

An act of courage: Women's decision-making processes regarding outpatient cardiac rehabilitation attendance.

By: Jean C. McSweeney and Patricia B. Crane

This is the pre-peer reviewed version of the following article:

McSweeney, J. & [Crane, P.B.](#) (2001). An act of courage: Women's decision-making processes regarding outpatient cardiac rehabilitation attendance. *Rehabilitation Nursing*, 26(4), 132-140.

which has been published in final form at

<http://onlinelibrary.wiley.com/doi/10.1002/j.2048-7940.2001.tb01935.x/abstract>.

Abstract:

The purpose of this qualitative study was to describe the factors that affect women's attendance and adherence to a cardiac rehabilitation (CR) program after a myocardial infarction (MI). We used in-depth interviews and a health survey form to collect data. The purposive sample consisted of 40 women who had experienced a first MI within the previous 6 weeks to 12 months. Of those 40, 18 women were not offered the program, 8 declined it, and 14 attended. Using content analysis and constant comparison, we identified three distinct phases: "initial decision," "CR attendance," and "reevaluation." Four data clusters positively influenced the continuation of CR attendance: "Psychological Appraisal," "Program Components," "Staff Behaviors," and "Outcomes." When women encountered a fifth cluster—"Barriers"—they entered the reevaluation phase. Results of this study support specific interventions for each phase.

Keywords: cardiac rehabilitation | women's health | nursing | rehabilitation nursing

Article:

Cardiovascular disease (CVD) is the leading cause of death and disability in American women (American Heart Association, 1997). By the year 2030, it is estimated that more than 70 million people will be 65 years old or older (Mazzeo et al., 1998). The increased risk of developing CVD as people age (American Heart Association, 1999), coupled with the projected increase in the number of aging women, potentially places a burden on the nation's healthcare budget. Interventions that target risk factors associated with CVD in women, such as cardiac rehabilitation (CR), are essential if these escalating costs are to be controlled. People who attend CR have a rehospitalization rate of 32%, compared with a 47% rehospitalization rate for people who do not attend CR. This is a major reason that CR program attendance is associated with a savings of \$12,000 per patient over a 5-year period (American Health Consultants, 1996).

Decreased costs and the overall benefits of CR to a person's health, such as increased exercise tolerance and improved symptoms, are well documented (Ades, Huang, & Weaver, 1992; Conn, Taylor, & Casey, 1992; Digenio & Joughin, 1997; Lavie & Milani, 1995). However, Thomas et al. (1996) reported that as few as 10.8% of myocardial infarction (MI) patients participate in CR; only 6.9% of women with MI are CR participants, compared with 13.3% of men with MI. Further, more than 50% of the women who do attend CR drop out (Cannistra, O'Malley, & Balady, 1995). Although researchers are beginning to investigate the barriers to women's participation in CR and the associated lifestyle changes (Biggs & Fleury, 1994; Halm, Penque, Doll, & Beahrs, 1999; McSweeney, 1993), little is known about how women decide whether or not to participate in CR. In addition, few studies have focused on the factors that women believe helped them successfully complete an outpatient CR program. Therefore, the purpose of this study was to examine how women decided whether or not to participate in outpatient CR, and to explore the factors they identified as having influenced their continuation in the program.

Literature review

Several researchers have reported that men and women benefit equally from CR (Cannistra, Balady, O'Malley, Weiner, & Ryan, 1992). Conn et al. (1992) found that both women and men in a CR program reported better health, greater self-esteem, and an improved quality of life. They also reported statistically significant positive influences on post-MI self-care behaviors of exercise ($r = 0.42$), diet ($r = 0.27$), and medication ($r = 0.25$). Lavie and Milani (1995) found that women and men showed similar improvements in quality of life, cardiac risk factor reduction, and behavioral traits after completing CR. In addition, research indicates that both women and men increased their metabolic equivalent (a standard measurement of oxygen uptake: 3.5 ml O₂/kg1/min) and exercise time by participating in CR (Cannistra et al., 1992). A peer review of 334 scientific articles found that the greatest benefits from attending CR were improved exercise tolerance, improved management of symptoms, reduced cigarette smoking, reduced blood lipid levels, reduced stress, improved psychological state, and reduced mortality (Digenio & Joughin, 1997).

Despite indications that women and men benefit equally from CR, recent studies report that physicians recommend CR more frequently for men (Ades, Waldmann, Polk, & Coflesky, 1992; Halm et al., 1999). This is important, because the primary physician's recommendation for CR is the strongest statistically significant predictor of participation (Ades, Waldmann, McCann, & Weaver, 1992; Lieberman, Meana, & Stewart, 1998).

