

**Sex and gender-related factors associated with cardiac rehabilitation enrolment: a  
secondary analysis among systematically referred patients**

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## Sex and Gender-Related Factors Associated with Cardiac Rehabilitation Enrolment

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## Structured Abstract

**Purpose:** To assess sex and gender-related factors associated with cardiac rehabilitation enrolment following an ACS among systematically referred patients.

**Methods:** This secondary analysis of the TRANSIT-UC randomized controlled trial used an exploratory approach. The present analysis examined the relationship between sex and gender-related factors and CR enrolment in systematically referred women (n = 35) and men (n = 207). We performed chi-squared and logistic regression analyses to identify statistically significant results. Using the Bonferroni method, a *p* value equal or inferior to 0.002 was considered a significant statistical result. A raw difference of 15% or more between enrolled and non-enrolled participants was considered a difference worthy of further investigation.

**Results:** Men who were regularly practicing physical activity prior to their hospitalization and who lived near the CR center showed a statistically higher CR enrolment rate. In women and in men, a radial entry site for percutaneous coronary intervention resulted in a clinically significant difference in favor of CR enrolment. In women, three sex-related variables and nine gender-related variables were associated with a difference of 15% or more between enrolled and non-enrolled participants.

**Conclusion:** Factors related to CR enrolment in women and in men are suggested. As women keep showing a lower rate of CR enrolment, the investigation of these factors in a larger sample of patients may hold valuable insights to improve CR enrolment.

## Condensed Abstract

The aim of this study is to identify sex and gender-related factors associated with cardiac rehabilitation (CR) enrolment. The regular practice of activity in men and psychosocial factors in women are both suggested as being related to CR enrolment. The findings should be investigated in a larger sample of patients.

**Trial registry name:** International Standard Registered Clinical/Social study Number  
URL: <http://www.isrctn.com/ISRCTN95784143>; Registration number: ISRCTN95784143

**Keywords:** Cardiac rehabilitation, acute coronary syndrome, heart diseases, gender identity, sex characteristics, secondary prevention

## Introduction

Survival rates following an acute coronary syndrome (ACS) have steadily increased in the last decades due to advances in medical care.<sup>1</sup> These therapeutic advances have been accompanied by an emphasis on secondary prevention measures, such as cardiac rehabilitation (CR) programs.<sup>2</sup> CR aims to address the underlying risk factors associated with cardiovascular diseases, such as inactivity, smoking, and an unhealthy diet.<sup>3</sup> These programs have been shown to be cost-effective, to improve quality of life, to reduce modifiable risk factors and mortality, and to prevent unplanned cardiac-related readmissions.<sup>4, 5</sup> Despite these benefits, less than half of eligible patients enroll in CR.<sup>6</sup> In both women and men, contextual factors such as transportation, distance from home to the CR center, and systematic referrals are strongly associated with CR enrolment.<sup>7</sup> A recent meta-analysis underlined significant sex disparities in CR enrolment, observing a lower rate in women than in men (39 vs 45%,  $p < 0.001$ ).<sup>6</sup>

That difference in CR enrolment between women and men could be explained by sex and gender-related factors. Sex-related factors include biological, physiological and illness-related characteristics.<sup>8</sup> For example, women are generally older than men when suffering from an ACS, and age is associated with more comorbidities such as diabetes, hypertension, and frailties, which can act as barrier to CR participation.<sup>9, 10</sup> Additionally, physiological factors, such as smaller vessel size in women, may result in more femoral rather than radial access for catheterization.<sup>11, 12</sup> Femoral access asks for slightly longer delay for strenuous activity, in contrast to radial access, and may be seen as a barrier to performing activity after an ACS.<sup>13</sup> Gender-related factors are socio-cultural constructs involving one's self-perceived role, identity, and expression.<sup>8</sup> For instance, women's concerns about the burden that CR may pose on their family life, and lack of perceived encouragement and social support, are negatively associated with CR enrolment.<sup>14</sup> There are also known differences in the way women and men perceive their illness and how they comply with medical treatment recommendations.<sup>15</sup> Therefore, both sex and gender-related factors may influence CR enrolment.<sup>16</sup>

