Family interventions during the trajectory of recovery from cardiac event: An integrative literature review*

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Abstract:

The experience of a cardiac event is a source of stress for both patients and their family members that may be viewed as a family crisis. The trajectory of cardiovascular disease, including both the acute and recovery phases, involves continuous adjustment by patients and family members as they attempt to reconcile the impact of the event and adapt to the uncertainties associated with the chronicity of coronary heart disease. This article reviews empirical intervention research available to practitioners and researchers that may guide the use of family centered cardiovascular nursing interventions. Although a significant amount of research has been conducted in this area, conclusions regarding patient and family interventions are varied. Directions for future research focus on the need for family centered interventions that address the needs of patients with cardiovascular disease that are specific to phases in the trajectory of illness.

Article:

The experience of a cardiac event is a source of stress for both patients and their family members that may be viewed as a crisis that significantly disrupts family functioning and dynamics.[1,2] The trajectory of cardiovascular disease, including both the acute and recovery phases, involves continuous adjustment by patients and family members as they attempt to reconcile the impact of the event and adapt to the uncertainties associated with the chronicity of coronary heart disease. Attempts by patients and family members to manage the stressors associated with both phases of cardiovascular illness are often associated with alterations in physiologic and psycho- logic functioning.[3,4]

The family's response to illness may affect the patient's well-being and, ultimately, recovery from the cardiac event.[5] Family relationships can weaken after a cardiac event, and spouse involvement may serve as a barrier to the patient's attempts to manage changes in work and social experiences.[6,7] Interventions should be used to assist family members in effectively managing their own anxiety and sense of loss and to facilitate their ability to support the cardiac patient's recovery and efforts to modify risk factors after a cardiac event.[3,8]

A patient's family is "the most important social context within which illness occurs and is resolved" (p. 495).[9] However, the management of the acute and recovery phases of cardiovascular illness has traditionally focused on the patient and has often failed to recognize the patient as part of the larger family unit.[1] Research that has addressed the role of family members within the context of care has focused on the combined experiences of patients and family members after acute myocardial infarction (MI)[10,11] and coronary artery bypass graft (CABG) surgery. [12] The focus of care must be expanded to conceptualize the patient as existing within an integrated system of interdependent relationships. This expansion will promote optimal outcomes, given the

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potential for patient comorbidities and postcoronary event complications and the potential impact of family members' responses to a cardiac event on patient recovery outcomes. [13]

There are 2 primary goals of family counseling and support during the acute and recovery phases after a cardiac event: (1) to reduce the psychologic distress experienced by patients and family members and (2) to provide guidance so that family members can offer appropriate, timely, and effective support to the cardiac patient during the recovery period.[1] Health care providers have a primary role in assisting the family to reorganize and stabilize its structure and function as the affected member progresses through the acute and recovery phases of illness. The successful stabilization of family structure and function is dependent on the family's ability to create and mobilize the resources necessary to effectively manage crises during the trajectory of hospitalization through rehabilitation.[8]

The purposes of this article are to review and summarize empirical intervention research conducted on cardiac patients and their families to guide the development of family centered interventions across the trajectory of cardiovascular disease, including both the acute and recovery phases. Although a significant amount of research has been conducted in this area, conclusions regarding patient and family interventions that support positive outcomes vary. Implications for future research emphasize the need for family centered interventions, supported by theory, that facilitate the process of recovery after a cardiac event and promote the health of individuals with cardiovascular disease.

TRAJECTORY FRAMEWORK

It is useful to conceptualize nursing interventions across the acute and recovery phases of cardiovascular disease within the trajectory of illness framework, which requires management through the combined actions of the patient, family, and health care provider. [14] The trajectory framework provides a patient-focused context for cardiac illness and posits that the course of a chronic condition has distinct phases and varies over time. For patients with cardiovascular disease, acute phases of illness are usually associated with hospitalization during a life- threatening event or surgical procedure. The recovery phase refers to the period of rehabilitation after hospital discharge and may include return to usual activities and/or development of lifestyle adaptations.

As a chronic illness, cardiovascular disease requires long-term management, which may be viewed as an unfolding course of action that changes in response to changes in illness status. Since most of the work of managing illness goes on at home, the responsibility for ongoing management rests mainly on the shoulders of afflicted individuals and their families. [14] Attending to the needs of the family is important because the patient's psychologic adjustment to major cardiac illness has been linked with family function.[15] Patient adherence to risk factor modification prescriptions has also been linked to spouse anxiety and to level of marital function.[16]

The advancement of technologies in the treatment of a cardiac event has resulted in a population of cardiac patients who are older and have more complex needs. As the age of the cardiac patient population increases, so does that of their family members, specifically spouses. Elderly family members may be unable to meet the complex caregiving needs of cardiac patients during the trajectory of cardiovascular illness and recovery from a cardiac event. [17] In light of this, there is an increasing need for family interventions that will be used to address the specific needs of special populations such as elderly cardiac patients and their family members.

