

Title:

The Cost Effectiveness of Exercise-Based Cardiac Rehabilitation: A Systematic Review

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Aim:

Economic evaluations provide a useful comparative approach for considering costs and consequences on patient outcomes, thus providing a foundation for effective policy and decision making [1, 2]. This descriptive review aims to better understand how economic evaluations of cardiac rehabilitation (CR) services are conducted to inform future research addressing the impact of a physical exercise component on cost-effectiveness.

Method:

Electronic databases were searched for economic evaluations of exercise-based CR programs published in English between 2000 and 2014. The methodological quality of included economic evaluations was reviewed using criteria taken from the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) statement [3].

Results:

Fifteen economic studies met the eligibility criteria but exhibited wide variability in study perspective, time horizon, setting, comparators and included costs, with significant heterogeneity for exercise dose between interventions. Ten evaluations were based on randomised controlled trials (RCTs) with time horizons between 6-24 months, but which largely produced weak or inconclusive results. Excluding two modelling studies, only three studies utilised longer time horizons (3.5-5 years), and findings suggest exercise-based CR leads to lowered costs, reduced rehospitalisation's and longer cumulative lifetime in the long-term.

Conclusion:

Variability in CR program delivery and exercise dose along with weak consistency between study perspective and included costs makes it difficult to compare cost and health outcomes between studies and accumulate evidence in support of a particular exercise regime. The dominance of RCTs with their extensive patient selectivity process and exclusion of comorbid patients questions whether cost-effectiveness findings would translate to a real-world setting. The use of longer time horizons would be more compatible with a chronic condition and allow the long-term effects of exercise-based CR to be evaluated.

1. Papadakis, S., et al., *Economic evaluation of cardiac rehabilitation: a systematic review*. European Journal of Cardiovascular Prevention & Rehabilitation, 2005. **12**(6): p. 513-520.
2. Oldridge, N., et al., *Economic evaluation of cardiac rehabilitation soon after acute myocardial infarction*. Am J Cardiol, 1993. **72**(2): p. 154-61.
3. Husereau, D., et al., *Consolidated Health Economic Evaluation Reporting Standards (CHEERS)--explanation and elaboration: a report of the ISPOR Health Economic Evaluation Publication Guidelines Good Reporting Practices Task Force*. Value Health, 2013. **16**(2): p. 231-50.

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