Previously, the TRANSIT-UC randomized controlled trial (RCT) found a significantly higher CR enrolment rate among participants ( $n=35$  women, 207 men) randomized to a nursing intervention (experimental group, EG) aimed at improving enrolment compared to those in a control group (CG) (45 vs 24%,  $p < 0.001$ ).<sup>16</sup> All participants received a systematic referral to the CR center, but only those in the EG received a personalized nursing intervention. The intervention, based on Leventhal's self-regulation theory<sup>17</sup>, addressed illness perception and consisted of three encounters delivered face-to-face or via telephone. Although the RCT was not powered to conduct women versus men sub-group analysis, descriptive data showed that 46% of the EG men entered CR compared to only 22% of the CG men, whereas enrolment rates were similar for women in both EG and CG (39 vs 42%, respectively).<sup>18</sup> Thus, the personalized nursing intervention may have had a strong positive effect in men to favor CR enrolment, but not in women. It may be possible that barriers to CR enrolment in women were not addressed by the personalized nursing intervention. For instance, a strong desire to resume a "normal life", a perception that CR programs are not adapted to women needs, and a conflicted schedule with domestic responsibilities are all known barriers to CR enrolment in women.<sup>14</sup>

An aspect that makes TRANSIT-UC different from current literature is the fact that all participants from the study received systematic referral, a factor known to increase CR enrolment.<sup>6</sup> Therefore, the TRANSIT-UC data was an opportunity to assess gender and sex-related factors associated with CR enrolment, in a context of systematic referral. As the offering CR programs and enrollment rates context has remained unchanged in the last few years<sup>6</sup>, using

the TRANSIT-UC data was considered appropriate. Therefore, the aim of the present study was to assess sex and gender-related factors associated with cardiac rehabilitation enrolment following an ACS among systematically referred patients.<sup>16</sup> Results from these secondary analyses will inform future studies. We followed the sex and gender-based analysis (SGBA) approach, as proposed by the Canadian Institutes for Health Research, to examine factors specific to both women and men in CR enrolment. The SGBA approach aims to examine health determinants and identify risk factors sensitive to individuals' sex and gender.<sup>8</sup> As such, variables collected in the original trial were categorized as either sex (i.e. biological attributes) or gender-related factors (i.e. behaviors, perceptions, and roles).

### **Methods**

#### **Study design and setting**

This secondary analysis of the TRANSIT-UC RCT used an exploratory approach.<sup>16</sup> The study took place at the Montreal Heart Institute (MHI), with enrolment occurring between October 3, 2006, and September 30, 2009. The study was approved by the center IRB (06-854) and registered (ISRCTN95784143). All participants provided informed written consent. The study was conducted in accordance with the ethical standards described in the Helsinki Declaration. All patients were referred to the MHI's CR center, located at a 5-minute walk from the MHI, free of charge. The usual CR program includes a physical activity component, counseling, and monitoring by an interdisciplinary team.

#### **Participants**

All participants from the RCT were included in this secondary analysis. The RCT was conducted among adult patients hospitalized with a diagnosis of ACS at the coronary care unit of the MHI. These patients had to be discharged directly to their home, have the physical and cognitive capacities to answer a written questionnaire and to communicate by telephone, and be able to communicate in French or in English. Exclusion criteria were the following: awaiting coronary artery bypass graft (due to the different clinical pathway); being hospitalized for longer than seven days (which would be indicative of a worse clinical state); receiving or being referred to regular outpatient follow-up (e.g., heart failure specialized clinics); self-reported transportation issues that precluded travel to the CR center; self-reported psychological problems (e.g., illicit drug use, severe anxiety), diagnosed cognitive problems (e.g., dementia), and having previously completed a CR program.

Because referral is a strong factor associated with CR enrolment, it was mandatory that all patients in both groups were referred to the CR center before discharge to avoid potential referral bias. The CR staff also phoned all study patients to invite them to enroll.

#### **Variables**

For this secondary analysis, all variables were treated as categorical in order to facilitate the interpretation of the results. The main outcome was enrolment in the CR program recorded in the hospital database and defined as having attended at least one CR session within 6 weeks of discharge. Two major sets of factors were examined: sex and gender-related. Contextual factors related to accessibility issues were also examined.

