

Cardiac rehabilitation I: review of psychosocial factors

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Abstract

Cardiovascular disease (CVD) is the leading cause of death and disability for women and men. There are gender differences in recovery from coronary events, which may be due physiological, sociodemographic, or psychosocial factors. Cardiac rehabilitation programs have beneficial effects on coronary recovery. The following presents a review of the literature from MedLine (1997–2001) and PsychInfo (1984–2001) on gender differences in participation in cardiac rehabilitation programs, with a focus on depression, anxiety, self-efficacy and social support. A critical analysis of gaps in the literature as well as areas for future research are presented.

Keywords: Cardiac rehabilitation; Gender; Depression; Social support; Self-efficacy

1. Introduction

Cardiovascular disease (CVD) is the leading cause of death and disability for women and men [1]. With strident medical advances, many women and men survive ischemic coronary events (ICEs), yet prominent gender differences in recovery exist. After a myocardial infarction (MI), women are more likely to experience re-infarction [2,3], are twice as likely as men to die within the first few weeks, and are more likely to die within the first year [2,4]. Women with cardiovascular disease are older, more often widowed, live alone, have poorer psychosocial adjustment, low socioeconomic status, and more likely to be retired or unemployed than men with CVD [3,5,6]. They are also more likely to live alone than men [3,7]. Women more often have concomitant illness including diabetes, arthritis and hypertension [3,8].

Cardiac rehabilitation (CR) programs are a crucial source of secondary prevention. Some of the gender differences outlined above may interfere with eligibility for CR. The following review will outline the literature from Medline

(1997–2001) and PsychInfo (1984–2001) on gender differences in participation in CR, with a focus on psychosocial factors such as depression, anxiety, self-efficacy and social support.

1.1. Cardiac rehabilitation

The goals of CR are to promote secondary prevention and to improve quality of life [9]. CR generally includes the following components: exercise training, risk factor modification, education, medical surveillance, vocational rehabilitation and psychological counseling [10]. Cardiac rehabilitation programs have beneficial effects in the following domains: mortality, exercise tolerance, functional capacity, lipid levels, blood pressure, symptoms of angina and dyspnea, weight loss, smoking behavior, stress level and psychosocial functioning [11–13]. Of greatest significance, cardiovascular mortality can be reduced by approximately 25% when patients participate in CR [12].

However, most research demonstrates lower referral and attendance in CR among women than men [7,8,14–17], but contradictory evidence is found [18,19]. In general 20% fewer women are enrolled in CR than men [6,20], and these female-to-male ratios are significantly lower than what would be expected based on morbidity data [8]. Despite

women's lower participation [6,21], women of all ages have been shown to benefit from CR [5,22–24]. In most studies, improvements in functional capacity, coronary risk and psychosocial well-being among women were comparable with, or exceeded those of men [5]. However, in some studies gender differences vary based on the health outcome measured. In a pre- and post-test design study examining gender differences in outcome following CR, women had significantly lower exercise capacity and health-related quality of life and significantly higher total cholesterol than men at baseline [23]. After a three-month multifactorial CR program, there were no significant gender differences in improvement rates in exercise capacity and risk factor profiles; however, women continued to exercise less and had generally lower quality of life (vitality subscale in particular) than men. Similarly, in another large study, women reported more symptomatology and functional impairment at entry to the CR program than men, and although they made significant physical gains in the program, they continued to exhibit more depressive symptomatology upon completion of the program [25].

It is now a growing concern in cardiology to identify the barriers women face in participating and benefiting from CR. The largest barrier appears to be a referral failure [8,13], however, other factors will be examined in the current review. These barriers may include depression, anxiety, social support, or self-efficacy [8,15,26–28].

1.2. Depression

Depressive symptoms and major depressive disorders are common in patients with ischemic heart disease [24,29–31]. The prevalence of major depression ranges from 15–23% [24], which is approximately three-fold higher than age-matched community-based prevalence studies [24,32]. Recovery from major depression associated with ICE is extremely poor, with more than 95% of patients remaining depressed at six months, and nearly 70% of patients remaining depressed at one year following the ICE [24]. Comorbid depression decreases the likelihood of adhering to recommended behavior and lifestyle changes [33–35], which in turn increases the risk of future coronary events [3,30,36].

