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## Cardiac Rehabilitation: Gender Differences in Factors Influencing Participation

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### ABSTRACT

This study investigates gender differences in the barriers and incentives that are most influential in the coronary patient's decision to participate in cardiac rehabilitation programs (CRPs) and suggests strategies to counter these barriers. Patient surveys were administered to consecutive English-speaking attenders and referred nonattenders to a cardiac rehabilitation center at a university healthcare system in Toronto, Canada. A survey questionnaire, constructed from a literature review and advice from key informants, examined potential factors affecting decisions to engage in CRPs. One hundred twenty-nine attenders at a CRP and 61 referred nonattenders completed the questionnaire. Physician recommendation was reported to be the most important factor influencing both women's and men's decisions to participate in CRPs, followed by encouragement from family members. For women who had attended CRP, encouragement from their adult children was significantly more influential than it was for men. Attention to health promotion was also a significantly more powerful motivator for women than it was for men. For CRP nonattenders, concomitant illness, transportation problems, and inconvenient timing of the program were stated to be the three most important barriers to CRP participation in both sexes, although women rated concomitant illness as a significantly more powerful barrier than did men. The decision to participate in CRPs involves several factors, some of which are different or more important for women. As physician recommendations continue to be the single most important factor in motivating both men and women to attend, strengthened and increased physician endorsement will likely encourage higher levels of participation in CRPs. For women, permission should be sought to discuss the advantages of CRPs with adult children who are apparently influential in the decision. As women nonattenders are more concerned than men about the effects of concomitant illnesses, reassurance should be provided about customized programs and exercise targets that consider the needs and limitations of individuals with other health conditions.

### INTRODUCTION

CARDIOVASCULAR DISEASE, particularly coronary artery disease (CAD), is the leading cause of death among women in the United States<sup>1,2</sup> and accounts for 37% of deaths in all

women and over 50% of deaths in postmenopausal women.<sup>3</sup> The age-adjusted mortality rate for CAD in white women is four times higher and in black women is six times higher than the mortality rate for breast cancer.<sup>4</sup> Although the onset of CAD in women is

typically 10 years later than in men, women's mortality and morbidity rates after a myocardial infarction (MI) are twice as high.<sup>5-7</sup> Women are also more likely to experience reinfarction,<sup>7</sup> are twice as likely as men to die within the first few weeks, and are more likely to die within the first year after the initial MI.<sup>8</sup>

Benefits of participating in cardiac rehabilitation programs (CRPs) include decreased morbidity and mortality,<sup>9</sup> increased confidence, improvement in physical condition and quality of life, and an opportunity to have other problems noted and monitored.<sup>10</sup> A meta-analysis of cardiac rehabilitation trials suggested that there may be as much as a 25% reduction in fatal events during the first 3.5 years after an MI, a reduction similar to that reported in trials of beta blockade after MI.<sup>9</sup> Other investigators<sup>11</sup> have noted that after rehabilitation, both men and women improved in exercise capacity, percent of body fat, body mass index (BMI), lipid profiles, behavioral characteristics, and overall quality of life. As the ultimate goal of cardiac rehabilitation is a return of individuals to their normal roles in society,<sup>12</sup> CRPs are increasingly considered an integral part of the recovery process.

Although the physical and psychologic benefits of cardiac rehabilitation are well substantiated, only a small percentage of cardiac patients engage in CRPs or complete CRP programs.<sup>13-16</sup> Wenger<sup>13</sup> concluded that no more than 6% of male and female MI survivors received formal rehabilitation services. Oldridge<sup>14</sup> reported that 40%–50% of patients drop out of programs within 6–12 months of referral. Previous research has found that women are less likely to enroll in cardiac rehabilitation, have higher hospital readmission rates, are less compliant, are older at the time of MI, and have fewer social supports after infarction.<sup>10</sup> Ades et al.<sup>17</sup> demonstrated that women are not referred to programs as often as men, and even when they are referred, they are not as strongly encouraged to enter these programs. Despite poorer compliance than males, female patients benefit equally from exercise rehabilitation.<sup>18</sup> It is a concern that despite well-substantiated positive outcomes, CRPs are an extremely underused resource, especially by women. It is not clear why women are not using these services, which have been

shown repeatedly to improve their health, function, and quality of life.