The varied functions and roles of nurses place them in a key position to assist individuals and families throughout the trajectory of cardiovascular disease. Nurses function in both hospital and home environments; teach as well as provide direct service; and care for individuals, families, and communities. Nurses may also tailor interventions to meet the differing needs of the individual patient as well as members of the family and the community within each phase of the illness trajectory.

The features of the acute and recovery phases after a cardiac event provide specific cues about the types of interventions that will be most helpful to patients and their families during the phases of recovery. This discussion addresses the following 2 commonly occurring acute cardiac events: CABG surgery and MI. The

majority of empirical work to date has focused on patients and families who experience 1 or both of these events. The inclusion of family interventions during these acute events is on the basis of the similarity of the family stressors, recovery trajectories, and desired outcomes of these 2 groups of patients. [18,19]

METHODS

A literature review of research articles was conducted through a search of the research databases Cumulative Index to Nursing and Allied Health Literature, PsycINFO, and MEDLINE for the years 1980 to 2001 and through a secondary review of citations in published articles. The timeline of 1980 through 2001 was selected in an effort to capture as many family intervention studies in this area as possible. Key words used in the search related to heart disease included "family," "family function," "acute care," "recovery process," "cardiac," "cardiac event," and "intervention." Articles reviewed included only original research conducted during the acute or recovery phase of a cardiac event, outlining key intervention methods and findings. A total of 13 studies conducted from 1982 to 2000 focusing on interventions designed to promote family function were analyzed and compared regarding purpose, method, sample, theoretical support, design, data collection strategies, measures, and outcomes.

Acute phase of cardiovascular illness

The experiences of patients after an acute cardiac event are characterized by severe emotional distress. Keller [20] found that during the immediate postoperative period after CABG surgery, patients experienced intense postoperative pain and expressed a fear of dying, augmented by a lack of information concerning their condition. Informants perceived the support of family and friends as essential to their recovery process. Hilbert[19] measured considerable emotional distress marked by low levels of positive affect and high levels of negative affect in patients during hospitalization for MI and 3 months after discharge.

The majority of research focusing on spouse and family issues in the acute care setting has served to describe and rank family members' needs and concerns.[21-25] In a synthesis of 15 years of research conducted on families' needs in the critical care setting, Hickey[26] reported needs for information from care providers regarding the patient's condition and available resources, care, and treatment choices as well as the need for reassurance and acceptance. Kleiber and colleagues[27] examined the emotional responses of 52 family members of critically ill patients and evaluated their descriptions of supportive behaviors. Subjects experienced a variety of emotions, including despair, joy, fear, worry, anger, helplessness, and exhaustion. The researchers noted that nurses could promote adaptive coping in family members by teaching them what to expect and how to manage common emotional reactions.

Spouses and patients are in need of interventions to address their emotional, physical, and informational needs during and immediately after hospitalization due to cardiac event. Hilbert, [19] in a study of family function of patients with MI and their spouses, found that spouses, when compared with patients, experi enced equally low levels of positive affect and higher levels of negative affect during the acute phase of hospitalization. Stress, physical and mental strain, exacerbated health problems, uncertainty, and vulnerability were also experienced by spouses of patients during the period immediately after hospital discharge.[18] The researchers suggested that interventions should address the context of caregiving and provide support through resources, advocacy, and education to meet both the needs of family members and cardiac patients.

Family centered interventions during the acute phase. The review of intervention studies during the acute phase of cardiovascular illness resulted in the inclusion of 6 studies published from 1987 to 1999 (Table 1). These studies were categorized into the acute phase because of their implementation of an intervention solely during patients' hospitalization. The majority of the studies were conducted with family members of patients in the coronary care unit. All studies sampled from intensive care units that contained cardiovascular patients; however, 3 studies included family members of patients in medical, surgical, or neurosurgical intensive care. The prevalence of cardiac patients in these settings is unknown; however, these studies were included to increase the comprehensiveness of the review in light of the limited number of existing studies. Subjects were primarily wives or female family members of patients. The majority of the studies were conducted in large

teaching hospitals or university medical centers in the United States, and 1 study was conducted in a hospital in the United Kingdom .[33] Clinical interventions implemented during the acute phase of cardiovascular illness focused primarily on providing support for family members through psychologic support groups and educational or orientation sessions, such as intensive care unit tours. Most interventions were intended to decrease family members' anxiety, depression, perceived feelings and physiologic indicators of stress, and to increase perceived social support and hope. One study[33] was designed to increase family members' knowledge regarding heart attacks and confidence as caregivers.