It is generally found that women experience more depressive symptomatology following an MI than men [18, 24,28,30,37–39]. Depressive symptomatology has been postulated to account for women's poorer recovery from coronary events [37,40]. Older women in particular are found to suffer from the vegetative signs of depression, such as slowed speech and movement, disinterest in eating, and exhausting fatigue [38]. Accordingly, there has been recent interest in the literature in specific depressive symptoms and their relation to cardiac outcome [41,42].

However, some studies have not demonstrated a link among gender, depression and cardiac outcome [43]. For instance, Conn et al. [44] found no gender differences in

anxiety or depression, but instead found that greater depression was associated with older age. Ai [37] found that women's higher depressive symptomatology was mostly affected by their precardiac event conditions, including age, health conditions, widow status, and socioeconomic status. However, specific depressive symptomatology was not examined in these studies.

Depressive symptomatology is also linked to CR participation and outcome [13,24,45]. Brezinka et al. report significant gender differences in depression at entry into a CR program, with women being more depressed than men. CR programs have been shown to be effective in reducing depression following a coronary event [24,46]. In one study, prevalence of depression in women dropped from 23% to 12% following a multifactorial CR program [24]. However, CR does not relate to decreased symptomatology for all participants. One study reports that while just less than one-half of participants improved with regard to depression, approximately one-quarter became more depressed, and one-third remained unchanged [47]. Another study found that depression was improved only in the short-term following CR [48]. The relationship among gender, depression, and CR is clearly a complex one, and further prospective studies are needed.

1.3. Anxiety

Anxiety is one of the earliest and most intense psychological responses to ICEs [49]. In one study of MI patients, more than two-thirds had anxiety levels that were considered above normal, and 26% had levels equivalent to or above those seen in psychiatric in-patients [50]. Although anxiety is less often investigated [51], considerable epidemiological evidence indicates that persons with anxiety symptomatology are at increased risk of recurrent ischemic and arrhythmic events [41,50,52]. Evidence from experimental laboratory studies suggests that excessive physiological response to stress may be responsible for this increased risk [53,54].

Again, women seem to be at greater risk of anxiety than men after a coronary incident [3,6,28,45]. In the 20-year follow-up of women in the Framingham heart study, anxiety was significantly predictive of the incidence of a MI or coronary death among homemakers [55]. Interestingly, a study by Lane et al. [56] found that symptoms of anxiety did not predict either cardiac or all-cause mortality four months after hospitalization for an MI, but did predict quality of life. Moreover, a study by Frasure-Smith and colleagues [3] found that high levels of anxiety were predictive of one-year cardiac mortality among men, but not among women.

Anxiety may be addressed by CR through reducing uncertainty, providing patients with an optimistic but realistic outlook on recovery, providing psychological support, and promoting coping. Research supports that CR may reduce anxiety [48]. There appear to be gender differences in anxiety at entry [45] and outcome [6] in CR participants, with

men experiencing significantly less anxiety than women. Not all participants appear to experience reduced anxiety in response to CR participation however. In a largely male sample, only 28% had a decrease in anxiety following CR, but 51% remained the same, and 21% experienced an increase in anxiety [47]. Anxiety may also compromise performance of activities in CR, and thus more research on this relationship is needed.

1.4. Social support

Although social support is a multi-faceted construct whose definition remains elusive [57], for the purposes of this review, social support is defined as the perception of emotional sustenance, informational guidance, and tangible assistance [58,59]. The source of social support is also integral (i.e., spouse, co-workers, friends; [60]). Support has been found to have a positive effect on the promotion and restoration of health, particularly following a coronary event [31,61,62]. For instance, social support may serve as a “buffer” between psychological distress and subsequent health outcome [59], and thus enhance physical recovery, and reduce psychological distress and mortality [17,56,63]. Major life events or losses, such as death of a spouse or family member can also have an effect on social support [59,64] and hence cardiac recovery [65].

In women [15,64], and in men [29,66] lack of support is related to poorer outcome after a coronary event, however this relationship is less consistent in women [17,67,68]. Women report having fewer family supports [7,13,17,28] while men receive more family support and are accompanied by their spouse to CR more often than women [69]. Absence of a spouse or confidant is associated with a three-fold increase in mortality over 5 years in patients with CVD [70] and greater depression (particularly among men) [3,31]. However, much contradictory evidence is found in the literature. For instance, women may have better ability to enlist support from sources other than family. Contradictory data from the Nurses’ Health study show that older women who live alone are not more isolated and do not have an increased risk of poor health outcomes compared with women who live with a spouse [71].