Although others have attempted to identify the barriers and incentives that influence participation rates in CRPs, much of this literature has been speculative, and few researchers have asked patients with ischemic heart disease directly which factors most strongly influenced their choice. Variables, such as age, gender, social support, competing family responsibilities, reason for referral, and program affordability, coverage, and accessibility, have all been suggested as possible factors.<sup>17-22</sup> However, little empirical support exists for these factors. Gaining a clearer understanding of the barriers and incentives to CRPs may be an important first step in increasing participation rates, especially for women. This information will help physicians and other healthcare providers tailor their treatment and counseling efforts to address specific patient concerns when making cardiac rehabilitation referrals.

This study investigates the most important factors influencing patients' decisions to engage in CRPs, investigates gender differences in this decision, and suggests strategies to overcoming these barriers.

## PATIENTS AND METHODS

### *Study population*

The target population included post-MI and post-coronary artery bypass graft (CABG) patients who were referred by their family physicians, cardiologists, or cardiac surgeons to a hospital-based CRP at a quaternary care teaching hospital in downtown Toronto, Canada. This hospital has the largest coronary intensive care unit and CABG program in Canada and is a referral center for patients in the surrounding area. As Canada has universal access to healthcare services covered by the government, the CRP at this hospital was offered to all patients for whom CRP was indicated. CRP referrals made to local centers that were more convenient for the patient were excluded from the study. The study population consisted of two groups, consecutive attenders and referred nonattenders at the CRP. Attenders included

129 ischemic heart disease (IHD) patients (86 men and 43 women) who were currently participating in the CRP, and nonattenders were 61 IHD patients (30 men and 31 women) who were recently referred to the CRP but did not participate. Nonattenders included patients who dropped out after their initial sessions as well as patients who failed to attend after the initial referral. Patients who could not understand the questionnaire because of language barriers were excluded.

#### *Procedure*

As no validated measure was found in the literature, a questionnaire was developed for the purpose of this study. The questionnaire catalogued potential influencing factors culled from the literature and from key patient and healthcare informants. The questionnaire cataloguing hypothesized factors influencing the decision to participate in the CRP was distributed to attenders at the rehabilitation clinic and administered to nonattenders over the telephone. The questionnaire asked participants to rate the extent to which each of a number of different factors had influenced their decision to participate in CRP by rating each factor on a 10-point Likert-type scale, ranging from "not at all influential" to "extremely influential." Pilot testing was conducted, and changes were made to the questionnaire based on the comprehensibility of the survey. The final factors participants were asked to rate included physician recommendation, attention to health promotion, financial considerations, partner encouragement, adult children encouragement, friend encouragement, program duration, transportation problems, family obligations, concomitant medical illnesses, guilt about taking time away from the family, and inconvenience. The institutional ethics committee approved the survey, and we obtained written consent from participating subjects. The questionnaire also included a program evaluation section for the attenders, as well as demographic questions for both groups.

CRP attenders were approached by the principal investigator and asked if they could take some time out from their program to complete the questionnaire, which took approximately 30 minutes. CRP nonattenders were tele-

phoned by the principal investigator, and their verbal consent was obtained over the telephone. The questionnaire was then administered verbally, and responses given by subjects were recorded by the investigator.

#### *Statistics*

Analyses were completed using the SPSS/PC+ (version 6.1 for Windows) statistical package. Frequency analyses were performed to examine CRP attender and nonattender demographic characteristics. Categorical data were reported as percentages and analyzed using  $\chi^2$  statistics. Continuous data were reported as means (with standard deviations) and analyzed using unpaired two-tailed *t*-tests.

## RESULTS

#### *Response rate*

All CRP attenders approached ( $n = 129$ ) completed the survey. In the nonattender group ( $n = 61$ ), 82% of those contacted by telephone agreed to participate in the study. Less than 1% of the patients could not complete the questionnaire because of language barriers.

