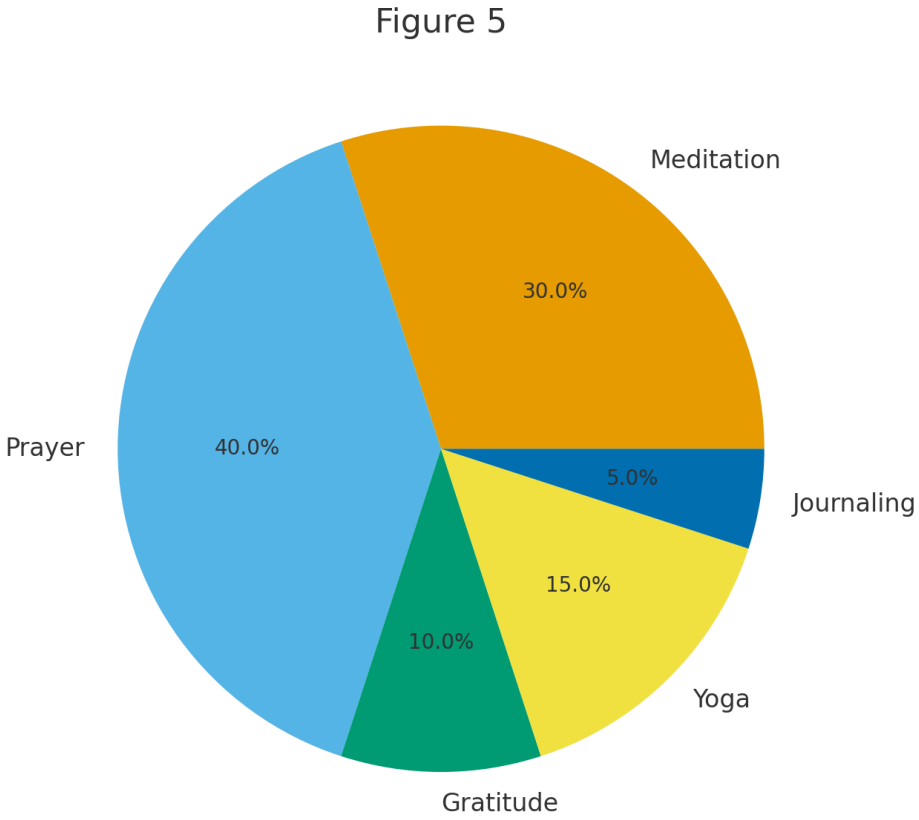


Figure 5

Spiritual and mindful practices supporting long-term psychological sustainability.