Empirical data from the majority of family centered interventions during the acute phase of cardiovascular illness have failed to produce significant reductions in family member anxiety, stress, or depression scores, or increases in feelings of hope or perceived social support.[28-30] However, qualitative data from these efforts do indicate that some of the interventions had distinct benefits. In a study conducted by Halm,[30] family member–perceived benefits from a support group session included sharing with others in similar situations, increased hope, reduced anxiety, and learning new coping methods. Experimental subjects in this study had a significant reduction in anxiety from premeasure to postmeasure. Sabo and colleagues[29] suggested that group support may foster an understanding of critical illness and the emotions related to it, assist the family in the exploration of alternative coping mechanisms, and facilitate the development of supportive networks.

The majority of the intervention studies examined that targeted family function during the acute phase of illness provided a single intervention session, which may have contributed to the frequent nonsignificant differences between treatment and control groups on the outcome variables of interest. In contrast, Thompson and Meddis[31] provided a structured program of education and psychologic support to coronary patients' wives in 4 sessions during the first 5 days after patient admission to the hospital. This serial intervention resulted in significantly lower anxiety scores in the treatment versus the control group at 5 days and at 1, 3, and 6 months follow-up. Thus, the provision of a program of support versus a single interaction may be essential to both the immediate and sustained success of family centered interventions.

Examination of the research methodologies revealed that quasiexperimental, 2-group, pretest- posttest designs were most commonly used in the reviewed studies (see Table 1). Only 2 studies[28,31] used randomization to treatment group. The threat of diffusion of treatments was most likely the primary reason for less frequent use of randomization to treatment group, owing to the potential for family member interactions in a shared waiting room. Regarding samples, none of the studies discussed the use of power analyses to determine sample size; however, the study samples were moderate to large, with most ranging from 40 to 85 subjects and 1 containing 183 subjects.

The selection of instruments and outcome variables was guided by theory in only one study. Halm[30] used Caplan's crisis theory to support an intervention designed to lower family member anxiety and also measured subjects' responses with the State-Trait Anxiety Inventory. Anxiety and subjective stress were commonly selected outcome variables, and 4 of the studies used instruments with established reliability and validity. Two studies[29,33] used researcher-developed instruments, and of these, only the study by Sabo[29] discussed the support for content validity for the instrument.

Recovery phase of cardiovascular illness

Empirical research investigating the trajectory of recovery after a cardiac event has characterized the recovery phase as difficult for both patients and family members. For the patient, the major task during the period of healing and rehabilitation is to come to terms with the meaning of the event.[34] Patients attempt to manage changes in their perception of themselves and their roles, both within the family and society.[35] They may have to deal with their feelings toward anxious spouses and cope with the fears and anxiety of their family members.[6] In addition, cardiac patients may experience the added stress of trying to make lifestyle changes related to coronary risk factor modification.

Psychosocial problems are common among patients who have experienced a cardiac event. Multiple stressors that occur after a coronary event, including anxiety and depression, decreased self- esteem, reduced family functioning, delayed return to work, and diminished health status, may persist during the recovery phase.[36,37] In a study of more than 1100 patients 4 months after a cardiac event, Dixon et al[38] found that a large proportion of patients experienced problems associated with emotional reactions, physical condition, convalescence, and relating to family and friends, with 90% of subjects reporting problems in at least 1 area and 45% experiencing problems in all 4 areas.

Research focusing on women after a cardiac event suggests that their recovery experiences may be different than those of men, with sometimes worse outcomes. In a description of the process of healing after a cardiac event, female patients expressed feelings of diminished self- worth, dependence on others, a lack of support and communication, and ongoing anger.[34] Data from focus group research reveal that women in recovery from a cardiac event experience problems in both physical and psychologic realms. Murray et al[39] found that problems for women younger than 60 years were largely emotional, centering around anger and frustration regarding a variety of issues, including their diagnosis, return to work, and difficulty in coping. In the same study, women older than 60 years more commonly expressed physical concerns, such as problems with memory, sleep, and activities of daily living. Both groups expressed having to contend with overprotective family members.