#### *Demographics for CRP attenders and nonattenders*

The majority of both CRP attenders and nonattenders were married/cohabiting, retired, and well educated (Table 1). In the CRP attender sample, no significant gender differences were found for any of the demographic variables, including age. In the CRC nonattender sample, significant gender differences were found only for employment status. That is, female nonattenders were more likely than men to be retired [ $\chi^2 = (1, n = 61) = 5.97, p < 0.01$ ]. However, employment status did not have a significant pattern or relation to any of the dependent variables.

#### *Factors influencing participation in CRPs*

The means of factors influencing men and women in their decision to participate in CRPs are presented in Table 2. Both men and women attenders ranked their physician's recommen-

TABLE 1. DEMOGRAPHICS OF CRP ATTENDERS AND NONATTENDERS, BY GENDER

| Characteristic  | Attenders                |            | Nonattenders             |                          |
|---|--------------------------|------------|--------------------------|--------------------------|
|   | Males                    | Females    | Males                    | Females                  |
| Sample size   | 86 (67%)                 | 43 (33%)   | 30 (49%)                 | 31 (51%)                 |
| Age (years)   | 62.9 ± 11.7 <sup>a</sup> | 63.3 ± 9.9 | 60.7 ± 11.6              | 66.5 ± 13.5              |
| Marital status  |                          |            |                          |                          |
| Married/cohabiting  | 53 (62%)                 | 23 (53%)   | 19 (63%)                 | 16 (52%)                 |
| No current partner<br>(separated, divorced,<br>widowed, single) | 30 (35%)                 | 16 (37%)   | 10 (33%)                 | 15 (48%)                 |
| Annual household income   |                          |            |                          |                          |
| Below 20,000  | 14 (16%)                 | 10 (23%)   | Over 10%<br>missing data | Over 10%<br>missing data |
| 20–40,000   | 21 (24%)                 | 9 (21%)    |                          |                          |
| 40–60,000   | 14 (16%)                 | 6 (14%)    |                          |                          |
| 60–80,000   | 19 (22%)                 | 7 (16%)    |                          |                          |
| Highest education completed                                     |                          |            |                          |                          |
| Elementary school   | 14 (16%)                 | 4 (9%)     | 3 (10%)                  | 7 (23%)                  |
| High school   | 29 (34%)                 | 17 (40%)   | 7 (23%)                  | 13 (42%)                 |
| College/university  | 23 (27%)                 | 11 (26%)   | 15 (50%)                 | 6 (19%)                  |
| Postgraduate studies  | 15 (17%)                 | 6 (14%)    | 4 (13%)                  | 5 (16%)                  |
| Employment status   |                          |            |                          |                          |
| Employed  | 24 (28%)                 | 7 (16%)    | 11 (37%)                 | 5 (16%)                  |
| Unemployed  | 5 (6%)                   | 4 (9%)     | 1 (3%)                   | 0                        |
| Retired   | 48 (56%)                 | 20 (46%)   | 12 (40%)                 | 20 (65%)*                |
| On disability   | 7 (8%)                   | 8 (19%)    | 5 (17%)                  | 2 (6%)                   |
| Homemaker   | 0                        | 1 (2%)     | 0                        | 4 (13%)                  |

<sup>a</sup>Mean ± SD.

\* $p < 0.1$ .

dation as the most important influencing factor and financial concerns as their least important influencing factor. However, there were significant gender differences in the extent to which encouragement from adult children and attention to health promotion were factors in the decision to participate in CRP. Women rated encouragement by their adult children [ $t(66) = -3.33, p < 0.0001$ ] and attention to health promotion [ $t(73) = -2.75, p < 0.008$ ] as more influential in their decision to participate than did men.

