Exercise-Based Cardiac Rehabilitation Outcomes: A Meta-Analysis of Gender Differences

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Purpose

There has been an increasing awareness of the differences of males and females in terms of cardiovascular disease, manifestations, and rehabilitation outcomes. Few studies compare individual outcomes of cardiac rehabilitation (CR) between men and women, and no meta-analysis was identified. The purpose of this meta-analysis was to determine if there is a difference in CR outcomes between genders.

Methods

Following PRISMA guidelines, a protocol for completing the meta-analysis was established. Inclusion criteria included experimental and quasi-experimental studies of coronary artery disease patients that underwent CR and that reported outcomes based on gender. A search of CINAHL, Medline, PubMed, and Google Scholar electronic databases was conducted using the keywords gender, sex, male, female, cardiac rehabilitation, exercise, secondary prevention coronary disease, and myocardial infarction. The search was limited to those published in English since 2008. The initial search returned 2,628 results, which was narrowed down to 1,355 after duplicates were eliminated based on abstract reviews and eliminating those not meeting inclusion criteria, 14 studies were considered. Two additional studies were eliminated following inspection of the full articles. Review of compared outcomes produced a final selection of eight usable studies. The review process and data entry were completed by three evaluators based on the set inclusion criteria. Data was entered into an Excel database and categorized by gender and pre-CR/post-CR outcomes. Protocol required a minimum of three studies per clinical outcomes for analysis, resulting in a final sample of seven articles. Meta-analysis was performed to determine any differences in the effect of CR on clinical outcomes between men and women and over time.

Results

Eight clinical outcomes met the required minimum of three studies for analyses: anxiety, depression, body mass index (BMI), functional capacity, total cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), and triglycerides. There was a significant decrease in LDL levels from pre-CR to post-CR in both men and women. However, there was no significant difference in LDL levels between men and women. HDL levels were significantly higher in women than men at baseline and following CR. Despite this finding, there was no significant difference over time for either group. Functional capacity and total cholesterol were significantly different over time and between men and women. There was a significant increase in functional capacity following CR, with men demonstrating a higher functional capacity than women. Total cholesterol levels were significantly lower following CR, with women having greater levels both before and after CR. No significant differences were found between men and women either at baseline or post CR for anxiety, depression, BMI, or triglycerides.

Conclusion

Cardiac rehabilitation appears to effectively decrease LDL and total cholesterol levels, and increase functional capacity for both genders. While men had significantly higher levels of functional capacity at baseline, they also experienced a significant improvement compared to the improvement among women. Females had higher HDL and total cholesterol levels than males, and the females had a significantly
different decline in total cholesterol than males. Very few studies report outcomes based on gender and the sample sizes of women in the studies reviewed were much smaller than men. Additional research comparing effectiveness of CR is needed. Interventions to engage women in CR should be explored.

**Clinical Relevance**

Women are less likely to participate in CR but appear to benefit in a similar manner as men. Therefore, nurses should encourage their female patients to engage in CR.

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**Title:**
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**Keywords:**
Cardiac rehabilitation, Coronary heart disease and Gender

**References:**


Abstract Summary:
Few studies have examined gender differences in cardiac rehabilitation (CR) outcomes. A meta-analysis comparing outcomes of CR between men and women revealed significant differences in functional capacity and lipid profiles; anxiety, depression, and BMI were non-significant. While CR appears to benefit both men and women, outcomes vary based on gender.

Content Outline:
I. Introduction
a. Few studies compare CR outcomes between men and women

II. Purpose
a. To determine if there are differences in outcomes of cardiac rehabilitation between men and women

III. Methods
a. Sample
i. Inclusion criteria
b. Procedures
i. Search process
ii. Review process
iii. Final sample description
iv. Data entry into excel

c. Analysis using meta-analysis

d. Results
i. Significant differences between groups pre- and post-CR
ii. Significant differences within groups
iii. Non-significant findings
IV. Conclusion

V. Clinical Significance

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