Additional research suggests that women have more physical and emotional problems during re-

Table I
Intervention studies—acute phase

Author(s) (year)	Sample/setting	Intervention/theory	Control
Chavez and Faber[28] (1987)	Spouses and significant others who visited patients in ICU or CCU n = 40 90% women Large Veterans Administration Medical Center	10-m previsit education-orientation program (discussion of physical environment, alarms, invasive lines, patient status, handout listing available resources) followed by patient visit	Followed hospital visitation protocol (5-min visit)
Sabo et al[29] (1989)	Family members and significant others of MICU, CCU, and SICU patients n = 67 75% women 900 bed university-affiliated hospital	One ICU family support group session led by a unit-based CNS, a psychiatric CNS, and/or a social worker	Usual visitation
Halm[30] (1990)	Adult family member visitors of SICU patients (general surgery, neurosurgery or cardiovascular surgery) n = 55 65% women Large Midwestern university medical center	Conventional bedside support and a 90-min support group session led by a critical care registered nurse with a psychiatric nursing background Content: share feelings and experiences in coping with critical illness On basis of Caplan's crisis theory	Conventional bedside support
Thompson and Meddis[31] (1990)	Wives of patients with first MI in CCU n = 60 100% women Large teaching hospital	Routine care and a structured program of education and psychologic support delivered by an experienced CCU registered nurse, 30-min sessions at 1, 2, 3, and 5 days after patient admission	Routine care
Lynn-McHale et al[32] (1997)	Patients scheduled for coronary artery bypass graft or valve surgery and their family members Patient n = 92 80% men Family n = 91, 31% men University medical center	Standard preoperative teaching (30 min, scripted with slide presentation delivered by a nurse) and a preoperative tour of the ICU (15 min, scripted and guided by a nurse)	Standard preoperative teaching
Westmacott et al[33] (1999)	219 partners and relatives of myocardial infarction patients in CCU Follow-up n = 85 (39%) Hospital in United Kingdom	1-h "Heartlearn" educational session delivered by a nurse. Content included coronary artery disease, risk factors, secondary prevention, hospital treatments, discharge care, and long-term management	No control group

ICU, Intensive care unit; *CCU*, cardiac care unit; *MICU*, medical intensive care unit; *SICU*, surgical intensive care unit; *CNS*, clinical nurse specialist.

covery than do men. In a study of a home recovery information intervention after CABG surgery, Moore and Dolansky[40] found that compared with male subjects, women had worse physical functioning and more symptom frequency 1 month after hospital discharge. In a community-based study, Dixon et

Design	Data collection	Outcome measures	Results
2-group experimental design	Treatment group data collection before and after intervention and after visit	Kerle and Bialek subjective stress scale, blood pressure, heart rate	Treatment group mean HR decreased after education and visit ($P < .05$)
Pretest-post-test Random assignment to treatment	Control group data collection before and after visit		No differences between groups subjective stress scale, blood pressure, or heart rate
2-group comparative design No randomization to treatment	1 measurement Treatment group after intervention	Perceived feelings of stress, social support, and hope measured by a 2-part questionnaire designed by the investigators	No significant differences between groups in mean stress, social support, or hope scores
2-group quasi-experimental design	2 control group data collections 12–18 h apart	State-Trait Anxiety Inventory	Treatment group had decreased anxiety levels between pre-treatment post-treatment ($P \leq .01$)
Pretest-post-test No randomization to treatment	Treatment group data collections after support group session (12–18 h after first collection)		No significant differences between groups Family members perceived benefits of support groups
2-group quasi-experimental design with 3 treatment and 3 control cohorts	Data collection at 1, 2, 3, and 5 days after patient admission and at 1, 3, and 6 mo follow-up	Hospital Anxiety and Depression scale — 8 visual analog scales measuring anxiety on a range of topics	Treatment group had statistically significant lower anxiety vs control group at 5 days and 1, 3, and 6 mo ($P < .05$)
Longitudinal			No differences between groups on depression
Random assignment to treatment			
2-group quasi-experimental design	Immediately before and after the standard teaching session	State-Trait Anxiety Inventory	All groups had significant decreases in anxiety, no difference between control and intervention groups when controlling for previous ICU experience
Pretest-post-test No randomization to treatment	(After tour for intervention group only)	Visual analog scale for anxiety	
I group Pretest-post-test	Immediately before and after the session	0–6 point analog scale developed by the researchers measures knowledge of nature and causes of heart attack and confidence as a caregiver	Median scores on all measures increased from 4 to 5 Wilcoxon ($P = .000$)

al[38] reported that women recovering after MI experienced significantly more severe problems related to emotional reactions and physical condition than did men.

Research on older individuals after a cardiac event has yielded varied results. Older individuals have been found to experience higher depression scores, lower perceived quality of life, less social support, and more problems related to physical condition after MI.[38,41] However, Varvaro[42] found that compared with older women, middle-aged women had significantly more problems with role adjustment and a greater number of emotional concerns after a cardiac event. In addition, older women reported engaging in more adaptive health behaviors and reported a significantly higher perception of life satisfaction compared with that of middle- aged women. Similarly, Murray et al[39] found that older women expressed more resiliency and problem-focused coping after a cardiac event than younger women did.