There is a lack of comprehensive findings about women's perceived barriers to CR. One reason women have been understudied is because of the small number who attend CR programs (O'Connor et al., 1989). Ades, Waldmann, McCann, et al. (1992) and Ades, Waldmann, Polk, et al. (1992) conducted two related studies that identified commute time, denial of disease severity, and a history of depression as predictors of CR participation. Both studies used a forced choice 30-question tool. Because the tool was not gender-specific, it is possible that women experience other barriers to CR that have not been identified. In fact, studies that have focused on women after a cardiac event reported additional barriers to making behavior changes after MI, such as safety issues, financial considerations, social relationships, transportation, comorbidities, and the environment (Biggs & Fleury, 1994; Halm et al., 1999; McSweeney, 1993).

Although some barriers have been identified, little is known about their timing and influence on a woman's initial decision to attend CR, or on her decision to continue CR. Further, we know little about how women overcome self-identified barriers. Before health professionals can develop effective interventions, they must understand women's decision-making processes and the factors that help them overcome barriers and facilitate their continuation in CR. This study adds to that knowledge base.

Methods

Sample: In this descriptive naturalistic study, the purposive nonprobability sample included 40 English-speaking women who had experienced their first MI within the previous 6 weeks to 12 months. The sample was 87.5% white, 10% African American, and 2.5% American Indian and ranged from 27 to 79 years of age ($M = 58.5$, $SD = 12.53$). The majority were married, 50% had a high school education or less, 22.5% had attended technical school, and 37.5% had attended college or had received college degrees. Annual household incomes ranged from less than \$10,000 to more than \$50,000, with 52% of the sample reporting yearly incomes of \$30,000 or less and 32% reporting \$50,000 or more. Demographics of the total sample are provided in Table 1. Patients who did not attend CR, who were not offered it, or who declined to attend, had more caregiving responsibilities (45% versus 7%), were more obese, and had less education. The majority of attenders (77%) had yearly incomes of more than \$30,000 whereas 69% of the nonattenders had incomes of less than \$30,000.

Table 1. . Description and Health Status of Cardiac Rehabilitation Participants and Nonparticipants

Descriptors	Participants (<i>n</i> = 14)	Nonparticipants (<i>n</i> = 26)
Age (years)	<i>M</i> =63; range 38–79	<i>M</i> =56; 27–35 range
Education		
12 years or less	22%	65%
13 years or more	78%	35%
Caregiver	7%	46%
BMI	<i>M</i> =26; range 18.7–9.6	<i>M</i> = 28; range 17.35–45.32
Income*		
\$30,000 or more	77%	31%
\$29,999 or less	22%	69%
History of smoking	64%	73%
Comorbidities		
None	21% (3)	15% (4)
One	21% (3)	42% (11)
Two	57% (8)	23% (6)
Three		19% (5)

* Income percentages based on data from 25 respondents.

Because comorbidities may be a factor in attendance of CR, we also explored the health status of all persons in the sample (Table 1). To collect these data, we asked the women to complete a health status questionnaire (described later in the “Data Collection” section). The most frequently identified comorbidities were diabetes and hypertension; smoking was the most prevalent controllable risk factor. Twenty-two percent of the women had diabetes, 50% had

hypertension, and 70% had a history of smoking. The body mass index (BMI) of the sample ranged from 17.4 to 49.6 kg; whereas the mean of 27.5 kg met the definition of overweight as specified by the National Heart, Lung, and Blood Institute (NHLBI, 1998). According to NHLBI guidelines, a BMI of 25–29.9 kg is considered overweight, whereas a BMI of 30 kg or above is classified as obese. Using a BMI table to identify health risk related to BMI (Sizer & Whitney, 1994), 52.5% of the sample were at normal or marginal risk, 25% were at moderate risk, and 22.5% were at high risk.

Participant recruitment: Women were approached about participating in this study after they were discharged from the acute care setting. To afford confidentiality during the recruitment of patients, an employee from each of the three participating medical centers contacted potential participants from among MI patients who had received care at their respective institutions. The employees then provided us with a list of women interested in participating; they were contacted by telephone and given an explanation of the study and of their rights. Their questions were answered and appointments were scheduled to sign a consent form, gather demographic information, complete the health status survey, and undergo a first interview.

Despite indications that women and men benefit equally from CR, recent studies report that physicians recommend CR more frequently for men.