Social support from both health professionals and family members play an important role in CR programs instituted following a coronary event [26,31,68,72,73]. However, one cross-sectional study of female CR program participants found the level of social support did not discriminate between participants and nonparticipants [74]. The literature has focused most exclusively on spousal support, but psychosocial adjustment during CR can stem from various support sources such as adult children, extended family, friends, and broader social networks, particularly among women [3,14,26,58].

1.5. Self-efficacy

Self-efficacy may be defined as an individual’s judgment of his or her capabilities to organize and execute courses of action required to attain performance goals [75]. Cardiac research has considered the contribution of self-efficacy as a predictor of recovery management, and physical, psychological, and social functioning [74,76,77–80]. In a study of MI patients, Terry [81] demonstrated that high levels of self-efficacy were associated with low levels of psychological distress. Penninx et al. [82], in a sample of older people with various chronic conditions including heart disease, found that direct favorable effects on depressive symptoms were related to higher self-efficacy, higher self-esteem, and having many close relationships. Shnek et al. [83] followed a sample of patients hospitalized for an ICE and found that self-efficacy was significantly related to less depressive symptoms one year after a coronary event. However, self-efficacy did not independently predict depressive symptoms when analyzed with other psychological factors including optimism, helplessness, and cognitive distortions.

Because CR places considerable emphasis on physical skills, women’s perceptions of their physical abilities may influence their decision to participate in CR. Women tend to have lower self-efficacy and lower adherence rates to CR programs than men [6,84].

2. Analysis

It appears from the literature that there are persistent gender differences in psychosocial outcome following an ICE. Women tend to have more depressive and anxiety symptomatology, less social support, and less self-efficacy. Considering that women’s coronary recovery is poorer than men’s, there is a need for more research in the area; research which is sensitive to the demographics and issues of women.

First, in regard to depression, the inconsistency in some findings may be due to a failure to specify types of depressive symptomatology. There is often a specification in the literature of somatic or vegetative types of symptoms versus cognitive or psychological types of symptoms [38,85]. Women more often display vegetative symptomatology, as also demonstrated by greater fatigue and vital exhaustion in women with CVD [23,45,86,87]. Vegetative symptomatology would be highly relevant to participation in CR, which requires physical exertion. Future research should operationalize depressive symptomatology in a manner which ensures that subtypes can be analyzed with an eye to gender differences, and also utilizes factor analyses to determine which constructs are being evaluated, and their relation to health outcome.

In regard to anxiety, its relation to CR is understudied. There again appear to be strong gender differences in anxiety, and therefore future research in this area may build on

our knowledge of women's recovery from ICEs, and their CR outcomes.

In regard to social support, the measurement of this construct remains highly variable. A multidimensional approach to measurement, specifying source of support is needed, in conjunction with strong methodology. Social support is generally found to be related to coronary recovery, but the types and sources of support differ greatly for men and women. Because women are more often older at the time of their coronary event, and because women have a longer lifespan, they are less apt to have a spouse. Non-spousal supports should receive more research attention, and in particular supports from adult children who may have a more influential effect on women cardiac patients and CR participation [14].

In regard to self-efficacy, this construct is pertinent to the performance of many health behaviors linked to CVD recovery, such as dietary and exercise adherence, and smoking cessation. Women often feel low self-efficacy in relation to exercise, a factor that may impede their participation in CR. This notion has been under-studied, partly because many women are simply not referred for CR. It could be that the referral failure is based on physician perception of a lack of physical self-efficacy among women. A study examining self-efficacy across several behavioral domains relevant to cardiac recovery is warranted.

3. Conclusions

In conclusion, because the literature demonstrates that women benefit from CR, psychosocial barriers to full participation should be identified and addressed. Clearly, one of the biggest barriers to participation is a referral failure, however, once enrolled women continue to participate in fewer CR sessions. Signs of vegetative depression, anxiety, and low self-efficacy should be attended to in women, in order to maximize their recovery from ICEs. Diverse individuals in women's support networks should be involved in the recovery process. Because women may be at particular psychological risk in the context of CVD, the assessment of these psychosocial factors may be especially relevant to managing the psychosocial rehabilitation of female cardiac patients. A more qualitative look at women's experience when participating in CR may shed further light on these psychosocial factors.

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