Findings of several research studies have highlighted the impact of recovery on the cardiac patient's family. In a descriptive study of men 1 month after their first MI and their female partners, Thompson and collegues[43] found the women experienced significant emotional upset displayed by anxiety, tearfulness, and overprotective behavior. In a study of wives of patients undergoing cardiac rehabilitation, O'Farrell et al[44] found that the majority (66%) of subjects experienced significant levels of psycho- logic distress, with less intimacy and lower levels of family functioning, than did nondistressed spouses. Hilgenberg and colleagues[10] found that children of patients with MI experienced more worries than they had previously and were aware of overprotective behaviors in the family, as well as increased irritability in their affected parent.

Although satisfaction with family function has been found to decline for patients and spouses,[37] some research has indicated that the negative impact of a cardiac event may be greater for spouses than patients. Spouses of cardiac patients have reported significantly less social support[37] and family satisfaction [45] and more emotional distress[19] than their partners during the recovery phase after a cardiac event. Research by Artinian[46] revealed that during the first year after cardiac surgery, patients' wives experienced significant decreases in social support, increases in role strain, and physical and mental symptoms of stress. Both Moore4 and Gilliss et al[47] found that spousal stress exceeded patient stress in the period after CABG surgery.

A number of studies have documented the influence of the spouse on the course of the patient's rehabilitative process. The spouse may have either an enabling or limiting effect on rehabilitation outcomes by encouraging or discouraging efforts related to patient recovery.[6] Family conflict may occur during the rehabilitative period because of differing expectations related to patient activity progression, changing role responsibilities, disrupted sexual relations, risk factor modification efforts, or overprotective behaviors .[45] Family members' engagement in overprotective behaviors during the recovery phase is a recurring theme in the literature. [10,43,46,48] Clarke and colleagues[48] found that perceived over- protectiveness from a spouse significantly correlated with higher levels of anxiety and depression in male cardiac patients 1 month after MI. In addition, these patients experienced increased perceived criticism from their wives. In a study by Artinian,[46] spouses frequently reported changing their personal roles and responsibilities as well as interactions with their mate to protect the patient from further health problems.

Family centered interventions during the recovery phase. A total of 7 family intervention studies conducted during the recovery phase of a cardiac event were included in this review (Table 2). Publication dates of the studies ranged from 1982 to 2000. Studies were categorized into the recovery phase if a major component of the intervention occurred after patient discharge from the hospital. Although in 2 of the studies [12,45] part of the intervention was conducted during hospitalization, delivery of the intervention was continued in both studies for 8 weeks after discharge and therefore were categorized as recovery phase research.

A key inclusion criterion for study selection was the delivery of the intervention to family members of patients postcardiac event. Most of the studies were conducted with patient-spouse pairs, with 1 study[54] providing interventions only to spouses. The study samples were primarily composed of male patients after an acute cardiac event (MI, CABG, or valve surgery) and their wives or next of kin. In the majority of studies, subjects were recruited from cardiac rehabilitation centers and university, community, or metropolitan hospitals in the United States. One study was international, conducted in a health care district in southwestern Sweden .[52] Most of the interventions were delivered in cardiac rehabilitation centers or patients' homes. Delivery of the intervention was often initiated immediately or soon after hospital discharge. One study[54] provided interventions for spouses of patients within 1 year of a cardiac event. Most interventions consisted of multiple sessions with a total length of delivery time ranging from 1 week to 3 months after patient hospital discharge.

Examination of the recovery phase studies in this review revealed that a variety of interventions have been conducted with family members. Types of interventions include educationally oriented discussion groups, counseling sessions, physical conditioning, and home visits or telephone calls made by registered nurses. The goals of these interventions have been the support of risk factor modification efforts within the family unit, the

promotion of family oriented problem solving, the enhancement of coping strategies, the facilitation of supportive relationships, the improvement of spouses' perceptions of patients' cardiac and physical efficacy, a decrease in anxiety, and an increase in perceived family control. Many of these interventions have shown promise in improving the quality of life of patients and family members after an acute cardiac event.

A family oriented intervention implemented by Dracup and colleagues[49,50] that consisted of weekly group discussion sessions on the basis of interactionist role theory was found to decrease spouse anxiety and increase both patient and spouse self- esteem. Fridlund and colleagues[52] conducted a 3-month support program consisting of conversational and physical training sessions for patients with MI and their family members. Although both experimental and control groups initially reported sufficient social networks, the intervention group expanded their social network during the intervention compared with a decrease in the control group.