Data collection: Quantitative data were obtained by having each woman provide demographic information and complete a health status questionnaire developed by McSweeney (1998), consisting of 55 questions related to risk factors, comorbidities, and CR attendance. For instance, questions focused on menopause status, weight, history of hypertension, and amount of time in CR. The data were used to describe the sample, identify the most frequent comorbidities and risk factors, and to determine caregiver status. The most pertinent data for this portion of the study are summarized in Table 1. After the questionnaire was completed, an experienced interviewer conducted and tape recorded all interviews. First interviews lasted from 1.5 to 2.5 hours, and follow-up interviews averaged 30 minutes. Follow-up interviews were held to clarify meanings, gain further information, and provide the women the opportunity to refine their previous comments. Because data generation and analysis occur simultaneously in qualitative research, follow-up interviews also provided the opportunity to validate participants' reactions to emerging data clusters. Each guided in-depth interview was initiated with a grand tour question (Spradley, 1979): “How was your life before you had your heart attack?” The question focused on the respondent's life before the MI to elicit data for the major research purpose of this study, which has been reported elsewhere (McSweeney & Crane, 2000). Probe questions, such as “Tell me about your decision to attend CR,” were asked to solicit information about the respondent's

decision to attend or not to attend a structured CR outpatient program and her continued participation in it.

Data analysis: A research assistant entered the quantitative data into the SPSS statistical software system. Descriptive statistics and tabulations were obtained on variables of interest. We used content analysis and constant comparison to analyze the qualitative data. Content analysis permits the researcher to examine the narrative text of each respondent's interview by word, topic, or unit of meaning (Lincoln & Guba, 1985; Morse & Field, 1995). Constant comparison, an analytic technique used in several qualitative methodologies, makes possible a comparison of the narrative data (each person's story) and facilitates development of global themes that encompass the group's experience (Denzin & Lincoln, 1994).

Qualitative interview data were transcribed verbatim and entered into the Ethnograph computer program (Seidel, 1988), which makes possible the sorting of data by codes. Using content analysis, we then manually coded transcripts into segments of data and re-entered the codes into the Ethnograph program. This resulted in aggregated raw data that focused on CR. Using content analysis and constant comparison, we then combined the raw aggregated data into data clusters, such as barriers or staff behaviors. Global categories were formed by combining and organizing these data clusters according to time of influence, related to the decision processes surrounding CR (Table 2). All coding decisions related to the categorizations of clusters and the timing of influence were recorded. These decisions were then reviewed and validated by a second researcher. Minor discrepancies were discussed until agreement was reached.

Table 2. . Data Analysis of Women's Cardiac Rehabilitation Attendance

Global Categories	Data Clusters	Raw Data
Initial Decision Phase	Attenders	“Doctor recommended rehab”
		“It helped my brother”
		“I read the material”
Cardiac Rehabilitation Attendance Phase	Psychological appraisal	“Attitude makes all the difference”
		“Therapy keeps me going”
		“I don't like it [exercise]”

Program components	<p>“You learn to watch for things [chest pain]”</p> <p>“Fun environment to exercise with others”</p> <p>“I feel secure”</p>
Staff behaviors	<p>“Nurses check on me all the time”</p> <p>“People [staff] are great”</p> <p>“Doctors enthused”</p>
Outcomes	<p>“I’ve cut my insulin”</p> <p>“Think clearer”</p> <p>“A turning point for me”</p>
Barriers	<p>Breast cancer</p> <p>Arthritis</p>

Reevaluation Phase Decision related to continued attendance “They [CR personnel] agreed I’d be better doing it [exercise] in the water at the bath house.”

Results

Discussion of data analysis is presented in this section. First, data relating to the offering of CR are presented. Next, reasons for nonattendance by women who were offered the CR program option are delineated. The remainder of the section focuses on data obtained from women who decided to attend an outpatient CR program.

Offering of cardiac rehabilitation: All 40 women were asked if they were either approached by a health professional about the possibility of attending a CR program, or if they had asked to attend CR. Nineteen women reported that the benefits of CR were discussed with them and that they were offered the opportunity to attend a program. Three women who were not offered the CR option asked their physicians for referrals to a local CR program. One physician denied the request. Of the 22 women who were offered or requested CR, 14 (64%) subsequently attended a program whereas seven (32%) declined to attend. In addition, the woman whose physician would

not refer her to CR did not attend because her insurance company would not pay if CR was not ordered by her physician.

The 18 women who were not offered, did not request, or did not remember being offered CR were asked to explain why they thought it was not offered. Some admitted that they might have forgotten about being offered CR because of the effect of their medications. The following quotation is typical of their responses: “I don't remember it because, you know, they put you on Ativan® and everything else and you don't remember a lot of stuff in the hospital.” One woman believed she was not offered CR because she was “out of the mainstream on the pediatric floor” (because of a high census). Others who said they didn't know why they were not offered CR, frequently asked, “What is CR?” The majority of the 18 women said they would have considered attending if CR had been offered. Because they did not participate, they were unable to provide additional data related to CR, but they did participate in other study aspects that are reported elsewhere (McSweeney & Crane, 2000). Note that nearly 50% of the women in this study were either never given, or did not remember being given, the opportunity to attend CR.