Sex-related factors included age, cardiac antecedents, diabetes mellitus, body mass index, hypertension, dyslipidemia, family history of cardiac diseases, creatinine clearance, diagnosis on

admission, percutaneous coronary intervention (PCI) during hospitalization, PCI entry site, and length of hospital stay.

Gender-related factors included education level, working status, smoking status, living with someone, regular practice of exercise before hospitalization, illness representations, family support, and anxiety.

Regarding context-related factors, patients' distance from home to the CR center and their driving status were examined as accessibility indicators. Distance was dichotomized as either living on the Island of Montreal (where the CR center is located) or not, because accessing Montreal via a bridge could have been an issue.

### **Data collection**

Clinical data were collected in the medical file during hospitalization. Sociodemographic data not available in the medical file were self-reported by the patient before discharge. All data were compiled by the study staff. A second independent data entry for the main outcome was also performed by the Montreal Heart Innovations Coordinating Center (<http://www.mhicc.org>) to ensure data integrity.

Three factors were measured using questionnaires at hospital discharge: illness representations, family support, and anxiety. Scores on these three factors were dichotomized as above or below the median observed in the total sample to simplify the clinical interpretation of the scores.

Illness representations were assessed using the 38-item Revised Illness Perception Questionnaire (IPQ-R).<sup>19</sup> The total score for each subscale varies depending on the number of items; each individual item has a value ranging from one to five. Higher scores on each dimension indicate that patients perceive the illness as more chronic than acute (seven items), report more negative consequences in their daily (six items), more control over their treatment (13 items), more personal control (12 items), have a better understanding of their illness (nine items), perceive the illness as more cyclic than stable (four items), and report more negative consequences of the illness (six items). Reliability of the scale is reported by Moss-Morris et al. with alpha coefficient ranging from .79 for the stable/cyclic dimension to .89 for the acute/chronic dimension.<sup>19</sup>

Anxiety was assessed using the 20-item state portion of the State-Trait Anxiety Inventory (STAI).<sup>20, 21</sup> The total score can vary from 20 to 80, a higher score being indicative of more severe anxiety. Reliability of the scale is reported by Spielberg with an alpha coefficient of .93.<sup>22</sup>

Patients' perceptions of the support provided by their family concerning their health situation were assessed using the 14-item Family Care Climate Questionnaire Patient version.<sup>23</sup> The total score can vary from 14 to 70, a higher score being indicative of a higher perception of support. Reliability of the scale is reported by Clark and Dunbar with an alpha coefficient of .89.<sup>23</sup>

### **Sample size and statistical methods**

The sample size was calculated for the initial trial.<sup>16</sup> No power calculations were performed for the present analysis.

Descriptive results for all factors are presented as frequencies with percentages. Comparisons between women and men were performed using chi-square statistics. We examined bivariate relationships between each factor and CR enrolment in women and men. While a raw difference of more than 15% between enrolled and non-enrolled participants was considered

important in CR enrolment, we performed chi-squared and logistic regression analyses to identify statistically significant results. We tested the interactions between each factor and women vs men CR enrolment using logistic regressions. Because the present analysis deals with data collected during an RCT, which showed a significant effect of the intervention to increase CR enrolment, interaction analysis included the variable “group” (either EG or CG) as a control variable, followed by the variable and the interaction between the variable and women/men.

As multiple statistical tests were performed, we employed the Bonferroni method to counteract the issue of the familywise error rate. As a  $p$  value of 0.05 or less was to be initially considered a statistically significant result, following adjustment for multiple testing, a  $p$  value equal or inferior to 0.002 was retained as a statistically significant result. SPSS 23.0 (IBM, Chicago, USA) was used to perform the analysis.

### Results

This secondary analysis included all 35 women and 207 men enrolled in the original trial (mean age 58.4, standard deviation [SD] 10.0) who returned home after an ACS (23.6% STEMI). There were no missing data on CR enrolment. Missing data on factors are reported in detail in the Tables. As shown in Table 1, men more often had a family history of cardiovascular diseases than women.