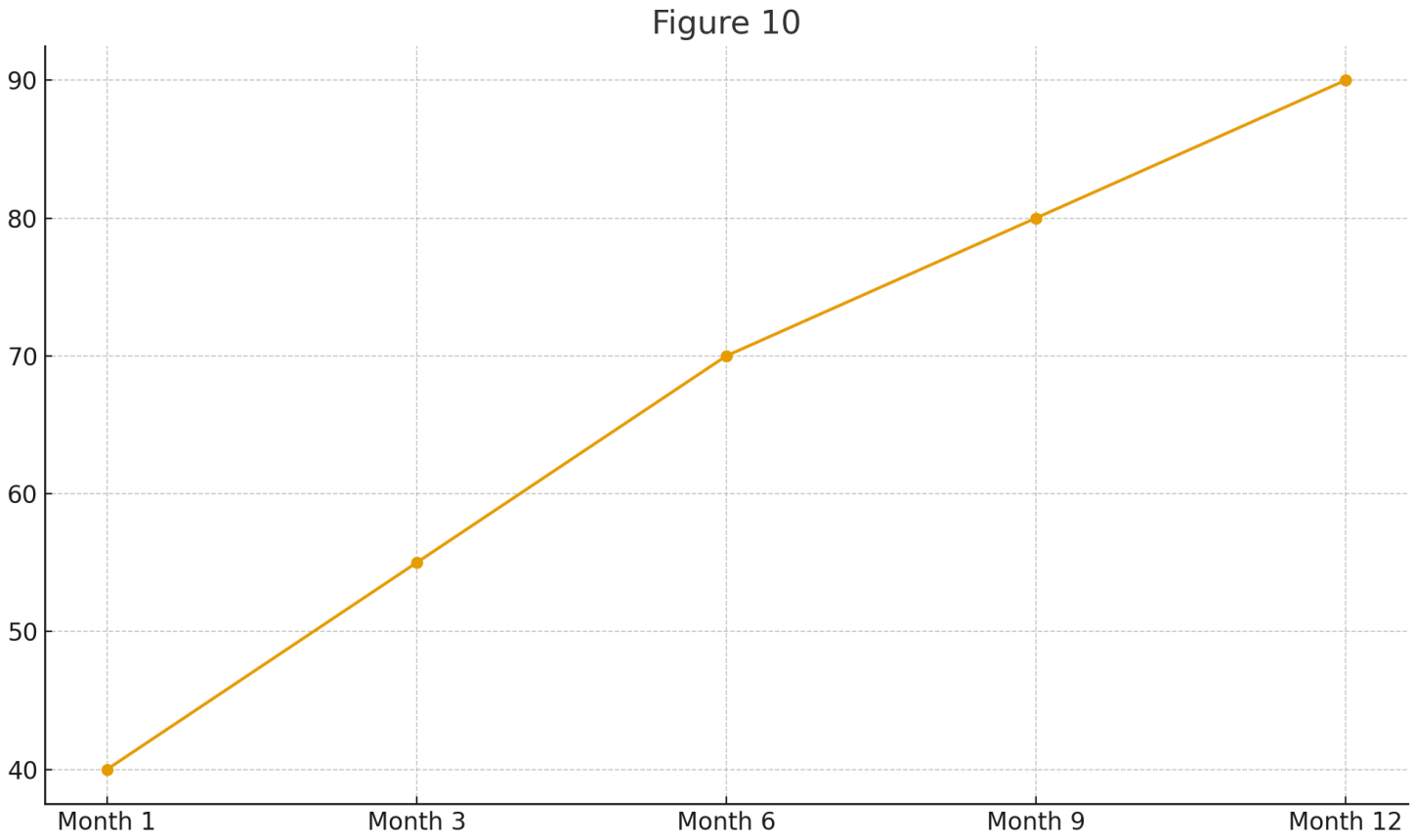


Figure 6

Longitudinal trajectory of sustainable wellbeing illustrating ongoing adaptation and growth.