Initial decision phase: The data in this and the other phases are based on the responses of the 22 women who were offered or requested participation in a CR program. This initial decision phase was the time frame surrounding the woman's decision to participate or not to participate in CR. It began with a health professional initiating discussion about CR or with the woman requesting information about it. The phase concluded with the woman's decision to attend or not to attend. If a woman visited a CR program before making a final decision, data related to the visit were included in this phase. All women went through an initial period in which they evaluated whether to attend a CR program (Figure 1).

Figure 1. . Factors Influencing Women's Cardiac Attendance

image

Decision process of nonattenders. The decision process for the eight women who were offered or requested CR but decided not to attend was short and was made before they were discharged from the hospital. Cardiac rehabilitation personnel initially visited the women and provided educational material about the outpatient CR program. Although most women said they read the material, neither the personal visit nor the reading material was so persuasive as to alter their decisions not to attend the program. In addition, none of the women reported discussing with CR

staff or other health professionals their reasons, including barriers, for not attending. It is important to note that none of the women in this study later decided to attend CR.

Thirteen reasons were cited by the women for deciding not to attend. For example, two women who did not drive had either a husband who was disabled or did not want to inconvenience family or friends by asking to be driven to a program. Other major reasons for not attending included lack of insurance coverage for CR, caretaking responsibilities, the distance to the facility, and the lack of a perceived need. A 36-year-old woman identified an additional reason for not attending:

I thought it was all going to be a bunch of 70-year-old people up there. I know I need CR because right now, I really don't know what I can do; with me being 36, there are things that I want to do that, you know, a 66-year-old woman wouldn't care about doing.

Interestingly, this woman had no identified cardiac risk factors other than a family history of MI and had regularly participated in an exercise program before the MI. She believed that CR would be tailored to the needs of older people and would not meet the physical or emotional needs of younger women.

Decision process of attenders. Fourteen women who were offered CR decided to attend during the initial decision phase. The majority remembered CR personnel contacting them while they were in the hospital and assisting them in exploring solutions to overcome their personal barriers. Although these women experienced some of the same barriers as the nonattenders, they visualized alternatives that would help them overcome perceived or identified barriers. This important, individualized assistance by CR personnel facilitated the women's decision process. Their initial decision process appeared to encompass a longer time period than did the process for nonattenders. For example, some women made definitive decisions to attend CR while they were hospitalized; others made tentative decisions in favor of outpatient CR on a trial basis.

Women, especially those who had never attended a formal exercise program, said that it took courage to decide to attend CR on a trial basis, or even to visit a CR program. A 79-year-old woman said, "I had to be led in there in that [CR] room." When a 65-year-old woman visited CR and saw others whom she perceived to be sicker than she actively participating in CR, she found

the courage to try the program. These initial visits proved to be influential in the women's decision to participate on a trial basis.

CR attendance phase: The data in this and the subsequent phases are based on responses from the 14 women who attended an outpatient CR program. The attendance phase spanned the period from the women's first CR session (not a trial visit) to their termination or completion of the program. During this phase, all attenders identified the factors that influenced them to continue the program. Data were clustered into four groups that positively influenced continuation of CR: psychological appraisal, program components, staff behaviors, and outcomes. A fifth data cluster, barriers, negatively influenced the women's ability to continue participation. Discussion of each of the data clusters follows (Figure 1).

Psychological appraisal. This cluster was defined as a mental assessment that occurred while the women were attending CR. The majority of the psychological appraisals provided positive reinforcement for continued participation. Examples of raw data included in this cluster were "I'm learning to..." "Attitude makes all the difference," and "Therapy keeps me going [because it] gives me a desire to get up." Although most of the data in this cluster were positive, several women identified negative thoughts such as "I don't like to do it [exercise]. I hate this," and "It screws up my whole day." However, these women continued in CR, which indicates that the other factors were strong enough to counteract the negative psychological appraisals.

The following quotation from a 70-year-old typifies the mental appraisal of the women who decided to attend CR:

Rehab helped me mentally. I knew that I couldn't keep on like this. I was feeling very martyred. I've had this [MI]. Now, I can't do this, I can't do that. I'm not supposed to eat anything. I just didn't see any real future, anything coming up bright. Not until I started on the cardiac therapy did I snap out of it. It was really the turning point for me, realizing how your body reheals. And it is like a miracle to me. I know I will continue to have a problem as far as watching my weight and all these things but slowly I am learning to accept what I can and cannot do. So many times you're in a mental block, because you just don't think you can accept all this. So I am grateful for the program and hopeful I can continue on in this vein.