Factors associated with CR enrolment are presented in Table 2. Statistically significant results were observed in men only and regarding one gender-related and one contextual factor. As such, the regular practice of activity prior to hospitalization and living near the CR center were both identified as statistically associated with CR enrollment in men only.

An important difference was observed both in women and in men for one sex-related factor: a radial entry site or no PCI (versus a femoral entry site). Important differences were identified in women for three sex-related factors: age  $\geq 65$  years, diabetes, and dyslipidemia; for nine gender-related factors: higher education level, not smoking, not living with someone, perceived control over the treatment, perceived personal control, a clear understanding of the illness, less negative emotional representation, strong family support, and low anxiety levels; and the two contextual factors: living near the CR center and driving a car.

### Discussion

The aim of this study was to assess sex and gender-related factors associated with CR enrolment following an ACS among systematically referred patients.

Results regarding the possible role of physical activity before a cardiac event are in line with the results reported in a recent study that identified the perceived ability to perform physical activities as a significant driver to enroll in CR.<sup>24</sup> It may therefore be possible that men who were already regularly performing physical activity had less concerns about their ability in realizing the group-based exercises of the CR program. However, the same hypothesis doesn't seem to apply in women as no differences in CR enrolment were found between those who exercised regularly and those who did not. As reported by Clark et al in their literature review, it is possible that the preference of women for women-only programs or exercises that do not necessitate any form of equipment may have played a stronger role in their decision to enroll in the CR program.<sup>14</sup>

Living near the CR center was statistically associated with CR enrolment in men and came out as an important difference in women. Distance and transportation issues have been correlated negatively with CR enrolment numerous times.<sup>24-26</sup> Rouleau et al. mention that

transportation issues can delay the enrolment in CR as the cardiac event sometimes hampers the ability to drive a car for a few weeks following their hospitalization.<sup>24</sup> As enrollment in the original trial was defined as attending at least one session of the CR program in the first six weeks following discharge, it was possible for patients to decide to enroll afterwards. The 6-week period was chosen as early appointments after discharge have been positively associated with CR enrolment. It is hypothesized that the motivation related to the urgency of having been diagnosed with a serious illness, which can be a driver in enrolling and attending CR, may dissipate after some time.<sup>27, 28</sup>

Our findings suggest that low levels of anxiety and negative emotional representation of the illness might be associated with a higher CR enrolment rate in women but not in men. Although these results need to be further explored in a larger study, our results are in line with those reported by Yohannes et al. who found that women who completed CR programs were less anxious than non-completers. However, this difference was not observed in men.<sup>21</sup> As for the emotional representation of the illness, the dual role of individuals' negative psychological responses has been underlined in the literature as it may lead either to avoidance or to taking actions.<sup>24</sup> It could be hypothesized that women's strong sense of control over their illness may have led them to take actions and to enroll in CR. In a review of the association between illness perceptions and attendance in CR programs, illness coherence and a strong sense of control were both positively associated with CR attendance in women and in men.<sup>29</sup>

Another clinically important difference in women that merits further investigation is older age, which favored CR enrolment. This result differs from reported observations in a recent systematic review as older age was reported to be a barrier to CR enrolment in both women and in men.<sup>26</sup> The authors of this systematic review hypothesize that a lower cardiologist referral rate among older patients and accessibility issues in this age group could help explain poorer enrolment. As all the patients included in the original trial were systematically referred to CR, it could serve as an explanation as to why we obtained a higher rate. However, our sample did not allow exploration of a cut off other than 65 years. As a different cutoff could result in different patterns of CR enrolment, it should be further explored in future studies. Considering this and in line with previous findings indicating that domestic and family responsibilities are negatively correlated with CR enrolment in women, more free time in older-aged women compared to their younger counterpart may serve as an explanation.<sup>14</sup> Strong family support and not living with someone were both identified in the present study as a clinically important difference in women. This could hint at either receiving enough support to perform domestic activities or lighter household activities. Nonetheless, the positive influence of family in improving CR enrolment has also previously been underlined.<sup>24</sup>

A limitation of this study includes a small sample of women, which precluded performing a multivariate analysis, and increased the possibility of a type 2 error. Therefore, we considered both the raw differences in CR enrolment rates and the Bonferroni corrected *p* value as indicators of a relationship between the factor and CR enrolment. Furthermore, in the original trial, patients undergoing surgery were not retained due to their different clinical pathway and barriers to CR enrolment (e.g., scar pain). It is obvious that CR is also beneficial for these patients in reducing mortality and should be encouraged.<sup>30</sup> Results obtained from this secondary analysis may thus not be transferable to the surgical population.