In an intervention designed to enhance spouse perceptions of patient's efficacy for rehabilitative activity, Taylor and colleagues[51] involved the wives of MI patients in treadmill testing. Wives who participated in treadmill testing, in contrast with those who observed their husbands on the treadmill and those who did neither, rated their confidence in their husbands' physical and cardiac capabilities to be significantly higher than did the wives in the other groups. In a home–visit intervention to decrease family anxiety, Buls[53] found that 2 visits by a registered nurse during the first week after hospital discharge resulted in significantly lower anxiety scores in patients and family members compared with that of control subjects. Lastly, a cardiopulmonary resuscitation training intervention for spouses of cardiac patients supplemented with group discussions of emotions or risk factor modification resulted in significant increases in spouses' perceived control compared with that of control subjects.[54] However, no significant differences in perceived control scores were found between the 2 types of intervention discussion groups.

Other intervention studies with the goal of improving family functioning after a cardiac event have not been as successful. Research conducted by Gortner and colleagues[1 2,55] and Gilliss and colleagues [1,45,47] evaluating the effects of in-hospital teaching followed by telephone counseling at home found no significant effects on indices of family recovery. At the 3-month follow-up measurement, Gilliss et al45 found that all subjects reported a significant decrease in family functioning. Gortner and Jenkins[55] found decreased family functioning was particularly evident for spouses, who reported consistently lower scores compared with those of the patients at each measurement. The authors attributed an inappropriate window of outcome measurement (3 and 6 months) to their lack of significant findings and suggested that research and interventions might best be focused on the first 6 weeks of patient recovery.

Methodologic strengths of recovery phase intervention research include large sample sizes, ranging from 60 to 196 subjects; the use of randomized clinical trial and quasi-experimental designs; and the implementation of serial interventions. These factors aided in providing sufficient power to detect significant differences on the outcome variables between intervention and control groups, reduced bias, and increased the strength and duration of the interventions. Consequently, more than half of the studies found significant effects regarding the improvement of family member anxiety, social network, and perceived control and efficacy after a cardiac event.

The 2 studies that lacked significant findings exhibit possible weaknesses in both intervention strength and timing of outcome measures. Both of these studies [12,45] used telephone interventions for 8 weeks after discharge, with outcome measures obtained at 3 and 6 months. In comparison, other studies in this review implemented in-person interventions, including group discussions, exercise training sessions, or home visits by a registered nurse. These successful interventions were often delivered over a longer period, thereby increasing their overall strength through the enhancement of the intervention specificity, dose, intensity, and duration .[56] The use of theory-based interventions and outcome variables was more commonly found than in the acute phase studies. Three of the 7 recovery phase studies were supported by theory. Dracup and collegues[49,50] used interactionist role theory to support an intervention designed to lower patient and spouse anxiety and increase self-esteem. Family stress theory was used in 2 studies [12,45] to support teaching and telephone counseling interventions. Both

of these studies used outcome measures of family functioning and resource management. The remaining studies measured individual outcomes, including anxiety, self-esteem, social network, self-efficacy, and perceived control. Most

Table II
Intervention studies—recovery phase

Author(s) (year)	Sample/setting	Intervention/theory	Control
Dracup et al[49] (1984)	62 married couples with 1 spouse after recent acute coronary event (myocardial infarction or coronary artery bypass graft surgery) n = 124	Role supplementation program provided in 10 weekly, 90-min group sessions (30 min content and 60 min discussion) delivered by a cardiovascular nurse and a psychiatric nurse. Content: role clarification, problem-solving, stress management, family relationships, and communication Interactionist role theory	No information provided
Dracup[50] (1982) Taylor et al[51] (1985)	4 cardiac rehabilitation centers in California 30 men after acute myocardial infarction and their wives n = 60 Cardiac rehabilitation program in California	Group II: Wife observed husband's treadmill test Group III: Wife observed husband's treadmill test and walked on treadmill for 3 min at the same peak workload achieved by her husband All groups received counseling with a cardiologist to discuss treadmill test results and capacity for physical activity	Group I: Wife sat in waiting room during husband's treadmill test
Gortner et al[12] (1988)	Patients of first-time coronary artery bypass graft surgery or valve replacement surgery and their spouses n = 79 couples 80% of patients men Follow-up n = 67 couples 2 university and 1 community hospital surgical centers in California and patients' homes	Before discharge: Intervention I (all groups): In-hospital teaching Intervention II (experiment group) Slide/tape "Working Together Towards Recovery" and counseling session After discharge: Intervention III (experiment group): Telephone call from registered nurse, weekly for 4 wk and then biweekly for 4 wk Self-efficacy theory Double ABCX Model of McCubbin and Patterson	Usual care
Gilliss et al[45] (1990)	Patients after first cardiac surgery and their spouses, n = 158 Follow-up n = 134 (67 patient-spouse pairs) 81% male patients 2 West coast medical centers and patients' homes	Before discharge: Control group care plus slide/tape "Working Together for Recovery" developed by the researchers, brief discussion with RN about current reactions and conflict management After discharge: Regular telephone calls from RN at weeks 1, 2, 3, 4, 6, and 8. Calls lasted 10–45 min Family stress theory, Double ABCX Model by McCubbin and Patterson	Usual care and slide/tape "An Active Partnership'
Fridlund et al[52] (1993)	Male patients after acute myocardial infarction and their next-of-kin n = 72 (36 pairs) Follow-up (n not provided) Health care district in south-western Sweden	Routine cardiac follow-up and 3-mo caring program Weekly sessions started 2 wk after acute myocardial infarction and continued for 3 months, consisting of 1 h of conversation and 1 h of physical training. Conducted by an intensive care unit nurse, a recreational physiotherapist, and a cardiologist	Routine cardiac follow-up care at 5 wk and 3 mo after acute myocardial infarction
Buls[53] (1995)	60 patients after first coronary artery bypass graft surgery and their spouses n = 120 68% male patients 200-bed Midwestern hospital and patients' homes	2 home visits by registered nurse at 2 and 7 days after hospital discharge. Registered nurses provided information and emotional support and reviewed a teaching sheet on care issues (physical care, diet, medications, exercise, etc)	Usual care
Moser and Dracup[54] (2000)	Spouses of patients with acute myocardial infarction, coronary artery bypass surgery, or percutaneous transluminal coronary angioplasty, within previous 12 mo n = 219. Follow-up n = 196 (89%) 83% women 5 metropolitan hospitals	1-small group training session on 1-person cardiopulmonary resuscitation (CPR) taught by a cardiovascular clinical nurse specialist with video-tape format supplemented with the following: 1. 30-min discussion of emotions related to learning CPR (social support CPR) or 2. 30-min discussion of risk-factor modification (risk factor education CPR)	Usual care