Women who had not visited CR as an inpatient identified courage as an important attribute in this phase, similar to the women who did visit during the decision-making phase. For example, one woman reported that it took courage for her to participate in her first CR session. She stated, “When I came here [CR], I didn’t want to go through all those machines. They have so many weird-looking ones.” They expressed fear of the unfamiliar exercise equipment. Thus, courage was essential for some, especially for women who had no experience with exercise programs, for them to initially visit and/or to participate in their first CR session. Other women emphasized that courage was also essential before they could initiate suggested lifestyle changes. For instance, one woman said, “If people would have the courage to do what is necessary to make these changes, it’s the difference [between] daylight and dark.” Although making changes is often difficult for persons of any age, significant life changes appeared to be especially difficult in this older population.

Program components. Women identified two important factors, safety and program benefits, in the “Program Components” data cluster that positively influenced their adherence to the CR program. Safety was defined as an environment that fostered comfort and feelings of being secure. The following quotations exemplify the importance of safety as essential in continuing CR attendance: “It’s a very comforting feeling to me because there are cardiac nurses there, so if something is going to go wrong, they are there to help. I’m in a controlled environment and I feel very secure...” A 54-year-old woman said, “I felt comfortable. I would not have done physically what I did in rehab if I had just come home from the hospital and not gone to rehab, because I wasn’t afraid in CR.”

We defined the second major factor in program components, program benefits, as a specific element of the CR program that women valued. The most frequently discussed benefit was education. Women identified the formal lectures and the accompanying informal interactions with CR personnel as especially helpful in making personal health decisions. A typical comment from a 70-year-old woman exemplified program benefits. “I had a lot of knowledge that was not good knowledge, particularly about fats and things. It has been great as far as my learning about diet and I have really worked on that.” Another woman said, “In rehab, if anyone starts developing anything like [chest pain], you know to cut out the activity. You learn to watch for things like that.” Another program benefit women identified was the opportunity to “share with people who had the same problems” or “the camaraderie” from participating in the program. Women often established schedules so that they could exercise with the same people at each session. Examples of other identified benefits were “availability of the proper exercise equipment,” and “the opportunity to sample low-fat food prepared by staff.” The “fun environment of exercising with others” also was cited as an important benefit.

The importance of the data clustered within the category of program components varied with time. For example, safety was of utmost importance early in the attendance phase. Careful monitoring by the CR personnel was important in helping attenders to feel safe. Safety issues decreased in importance as the women became more secure and comfortable with what they could do without ill effects. Once the women felt safe, other identified benefits superseded the need for safety and remained throughout the attendance phase. For example, the benefits of exercising with others with similar problems and the informal interactions with staff, during which concerns could be discussed on an individual basis, remained important throughout the experience.

Staff behaviors. The third data cluster within the attendance phase was titled “Staff Behaviors”: behaviors of CR personnel that were incentives for the women to make changes or to continue in CR. The women used the term CR personnel to include individuals such as the van drivers responsible for transporting them to and from the program, technicians, dietitians, nurses, and physicians. Examples of specific staff behaviors that served as incentives included “Nurses check on me all the time,” “People [staff] are great,” and “Doctors are as enthused as we are.” Another incentive to maintain healthy behaviors was the continual assessment by CR personnel regarding compliance with lifestyle modifications in the home environment. Importantly, the most valued staff behavior was encouragement, including both verbal cues and assistance in setting challenging but achievable health goals. For example, one 54-year-old woman stated, “They kept saying, 'You can do anything you want to do,' and rehab proved that to me.” An elderly woman said, “They caution me, tell me what to eat, what not to eat, and [encourage me to] exercise. They check on me.” Although this woman felt that her progress was initially slow, she credited the constant checking and verbal encouragement from the nurses for helping her to increase her exercise endurance and speed, leading to her nickname, “Speedy.”

Importantly, the most valued staff behavior was encouragement, including both verbal cues and assistance in setting challenging but achievable health goals.

Outcomes. The last positive influential data cluster during this phase—“Outcomes”—was defined as the perceived physical and psychological results of attending the CR program. The following quotation illustrates how physical outcomes influenced continuation in the CR program: “I couldn't stoop over to pick up nothing on the floor. I was so stiff and [now] I just reach down there and get it. It's because they [CR] made me do all that exercise over there.” A

70-year-old woman noted, "I've been able to cut my insulin in half. I've been able to think clearer and better.

I have twice as much energy, it's like your body has rehealed itself." Examples of the psychological results that influenced continuing CR included comments such as "It was a turning point for me" and "[Now] I look forward to being and doing."