## Conclusion

Previous studies and reviews have identified factors related to CR enrolment in the overall population of cardiac patients.<sup>26, 31, 32</sup> Our study adds to the current body of literature by suggesting factors specific to women and men. Such factors include the regular practice of activity in men and the impact of psychosocial factors in women. As the latter keep showing a lower rate of enrolment compared to their male counterpart and as novel approaches to CR, such as gender-tailored CR programs, are being developed, the investigation of the factors suggested to have a clinical importance in a larger sample of patients may hold valuable insights to improve CR enrolment in women and in men.<sup>6, 33</sup>

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**Table 1. Comparison between women and men regarding sex-, gender-, and context-related factors.**

|                                                                  | Women<br>(n=35)       | Men<br>(n=207)         | p-value |
|------------------------------------------------------------------|-----------------------|------------------------|---------|
| Enrolled in cardiac rehabilitation within six weeks of discharge | 14 (40)               | 69 (33)                | 0.44    |
| Sex-related factors                                              |                       |                        |         |
| Age > 65 years                                                   | 10 (29)               | 54 (26)                | 0.76    |
| Any cardiac antecedents                                          | 11 (31)               | 98 (47)†               | 0.080   |
| Diabetes mellitus                                                | 7 (20)                | 50 (24)                | 0.59    |
| Body mass index $\geq 30$ kg/m <sup>2</sup>                      | 14 (47) <sup>a</sup>  | 76 (43) <sup>b</sup>   | 0.72    |
| Hypertension                                                     | 25 (71)               | 124 (60)               | 0.20    |
| Dyslipidemia                                                     | 28 (80)               | 166 (80)               | 0.98    |
| Family history of cardiovascular diseases                        | 23 (66)†              | 71 (34)                | <0.001  |
| Creatinine clearance < 60 ml/min                                 | 6 (19) <sup>c</sup>   | 22 (12) <sup>d</sup>   | 0.25    |
| Diagnosis on admission                                           |                       |                        | 0.40    |
| STEMI                                                            | 7 (20)                | 50 (24)                |         |
| Non-STEMI                                                        | 16 (46)               | 70 (34)                |         |
| Unstable angina                                                  | 12 (34)               | 87 (42)                |         |
| PCI during hospitalization                                       | 28 (80)               | 177 (86)               | 0.40    |
| Radial PCI entry site or no PCI (vs femoral entry site)          | 19 (54)               | 152 (73)†              | 0.021   |
| Length of stay > 3 days                                          | 18 (51)               | 87 (42)                | 0.30    |
| Gender-related factors                                           |                       |                        |         |
| Education level $\leq$ high school                               | 17 (50) <sup>e</sup>  | 98 (50) <sup>f</sup>   | 0.98    |
| Active worker                                                    | 20 (57)               | 130 (64)               | 0.46    |
| Active smoker                                                    | 17 (49)               | 76 (37)                | 0.18    |
| Living with someone                                              | 26 (74)               | 170 (85) <sup>g</sup>  | 0.12    |
| Exercise pre-hospitalization < than once a week                  | 10 (30) <sup>h</sup>  | 73 (37) <sup>i</sup>   | 0.47    |
| Illness representations (> median)                               |                       |                        |         |
| Chronic                                                          | 22 (63)               | 98 (49) <sup>j</sup>   | 0.12    |
| Negative consequences                                            | 20 (57)               | 104 (52) <sup>j</sup>  | 0.56    |
| Treatment control                                                | 17 (49)               | 91 (45) <sup>j</sup>   | 0.72    |
| Personal control                                                 | 16 (46)               | 91 (54) <sup>j</sup>   | 0.96    |
| Illness coherence                                                | 17 (49)               | 93 (46) <sup>j</sup>   | 0.80    |
| Cyclical                                                         | 20 (57)†              | 85 (42) <sup>j</sup>   | 0.10    |
| Negative emotional representation                                | 21 (60)               | 95 (47) <sup>j</sup>   | 0.16    |
| Family support (> median)                                        | 18 (51)               | 118 (59) <sup>j</sup>  | 0.42    |
| Anxiety (> median)                                               | 22 (67)† <sup>h</sup> | 102 (51) <sup>k</sup>  | 0.084   |
| Context-related factors                                          |                       |                        |         |
| Living near the CR center                                        | 26 (74)               | 129 (62) <sup>l</sup>  | 0.17    |
| Drives a car                                                     | 26 (77) <sup>e</sup>  | 180 (92)† <sup>m</sup> | 0.007   |