of the studies used instruments with previously established reliability and validity. Two studies used instruments developed by the researchers, and of these, Fridlund et al[52] discussed the instrument's content validity and Taylor et al51 provided data regarding instrument reliability.

IMPLICATIONS FOR PRACTICE

The literature on counseling and support for cardiac patients and their family members suggests that across the trajectory of acute illness and recovery, experiences include increased anxiety and mood disturbance, fear, changes in role and family function, struggle to come to terms with the meaning of the cardiac event, and challenges related to risk factor modification. Many of the interventions in these studies facilitate the recognition and sharing of experiences surrounding the cardiac event through the use of mechanisms such as patient and family support groups. The experience of sharing

Design	Data collection	Outcome measures	Results
Quasi-experimental 3 groups: control (A) n = 40 Patient-only (B1) n = 44 Patient-spouse (B2) n = 40	10 wk and 6 mo	Anxiety and self-esteem by questionnaire	B2 spouses had greater decreases in anxiety and increases in self-esteem than did A or B1 ($P < .01$) B2 patients had higher self-esteem than did A or B1 patients ($P < .05$)
Quasi-experimental with spouses randomly assigned to one of 3 groups: 1. No observation 2. Observation 3. Observation and exercise	3 data collections 3 wk after acute myocardial infarction—before and after exercise testing, and after counseling	Wives' perceptions of their husband's physical and cardiac self-efficacy Specific instruments not provided	Wives' changes in perceptions of husband's cardiac and physical efficacy Group 1 and 2 NS Group 3 increases significant in physical ($P < .01$) and cardiac ($P < .004$) efficacy
Randomized clinical trial	3 and 6 mo	Family APGAR Family Inventory of Resources for Management	No significant differences between control and experiment groups on Family APGAR and Family Inventory of Resources for Management at 3 and 6 mo
Randomized clinical trial	Family APGAR and Family Inventory of Resources for Management at 3 and 6 mo after surgery; Marital Adjustment Scale at 6 mo after surgery	Family APGAR, Locke-Wallace Marital Adjustment Scale, Family Inventory of Resources for Management	No significant main effects of treatment on any measure All subjects reported significant decrease in family functioning at 3 months
2-group control No randomization to treatment (subject self selection of participation in intervention)	3 mo after acute myocardial infarction	Social network and social support measured by a 10-item questionnaire developed by the researchers	Immediately after acute myocardial infarction 9 in both groups requested social support At 3-month follow-up, intervention group changed type of social support requested to info-material Control group requested no additional social support Both groups expressed sufficient social network on the basis of family during acute myocardial infarction and 3 mo later
2-group control Pretest-post-test subjects matched by age, sex, and admission status (myocardial infarction vs angina)	2 and 7 days after hospital discharge (pretest at 2 days, post-test at 7 days)	State-Trait Anxiety Inventory Affect Adjective Check List	Patients and family members in treatment group had lower mean scores on post-test State-Trait Anxiety Inventory and Affect Adjective Check List than did control group ($P < .05$)
3-group experimental Pretest-post-test with random assignment in blocks to 3 groups: A: Control n = 84 B: Social support CPR n = 68 C: Risk-factor education CPR n = 67	Baseline (1–2 wk before CPR training) and 1 mo after CPR training	Family Control Attitudes Scale	Perceived control scores (Family Control Attitude Scale) increased significantly in both CPR intervention groups ($P = .001$) No significant differences between type of intervention No significant change in control group Family Control Attitude Scale