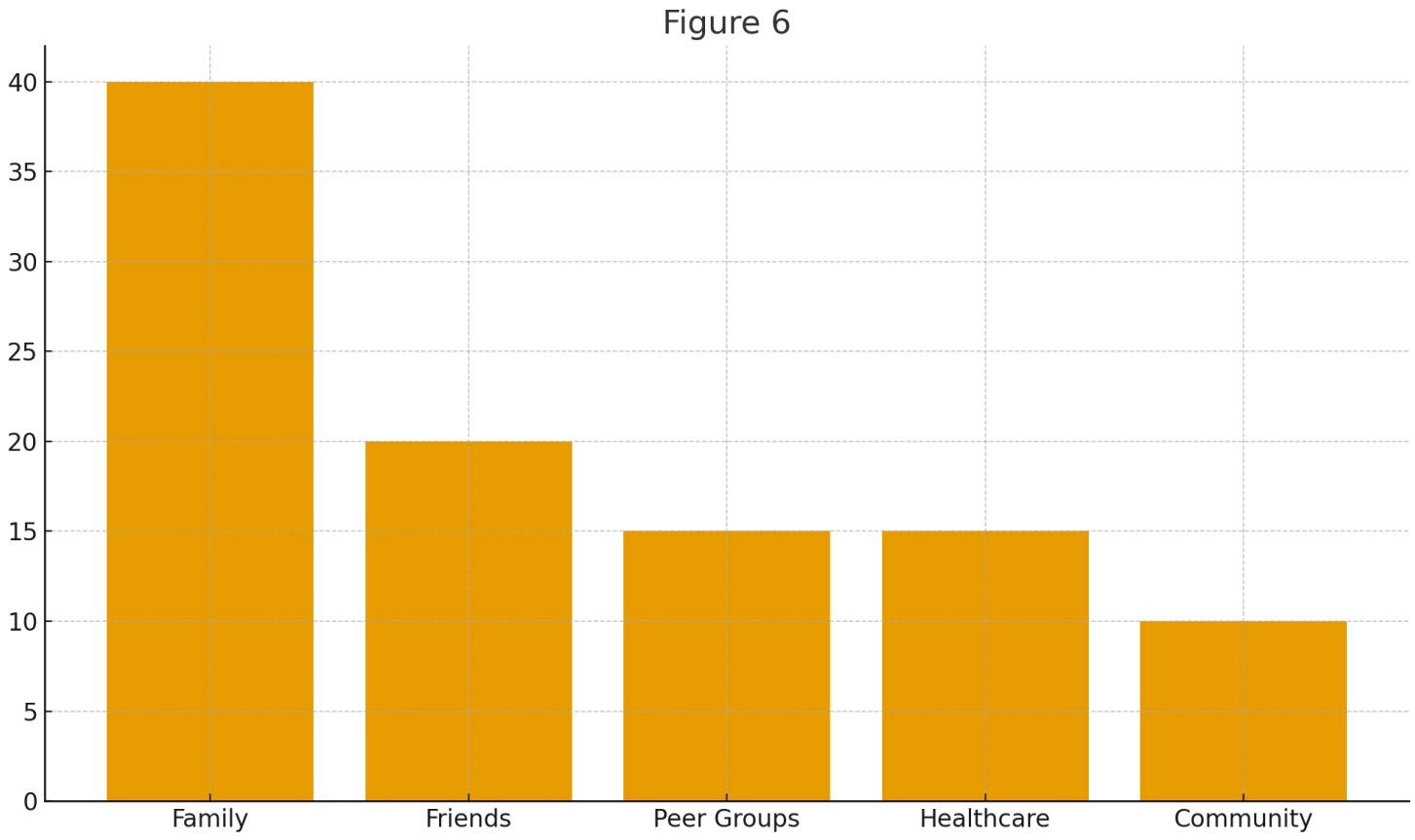


Figure 7

Sources and intensity of social support networks fostering sustainable recovery.