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Abbreviations: STEMI, ST-elevation myocardial infarction; NSTEMI, non-ST-elevation myocardial infarction; PCI, percutaneous coronary intervention.

<sup>a</sup> n=30; <sup>b</sup> n=176; <sup>c</sup> n=31; <sup>d</sup> n=186; <sup>e</sup> n=34; <sup>f</sup> n=204; <sup>g</sup> n=200; <sup>h</sup> n=33; <sup>i</sup> n=198; <sup>j</sup> n=201; <sup>k</sup> n=202; <sup>l</sup> n=205; <sup>m</sup> n=196.

† indicates a raw difference in percentage of 15% or more.

*Note.* Values are presented as n (%). All variables are categorical; chi-squared test was used to compare women and men.

**Table 2. Relationships between CR enrolment at 6 weeks and sex-, gender-, and context-related factors in women and men.**

|                                   | Women CR enrolment |         | Men CR enrolment |         | Interaction between the variable and women-men status |         |
|-----------------------------------|--------------------|---------|------------------|---------|-------------------------------------------------------|---------|
|                                   | n (%)              | p-value | n (%)            | p-value | OR (95% CI)                                           | p-value |
| Sex-related factors               |                    |         |                  |         |                                                       |         |
| Age                               |                    |         |                  |         |                                                       |         |
| ≤ 65 years                        | 8/25 (32)          | 0.13    | 51/153 (33)      | >0.99   | 0.41 (0.077-2.23)                                     | 0.31    |
| > 65 years                        | 6/10 (60)†         |         | 18/54 (33)       |         |                                                       |         |
| Any cardiac antecedents           |                    |         |                  |         |                                                       |         |
| No                                | 9/24 (38)          | 0.66    | 41/109 (38)      | 0.17    | 0.47 (0.095-2.31)                                     | 0.35    |
| Yes                               | 5/11 (46)          |         | 28/98 (29)       |         |                                                       |         |
| Diabetes mellitus                 |                    |         |                  |         |                                                       |         |
| No                                | 10/28 (36)         | 0.30    | 56/157 (36)      | 0.21    | 0.34 (0.052-2.15)                                     | 0.25    |
| Yes                               | 4/7 (57)†          |         | 13/50 (26)       |         |                                                       |         |
| Body mass index                   |                    |         |                  |         |                                                       |         |
| < 30 kg/m <sup>2</sup>            | 7/16 (44)          | 0.65    | 36/100 (36)      | 0.32    | 0.91 (0.18-4.70)                                      | 0.91    |
| ≥ 30 kg/m <sup>2</sup>            | 5/14 (36)          |         | 22/76 (29)       |         |                                                       |         |
| Hypertension                      |                    |         |                  |         |                                                       |         |
| No                                | 4/10 (40)          | >0.99   | 26/83 (31)       | 0.62    | 1.75 (0.33-9.22)                                      | 0.51    |
| Yes                               | 10/25 (40)         |         | 43/124 (35)      |         |                                                       |         |
| Dyslipidemia                      |                    |         |                  |         |                                                       |         |
| No                                | 5/7 (71)†          | 0.058   | 14/41 (34)       | 0.90    | 4.56 (0.62-33.35)                                     | 0.14    |
| Yes                               | 9/28 (32)          |         | 55/166 (33)      |         |                                                       |         |
| Family history of cardiac disease |                    |         |                  |         |                                                       |         |
| No                                | 4/12 (33)          | 0.56    | 42/136 (31)      | 0.30    | 0.99 (0.20-4.98)                                      | 0.99    |
| Yes                               | 10/23 (44)         |         | 27/71 (38)       |         |                                                       |         |
| Creatinine clearance              |                    |         |                  |         |                                                       |         |
| < 60 mL/min                       | 3/6 (50)           | 0.53    | 6/22 (27)        | 0.56    | 0.54 (0.067-4.39)                                     | 0.57    |
| ≥ 60 mL/min                       | 9/25 (36)          |         | 55/164 (34)      |         |                                                       |         |
| Diagnosis on admission            |                    | 0.86    |                  | 0.42    | 0.79 (0.12-4.97)                                      | 0.80    |