Outcomes, reflected in personal health decisions, were not always in accord with CR educational materials. For instance, 2 of the 14 women reported making personal health decisions that were in conflict with the recommendations presented in the CR program despite their participation. One 66-year-old woman stated, "They have lectures on the various things about the heart. They pointed out how much my life is shortened every time I smoke a cigarette. I know a lot of the facts, but I know what I'm doing to myself. There's something in me that is willing to take that chance." (She continued to smoke). Another woman explained that "I don't give it its due, you know diabetes and heart problems, and the need to exercise, the need for good nutrition." So, although these women were given the appropriate information and participated in CR, they also continued behaviors that they acknowledged as being risky. One woman entered a maintenance program after completing the outpatient CR program but continued to smoke.

Barriers. The fifth influential data cluster—"Barriers"—encompassed problems that hindered continued participation in CR. For instance, one woman reported that breast cancer served as a barrier to her attendance at CR. Another woman had difficulty adjusting her insulin to accommodate her increased physical activity. Her resulting low blood sugars delayed the beginning of her exercise regime. She expressed frustration with the delay and indicated that it alienated her from the other attenders. She stated, "I couldn't start on time because my blood sugar was low, so everybody was leaving when I was just starting." Thus, she did not experience the program benefit of camaraderie and the powerful reinforcement of exercising with other attenders. A 77-year-old woman could not participate because she had arthritis. Women who encountered these barriers while actively participating in CR entered a reevaluation phase.

Reevaluation phase: In this phase, women examined their decisions to continue participating in CR despite their personal barriers. This reexamination led to a decision regarding continuing or discontinuing attendance in CR. It is important to note that the decisions were reached with the help of CR personnel. They intervened by assisting the women in selecting effective alternative health promoting strategies, or by assisting them in overcoming barriers to their continuing CR.

For example, CR personnel helped the woman with arthritis by finding an alternative water aerobics program. A physician and other CR personnel helped the woman with low blood sugars to better regulate her insulin so that she could experience the camaraderie inherent in exercising with others.

Discussion and implications

Because little is known about women who do not attend CR, we compared their characteristics with those of women who do attend. The latter were more educated, had higher incomes, fewer comorbidities, a lower BMI, and fewer caretaking responsibilities. This is disturbing because the women who did not attend CR were those at highest risk for reoccurrence of MI. In addition, the mean age of attenders was 63 years, compared with the mean age of 56 for nonattenders. This suggests that age may not be as important a factor in attendance at CR as has been thought, but it supports the findings of others (Ades, Waldman, McCann, et al., 1992; Halm et al., 1999) that women with numerous comorbidities are less likely to attend. However, Thomas et al. (1996) reported that women who participate in CR are significantly older ($p < .001$) and have more hypertension ($p < .001$), diabetes ($p < .001$), and hyperlipidemia ($p < .001$), than do men who attend CR.

An important differentiation between attenders and nonattenders in this study emerged during the initial decision phase of our study. Although both groups identified their barriers to participation, the attenders readily sought help from healthcare personnel in overcoming their perceived barriers. In contrast, the nonattenders never discussed their perceived barriers with any healthcare professional. Because the attenders were better educated, it is possible that they were able to identify and express their perceived barriers more readily than were the less educated nonattenders. Although more research is needed, there is a need for health professionals, especially CR personnel, to explore reasons why people decline to attend CR and to develop solutions or alternatives.

A surprising finding of this study was the number of women who said they did not remember being offered CR. With sedatives capable of inducing retrograde amnesia, or sedatives that affect short-term memory (Schuster et al., 1999) coupled with the shorter stays in acute care facilities, patients may not remember whether CR was either offered or discussed. Future research should explore the effects of new sedatives and shortened length of stays on retention of health-related information by men and women.

It is disturbing that approximately 50% of the women were either not offered or did not remember being offered CR. Other researchers (Ades, Waldmann, McCann, et al., 1992; Lieberman et al., 1998) have reported that physician referral is the most statistically significant predictor of participation in CR, but little is known about the effect of women requesting to attend CR at the suggestion of CR personnel, family, or friends. The importance of discussing CR benefits with a healthcare professional is supported in this study, because 64% of the women who were offered or asked to attend decided to attend. However, the reasons why physicians deny CR to women who request it deserve further investigation.

The prime time for interventions to promote CR attendance is when women are still inpatients.

Because decisions to attend CR were usually made during hospitalization, interventions at this time are critical. One common intervention by CR personnel is to provide educational materials. However, our results indicate that this information was not influential with all women. Because women with more education attended CR, it is possible that reading materials may have helped convince them to attend. Future research should investigate the impact of CR educational material on women with different backgrounds to determine its usefulness. Another inexpensive intervention to increase the number of women attending CR is to ensure that healthcare professionals offer and/or refer women to it. CR personnel must develop creative, cost-effective strategies to ensure that the patient has the information needed to make informed health decisions after discharge from the acute hospital setting. These strategies may include developing a detailed, educational package tailored to the patient's level of education, making follow-up telephone calls to remind women who may have forgotten that they were offered CR, answering questions or identifying perceived barriers to CR participation. DeBusk et al. (1994) reported that telephone follow-up was an effective intervention in this population.