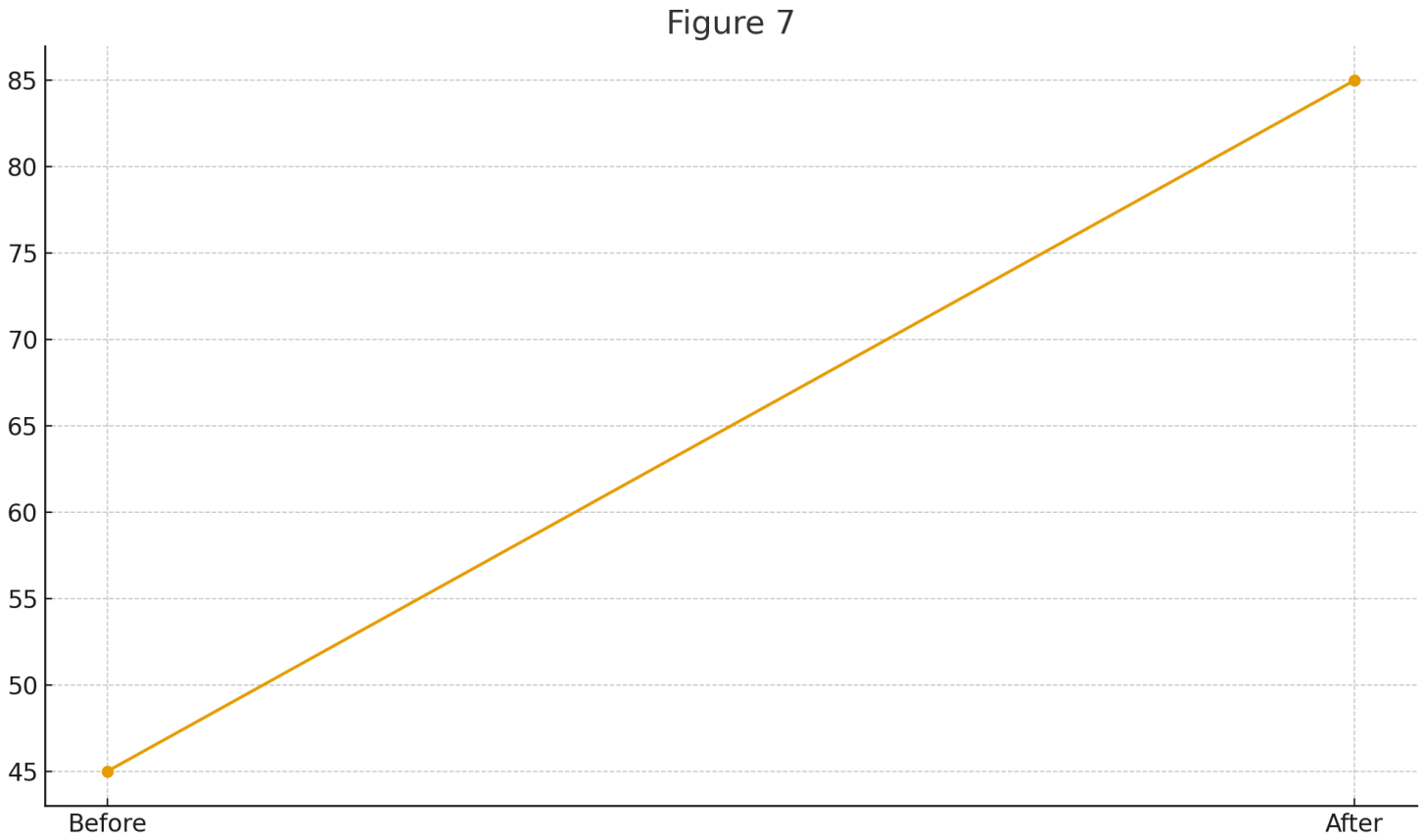


Figure 8

Improvement in health literacy levels enhancing sustainable self-management.

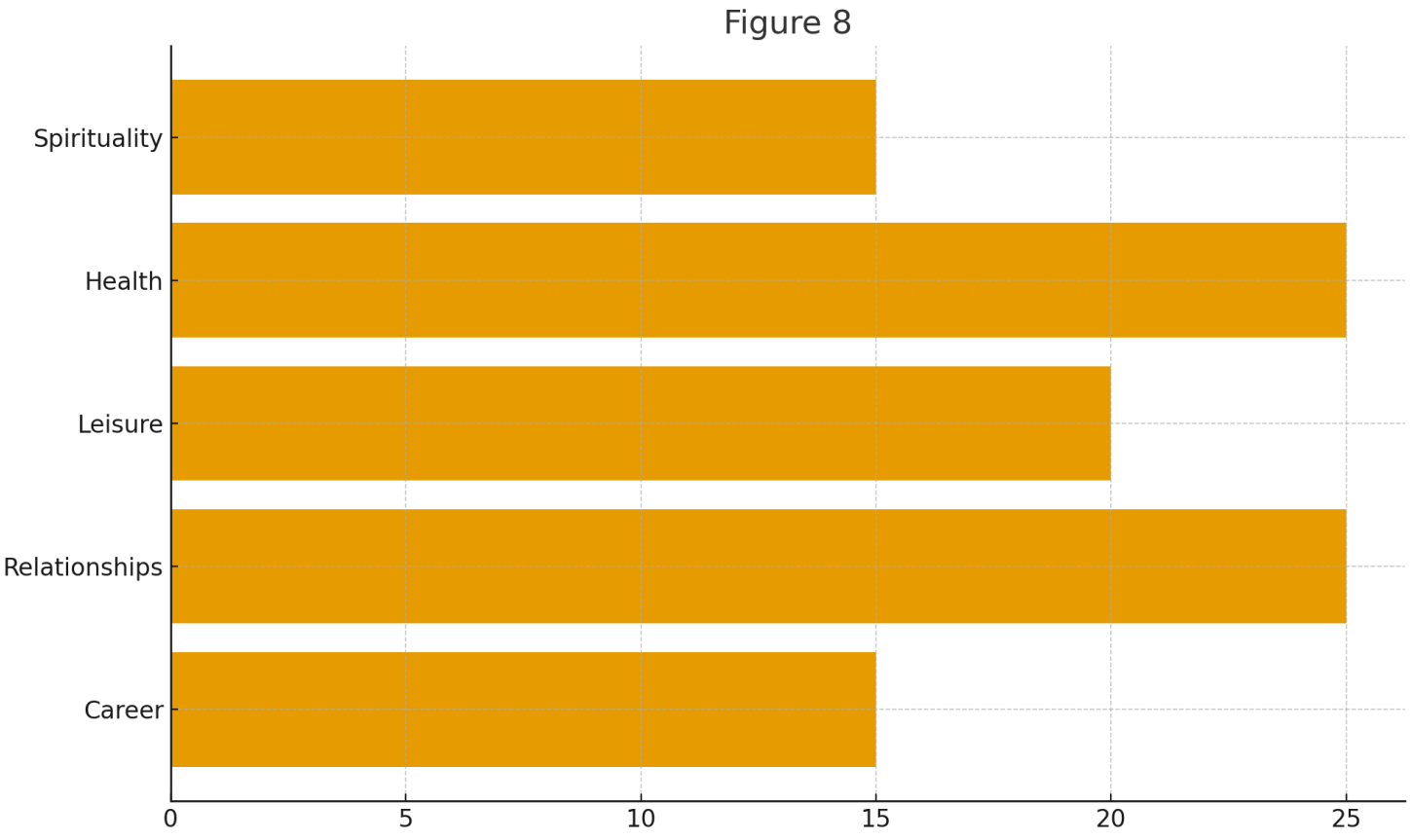


Figure 9

Transformation of personal values and lifestyle balance post-CVD.