## Sex and Gender-Related Factors Associated with Cardiac Rehabilitation Enrolment

|                                  |             |       |              |       |                    |       |
|----------------------------------|-------------|-------|--------------|-------|--------------------|-------|
| STEMI                            | 3/7 (43)    |       | 19/50 (38)   |       |                    |       |
| NSTEMI or unstable angina        | 11/28 (39)  |       | 50/157 (32)  |       |                    |       |
| PCI during hospitalization       |             |       |              |       |                    |       |
| None                             | 3/7 (43)    | 0.86  | 10/30 (33)   | >0.99 | 1.03 (0.16-6.88)   | 0.98  |
| Yes                              | 11/28 (39)  |       | 59/177 (33)  |       |                    |       |
| PCI entry site                   |             |       |              |       |                    |       |
| Radial entry site or no PCI      | 10/19 (53)† | 0.096 | 57/152 (38)† | 0.035 | 1.68 (0.32-8.68)   | 0.54  |
| Any femoral entry site           | 4/16 (25)   |       | 12/55 (22)   |       |                    |       |
| Length of stay > 3 days          |             |       |              |       |                    |       |
| ≤ 3 days                         | 8/17 (47)   | 0.41  | 44/120 (37)  | 0.23  | 1.19 (0.26-5.46)   | 0.82  |
| > 3 days                         | 6/18 (33)   |       | 25/87 (29)   |       |                    |       |
| Gender-related factors           |             |       |              |       |                    |       |
| Education level                  |             |       |              |       |                    |       |
| ≤ high school                    | 5/17 (29)   | 0.16  | 36/98 (37)   | 0.42  | 0.21 (0.004-1.04)  | 0.056 |
| > high school                    | 9/17 (53)†  |       | 31/99 (31)   |       |                    |       |
| Working status (active worker)   |             |       |              |       |                    |       |
| No                               | 7/15 (47)   | 0.49  | 25/74 (34)   | 0.92  | 0.81 (0.18-3.75)   | 0.79  |
| Yes                              | 7/20 (35)   |       | 43/130 (33)  |       |                    |       |
| Smoking status (active smoker)   |             |       |              |       |                    |       |
| No                               | 9/18 (50)†  | 0.21  | 45/131 (34)  | 0.68  | 1.97 (0.42-9.28)   | 0.39  |
| Yes                              | 5/17 (29)   |       | 24/76 (32)   |       |                    |       |
| Lives with someone               |             |       |              |       |                    |       |
| No                               | 5/9 (56)†   | 0.27  | 12/30 (40)   | 0.45  | 1.73 (0.29-10.12)  | 0.55  |
| Yes                              | 9/26 (35)   |       | 56/170 (33)  |       |                    |       |
| Exercise pre-hospitalization     |             |       |              |       |                    |       |
| Non-regular (< than once a week) | 5/10 (50)   | 0.56  | 14/73 (19)   | 0.002 | 5.57 (1.018-30.48) | 0.048 |
| Regular (more than once a week)  | 9/23 (39)   |       | 51/125 (41)† |       |                    |       |
| Illness representations          |             |       |              |       |                    |       |