Women who did not attend CR easily identified barriers that influenced their attendance decisions. However, these barriers were not identified or explored by the healthcare providers and, consequently, the women had no help in developing plans to overcome them. It is possible that if barriers had been assessed during the initial contact period, plans could have been jointly devised to remove or diminish the perceived or actual barriers.

The need of some women to have the courage to visit or begin CR, or even to initiate other lifestyle changes, was also an interesting finding. Researchers have reported that depression has

a negative impact on decisions to enter CR (Ades, Waldmann, McCann, et al., 1992; Lavie, Milani, Cassidy, & Gilliland, 1999), but little is known about courage and other characteristics that may serve as precursors to initiating a structured exercise program or to initiating lifestyle changes. Perhaps these precursors are unique to older women who have not participated in exercise programs that employ high-tech exercise equipment. Further research is needed to identify such precursors as courage and determine whether they are influential only in an older population or in women of all ages. Our results indicate that an intervention, such as arranging for women who are inpatients to visit CR, could influence their decisions to participate in a program. Women who are participating in CR, and who had not previously used the exercise equipment, could be role models for the newcomers. They could share their experiences in learning how to use the equipment and in changing their lifestyles.

Importantly, all women who began CR continued their participation unless they experienced severe health problems, such as breast cancer. Because other researchers have reported women's dropout rates of up to 50% from CR programs (Cannistra et al., 1995), this finding may be unique to our sample. When our attenders encountered barriers, they immediately asked CR personnel for help in overcoming them. Thus, their confidence in CR staff's receptiveness may have been influential in their willingness to discuss their barriers. The literature supports the significance of CR personnel in facilitating continued attendance in CR (McSweeney, 1993; Moore, 1996).

In summary, results of this study indicate that the prime time for interventions to promote CR attendance is when women are still inpatients. Importantly, our results indicate that more women might attend CR if they were offered it, remembered being offered it, or were reminded about it after their discharge from the hospital. Appropriate interventions must be developed that capitalize on the most effective time to present information to post-Mi patients. Because the women decided while hospitalized not to attend CR, there is but a small window of opportunity to implement interventions. It is significant that all women who visited CR on a trial basis elected to participate. Therefore, having a patient visit CR before she is discharged may be one of the least expensive but most effective interventions for increasing participation in CR. However, important unanswered questions remain, such as why not all women were given the opportunity to attend CR. Did the women forget that they were offered CR, or were they not given the choice to attend? How much do comorbidities and caregiving responsibilities impact women's decisions to participate in CR? Research will help answer these questions, and provide the groundwork for programs aimed at increasing women's attendance in CR programs. Further research into why women do not attend CR is important. Effective strategies to increase women's enrollment in CR can be developed only after their reasons for nonattendance are further delineated.

Acknowledgments

This study was funded by the Arkansas Affiliate of the American Heart Association. The authors express appreciation to Arlene Sullivan, MNSc RN, and Beth Freyaldehoven, MNSc RN, for assistance with this research project.

References

- Ades, P.A., Huang, D., & Weaver, S.O. (1992). Cardiac rehabilitation participation predicts lower rehospitalization costs. *American Heart Journal*, 123, 916–921.
- Ades, P.A., Waldmann, M.L., McCann, W.J., & Weaver, S.O. (1992). Predictors of cardiac rehabilitation participation in older coronary patients. *Cardiac Rehabilitation*, 152, 1033–1035.
- Ades, P.A., Waldmann, M.L., Polk, D.M., & Coflesky, J.T. (1992). Referral patterns and exercise response in the rehabilitation of female coronary patients aged ≥ 62 years. *American Journal of Cardiology*, 69, 1422–1425.
- American Health Consultants. (1996). Pitch economic and marketing benefits to win OK for rehab program: Investment produces healthy patients, lower costs in long run. *Cost Management in Cardiac Care*, 1 (3), 26–30.
- American Heart Association. (1999). 2000 heart and stroke statistical update. Dallas: Author.
- Biggs, J., & Fleury, J. (1994). An exploration of perceived barriers to cardiovascular risk reduction. *Cardiovascular Nursing*, 30 (6), 41–46.
- Cannistra, L.B., Balady, G.J., O'Malley, C.J., Weiner, D.A., & Ryan, T.J. (1992). Comparison of the clinical profile and outcome of women and men in cardiac rehabilitation. *American Journal of Cardiology*, 69, 1274–1279.
- Cannistra, L.B., O'Malley, C.J., & Balady, G.J. (1995). Comparison of outcome of cardiac rehabilitation in black women and white women. *American Journal of Cardiology*, 75, 890–893.
- Conn, V.S., Taylor, S.G., & Casey, B. (1992). Cardiac rehabilitation program participation and outcomes after myocardial infarction. *Rehabilitation Nursing*, 17, 58–62.
- DeBusk, R.F., Miller, N.H., Superko, H.R., Dennis, C.A., Thomas, R.J., Lew, H.T., Berger, W.E., Heller, R.S., et al. (1994). A case-management system for coronary risk factor modification after acute myocardial infarction. *Annals of Internal Medicine*, 120, 721–729.