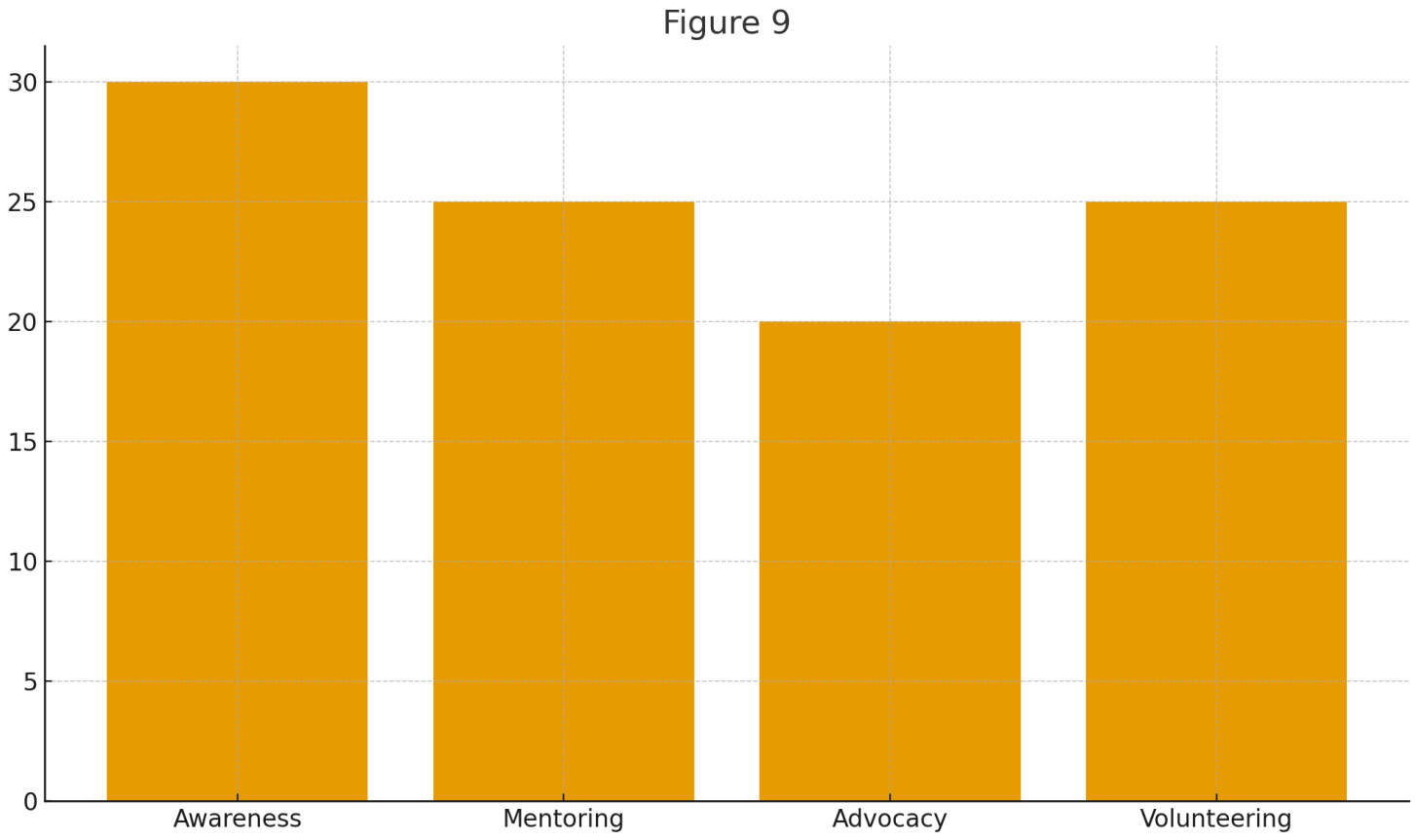


Figure 10

Engagement in community-based activities supporting collective sustainability and empowerment.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- RelatedMaterialSupplementaryFile1.docx