may assist patients and family members by providing essential information, working through uncertainties inherent in redefining roles and relationship patterns, and decreasing anxiety.[28-30] Support groups may provide a valuable method for patients and family members to learn about problems and experiences similar to their own and about how other families have managed. Alternative interventions might include the use of family counseling and resource utilization, particularly as related to the management of role change and risk factor modification efforts.

The research presented has documented the effectiveness of interventions for improving individual outcomes such as self-esteem, anxiety, and self- efficacy; however, no significant improvements were detected in measures of family functioning, such as family and marital satisfaction, or resource utilization. These findings suggest that family functioning is a complex phenomenon that may require interventions of greater intensity and duration. Furthermore, examination of intervention studies in the acute stage suggests that effective programs consist of a series of events rather than single interactions. The trajectory of illness suggests that interventions may be most effective when provided during all stages of illness and may best be tailored to meet the specific needs of individuals and families in each stage. Family members should receive interventions to help them cope

during both the acute and recovery phases of cardiovascular illness to improve both the patient's and the family's overall functioning.

Directions for research

Although interventions designed to promote the management of cardiovascular disease for patients and family members have provided valuable guidance for practitioners, these interventions have demonstrated only limited effects. Research has verified the impact of the cardiac event on patient and family functioning across the trajectory of acute illness and recovery. However, more information is needed about factors associated with both psycho- logic distress and the recovery process within the context of the family.

Overall, little is known about the impact of acute and chronic illness on women and older adults. The majority of the research to date has focused on male cardiac patients and the effects of the cardiac event on themselves and their families. Most of the family research in this area has been conducted on cardiac patients' wives. To tailor interventions to best support the needs of the family, researchers should explore the differences in coping styles and patterns of recovery between men and women and between individuals of varying age groups. In addition, the role of these differences in the recovery process should be explored.

The majority of research related to patient and family functioning after a cardiac event has also been conducted with subjects representative of the white middle class. Little is known about supportive mechanisms, family functioning, or role change for different ethnic groups who also must experience the process of recovery after a cardiac event. The recovery process for these individuals may significantly differ from the established norms and therefore must be explored if caregivers are to have a base on which to develop culturally relevant interventions that provide counseling and support.

Future research must also include an analysis of expected outcomes with interventions that target both patients and family members. A successful intervention should result in the following 2 sets of measurable outcomes: an improvement in measures of patient activity, or quality of life, and a return to or increase in pre-event levels of marital and family satisfaction.[1] Despite evidence suggesting that families both affect and are affected by acute and chronic cardiac illness, the provision of interventions for family members during both the acute and recovery phases of cardiovascular illness remains limited. To promote optimal patient and family recovery, frameworks for intervention must be expanded to incorporate the patient as existing in the context of an integrated family system.

The use of a theoretical framework to guide the development of interventions and the selection of outcome variables and measurement times continues to be a greatly needed approach for the successful development and testing of interventions to improve family functioning after a cardiac event. Although intended as family research, none of the acute phase studies and only 2 of the recovery phase studies selected outcome variables that indicated levels of family functioning, such as family satisfaction, family resource management, or marital adjustment. The remaining studies measured individual family members' levels of anxiety, self-esteem, self-efficacy, social network, perceived control, or affect. To improve family functioning after a cardiac event, researchers must turn from individual outcomes and focus on the impact of illness on family outcomes. This may be accomplished through the design and implementation of interventions that support positive family interactions and coping patterns and, through the selection of outcome measures that are sensitive to improvements in family functioning.

Although family centered intervention trials have provided some direction, the best length, type, and format of family intervention remains unclear. Few studies have attempted to tailor treatments for patient and family needs or to acknowledge the role of different psychologic responses among family members and patients across the trajectory of cardiovascular illness and recovery. The challenge remains for researchers and clinicians to explore different methods and to acknowledge differing perspectives to better understand variations in psychologic responses and to provide the most relevant and effective education, counseling, and support for patients and family members after a cardiac event. The trajectory framework of illness may guide research and

conceptually support the selection of interventions to be delivered; the most appropriate strength, frequency, and duration of delivery; and the timing of outcome measurements to achieve the greatest effectiveness.

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