- Denzin, N.K., & Lincoln, Y.S. (1994). *Handbook of qualitative research*. London: Sage Publications.
- Digenio, A.G., & Joughin, H.M. (1997). Should all cardiac patients be offered the choice of cardiac rehabilitation?. *Cardiovascular Journal of Southern Africa*, 3, C136–C144.
- Halm, M., Penque, S., Doll, N., & Beahrs, M. (1999). Women and cardiac rehabilitation: Referral and compliance patterns. *Journal of Cardiovascular Nursing*, 13, 83–92.
- Lavie, C.J., & Milani, R.V. (1995). Effects of cardiac rehabilitation and exercise training on exercise capacity, coronary risk factors, behavioral characteristics, and quality of life in women. *American Journal of Cardiology*, 75, 340–343.
- Lavie, C.J., Milani, R.V., Cassidy, M.M., & Gilliland, Y.E. (1999). Effects of cardiac rehabilitation and exercise training programs in women with depression. *American Journal of Cardiology*, 83, 1480–1483.
- Lieberman, L., Meana, M., & Stewart, D. (1998). Cardiac rehabilitation: Gender differences in factors influencing participation. *Journal of Women's Health*, 7, 717–723.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. London: Sage Publications.
- Mazzeo, R.S., Cavanagh, P., Evans, W.J., Fiatarone, M., Hagberg, J., McAuley, E., & Starzell, J. (1998). Exercise and physical activity for older adults. *Medicine and Science in Sport and Exercise*, 30, 992–1008.
- McSweeney, J.C. (1993). Making behavior changes after a myocardial infarction. *Western Journal of Nursing Research*, 15, 441–455.
- McSweeney, J.C. (1998). Women's narratives: Evolving symptoms of myocardial infarction. *Journal of Women and Aging*, 10 (2), 67–83.
- McSweeney, J.C., & Crane, P.B. (2000). Challenging the rules: Women's prodromal and acute symptoms of myocardial infarction. *Research in Nursing & Health*, 23, 135–146.
- Moore, S. (1996). Women's views of cardiac rehabilitation programs. *Journal of Cardiopulmonary Rehabilitation*, 16, 123–129.
- Morse, J.M., & Field, P.A. (1995). *Qualitative research methods for health professionals* (2nd ed.). London: Sage Publications.
- National Heart, Lung, and Blood Institute Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. (1998, June). Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in

adults [Evidence report]. Bethesda, MD: National Institutes of Health. Retrieved November 30, 1999, from the World Wide Web: http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf.

O'Connor, G.T., Buring, J.E., Yusuf, S., Goldhaber, S.Z., Olmstead, E.M., Paffenbarger, R.S., & Hennekens, C.H. (1989). An overview of randomized trials of rehabilitation with exercise after myocardial infarction. *Circulation*, 80, 234–244.

Schuster, M.M., McCauley, K., Kutalek, S., Hessen, S.E., Marchlinski, F., & Baessler, C.A. (1999). Learning retention in patients receiving midazolam during permanent pacemaker implantation. *Journal of Cardiovascular Nursing*, 14, 27–34.

Seidel, J. (1988). *The Ethnograph computer program: (Version 3.0) [Computer software]*. Littleton, CO: Qualis Research Associates.

Sizer, F.S. & Whitney, E.N. (1994). *Nutrition: Concepts and controversies (6th ed.)*. New York: Wadsworth Publishing Co..

Spradley, J.P. (1979). *The ethnographic interview*. Philadelphia: Harcourt Brace Jovanovich College Publishers.

Thomas, R.J., Miller, N.H., Lamendola, C., Berra, K., Hedback, B., Durstine, J.L., & Haskell, W. (1996). National survey on gender differences in cardiac rehabilitation programs: Patient characteristics and enrollment patterns. *Journal of Cardiopulmonary Rehabilitation*, 16, 402–412.