#### Factors influencing nonparticipation in CRPs

The means of barriers to CRP participation for men and women are presented in Table 3. Overall, the CRP nonattenders rated concomitant medical illnesses, transportation problems, and inconvenient timing of the program as the three most important factors influencing their decision not to participate in the CRP. Gender differences in the rating of barriers influencing the decision not to participate were found for concomitant illnesses. Concern about the exis-

tence of a concomitant medical illness was significantly more important in women's decision not to participate than in men's decision not to participate [ $t(50) = -2.33, p < 0.024$ ].

## DISCUSSION

The findings of this study provide important practice considerations for physicians caring for coronary patients. Both men and women in this study indicated that their physician's recommendation was the primary determinant in their decision to participate in CRPs. Recommendations from physicians regarding health behavior have been shown to be strong motivators for patient health behavior change. Even behavior as resistant to change as cigarette smoking or exercise uptake is affected by brief physician recommendations and interventions.<sup>23,24</sup> This study contributes further evidence of the critical role that physicians play in encouraging their patients to make lifestyle changes, including participation in CRPs. It is

TABLE 2. FACTORS INFLUENCING DECISIONS TO PARTICIPATE IN CRP, BY GENDER ( $n = 129$ )

| Influencing factors           | Male ( $n = 86$ )      | Female ( $n = 43$ ) |
|-------------------------------|------------------------|---------------------|
| Physician                     | 8.2 ± 2.1 <sup>a</sup> | 7.2 ± 3.0           |
| Partner                       | 5.8 ± 3.5              | 4.7 ± 3.9           |
| Attention to health promotion | 4.4 ± 3.5              | 6.3 ± 3.6*          |
| Program duration              | 4.1 ± 3.6              | 4.0 ± 3.6           |
| Children                      | 4.1 ± 3.7              | 6.6 ± 3.7**         |
| Friends                       | 3.5 ± 3.3              | 4.3 ± 3.5           |
| Financial concerns            | 2.4 ± 2.5              | 3.2 ± 3.3           |

<sup>a</sup>Mean ± SD.\* $p < 0.01$ .\*\* $p < 0.0001$ .

a role that cannot be underestimated and needs to be optimized.

Encouragement from adult children was significantly more influential in women's decisions to engage in CRP than it was for men, and both men and women rated encouragement from partners as important. This suggests that increasing family involvement in treatment and education about CAD and about the benefits of CRP after surgery or after MI may serve to enhance women's participation rates. Physicians can play an important role in involving family members in the treatment plan by suggesting that patients invite family to at least one post-MI or post-CABG appointment where the positive effects of participating in CRP are emphasized. In addition, physicians or the appropriate allied health staff could organize information pamphlets or support groups for the family members of patients with heart disease. Initiation of these measures for spouses and adult children of CAD patients would reinforce the importance of their role in the rehabilitation process, would enable practitioners to highlight the beneficial effects of CRP, and would normalize the adjustments that both patients and their caregivers may experience.

Considering that women were significantly more influenced by their adult children than were men, this study also suggests that men and women rely on different support networks when making decisions about engaging in CRP. Men seem to rely more on their spouses' opinions, whereas women tend to rely more on

TABLE 3. FACTORS INFLUENCING DECISIONS NOT TO PARTICIPATE IN CRP, BY GENDER ( $n = 61$ )

| Influencing factors              | Male ( $n = 30$ )      | Female ( $n = 31$ ) |
|----------------------------------|------------------------|---------------------|
| Transportation problems          | 3.3 ± 3.9 <sup>a</sup> | 2.9 ± 3.3           |
| Concomitant illnesses            | 2.7 ± 3.4              | 4.9 ± 4.0*          |
| Inconvenient time                | 1.9 ± 2.6              | 2.1 ± 2.9           |
| Program duration                 | 1.6 ± 2.0              | 1.0 ± 2.3           |
| Financial reasons                | 1.5 ± 1.9              | 1.2 ± 1.3           |
| Friends, children, partner       | 1.2 ± 1.1              | 1.0 ± 0.0           |
| Guilt about less time for family | 1.0 ± 0.2              | 1.6 ± 2.3           |

<sup>a</sup>Mean ± SD.\* $p < 0.5$ .