# Sex and Gender-Related Factors Associated with Cardiac Rehabilitation Enrolment

|                                   |             |       |              |       |                   |       |
|-----------------------------------|-------------|-------|--------------|-------|-------------------|-------|
| Chronic                           |             |       |              |       |                   |       |
| ≤ median                          | 5/13 (39)   | 0.89  | 37/103 (36)  | 0.34  | 0.92 (0.79-1.07)  | 0.34  |
| > median                          | 9/22 (41)   |       | 29/98 (30)   |       |                   |       |
| Negative consequences             |             |       |              |       |                   |       |
| ≤ median                          | 5/15 (33)   | 0.49  | 30/97 (31)   | 0.58  | 0.60 (0.13-2.81)  | 0.52  |
| > median                          | 9/20 (45)   |       | 36/104 (35)  |       |                   |       |
| Treatment control                 |             |       |              |       |                   |       |
| ≤ median                          | 5/18 (28)   | 0.13  | 35/110 (32)  | 0.74  | 0.41 (0.087-1.95) | 0.26  |
| > median                          | 9/17 (53)†  |       | 31/91 (34)   |       |                   |       |
| Personal control                  |             |       |              |       |                   |       |
| ≤ median                          | 6/19 (32)   | 0.27  | 33/110 (30)  | 0.35  | 0.57 (0.12-2.63)  | 0.47  |
| > median                          | 8/16 (50)†  |       | 33/91 (36)   |       |                   |       |
| Illness coherence                 |             |       |              |       |                   |       |
| ≤ median                          | 5/18 (28)   | 0.13  | 35/108 (32)  | 0.89  | 0.35 (0.073-1.65) | 0.18  |
| > median                          | 9/17 (53)†  |       | 31/93 (33)   |       |                   |       |
| Cyclical                          |             |       |              |       |                   |       |
| ≤ median                          | 5/15 (33)   | 0.49  | 34/116 (29)  | 0.21  | 0.89 (0.19-4.13)  | 0.88  |
| > median                          | 9/20 (45)   |       | 32/85 (38)   |       |                   |       |
| Negative emotional representation |             |       |              |       |                   |       |
| ≤ median                          | 7/14 (50)†  | 0.32  | 31/106 (29)  | 0.25  | 2.65 (0.57-12.35) | 0.21  |
| > median                          | 7/21 (33)   |       | 35/95 (37)   |       |                   |       |
| Family support                    |             |       |              |       |                   |       |
| ≤ median                          | 4/17 (24)   | 0.053 | 23 /83 (28)  | 0.16  | 0.44 (0.88-2.21)  | 0.32  |
| > median                          | 10/18 (56)† |       | 44/118 (37)  |       |                   |       |
| Anxiety                           |             |       |              |       |                   |       |
| ≤ median                          | 6/11 (55)†  | 0.32  | 26/100 (26)  | 0.032 | 4.60 (0.80-23.55) | 0.067 |
| > median                          | 8/22 (36)   |       | 41/102 (40)  |       |                   |       |
| <hr/>                             |             |       |              |       |                   |       |
| Contextual factors                |             |       |              |       |                   |       |
| Lives near the CR center          |             |       |              |       |                   |       |
| No                                | 1/9 (11)    | 0.040 | 16/76 (21)   | 0.002 | 0.24 (0.023-2.49) | 0.23  |
| Yes                               | 13/26 (50)† |       | 53/129 (41)† |       |                   |       |

## Sex and Gender-Related Factors Associated with Cardiac Rehabilitation Enrolment

|              |             |      |             |      |                   |      |
|--------------|-------------|------|-------------|------|-------------------|------|
| Drives a car |             |      |             |      |                   |      |
| No           | 2/8 (25)    | 0.29 | 5/16 (31)   | 0.80 | 0.43 (0.052-3.60) | 0.44 |
| Yes          | 12/26 (46)† |      | 62/180 (34) |      |                   |      |

Abbreviations: OR, odd ratio; CI, confidence interval; STEMI, ST-elevation myocardial infarction; NSTEMI, non-ST-elevation myocardial infarction; PCI, percutaneous coronary intervention.

Note. † indicates a raw difference in percentage of 15% or more.