their adult children's opinions. This result is consistent with reports of previous researchers, who found that a larger proportion of daughters accompanied their mothers to appointments after angiopathy, whereas men were more often accompanied by their spouse.<sup>25</sup> One explanation for this difference is that women tend to outlive their mates and, therefore, are more likely to live alone and may have limited social supports. Alternatively, women may be more likely to be swayed by the advice of their adult children, feeling that they are more knowledgeable about health than their elderly husbands. As men tend to rely on women to arrange their healthcare throughout their lives, this pattern may simply extend to attendance at CRPs. Therefore, physicians may need to employ different strategies in efforts to enhance CRP adherence in men and women.

Although both male and female nonattenders ranked concomitant medical illnesses as an important barrier to their participation in a CRP, females ranked this higher than did men. This may well reflect the finding of other investigators who noted that women have more advanced cardiac disease and have more concurrent medical illness.<sup>13</sup> This is usually attributed to that fact that the onset of CAD is usually 10 years later in women than in men.<sup>5-7</sup> There was, however, no age difference found in this study between men and women. Women who did not participate in the CRP were more likely than men to rate concomitant illness as a barrier, despite the lack of age difference between genders in this sample. Per-

haps younger women with CAD are also more likely than men with CAD to have other illnesses, or perhaps the gender difference found truly refers to the extent to which this factor influenced decisions in women versus men, even when concomitant illnesses were present in both sexes.

In any case, noncompliance because of coexisting medical illness is clearly an issue that needs to be addressed by physicians. Individualized exercise programs and goals should be considered for women with concomitant illnesses to alleviate any fears or misconceptions they may have about the exercises they will be expected to perform. Programs should be modified so that the intensity level and pace are customized to meet the needs of women who may be intimidated by the level of training. If physicians provide written CRP materials detailing the components of the program and address patients' fears about safety, consideration of other illnesses, and fitness expectations, women may be more likely to consider attendance at CRPs as an option.

Previous research indicated that feeling guilty about having less time for family responsibilities was an important barrier contributing to a woman's decision not to participate in a CRP.<sup>12</sup> The current study did not support these findings, as this factor was not reported to be an important barrier to participation for either men or women, and no significant differences were found between males and females. Possible explanations include the large percentage of retired or widowed patients in our study.

Inconvenience has been stated by patients as a factor in poor compliance with cardiac rehabilitation in the present study and in others.<sup>19,26</sup> The term "inconvenience" includes lack of transportation, cost of parking, distance from site, or not having a driver's license. Although these issues may seem to be outside the realm of medicine, physicians could take the lead in advocating for easier access to programs that meet the needs of their coronary patients. Easier access may include increasing available transportation to the CRP site and promoting the development of CRP through television and home computers.

Limitations of the present study include the

relatively small sample size and the specialized setting at the universal access healthcare system. These may limit generalizability to other groups. Nonattenders may have felt a need to rationalize or disguise their reasons for nonadherence to CRPs or may have been subject to retrospective bias. Also, given that there were no existing standardized measures to investigate factors influencing decision making in CAD, the questionnaire used in this study was developed specifically for this project and does not have established reliability and validity. It is also possible that the difference in the mode of delivery of questionnaires for attenders (written) and nonattenders (verbal) may have caused either group to feel less free to fully disclose their opinions.

## CONCLUSIONS

As physician recommendation was confirmed in this study to be the most powerful factor in affecting CRP attendance for all patients, enthusiastic advocacy should be provided by healthcare providers to patients who are candidates for CRP. In addition, involvement of family, especially adult children of women patients, in the education about the benefits of CRP may increase women's adherence. As women reported more nonadherence to CRPs because of concerns about concomitant illnesses than did men, discussion of programs and exercise goals customized to the needs and limitations of other health conditions may reassure women and increase their participation. In view of the proven benefits of CRPs in reducing cardiac morbidity and mortality, attention to these barriers and incentives may decrease the high nonadherence and early dropout rate that continues to be widely reported for female patients.

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