Cochrane corner: increasing patient utilisation of cardiac rehabilitation

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Background

Cardiac rehabilitation (CR) is a medically-sponsored program to aid recovery and prevent further cardiac events. Programs offer core components to optimize cardiovascular risk reduction, foster healthy behaviours (e.g. exercise, healthy eating, no smoking), increase patient's understanding of their disease, and improve psychosocial well-being CR has been shown to improve quality of life, as well as decrease subsequent morbidity and cardiovascular mortality by approximately 20%. [1] As a result, CR is an integral recommendation in many clinical guidelines for secondary prevention in cardiac patients. [2]

However, CR utilization remains sub-optimal. Such under-utilization can be attributed in part to low referral by healthcare providers. However, even among patients referred, few enroll in CR, and many of those who do, dropout. [3] Factors impacting utilization of CR include: distance, financial resources, work and other time constraints, gender, age, social support, illness perceptions, and depression. [4]

Herein we highlight the updated systematic review and meta-analysis of interventions to increase patient utilisation of CR. [5] This was operationalized as enrolment (i.e., patient attendance at a first visit), adherence (i.e., percentage of prescribed sessions completed), and completion (i.e., patients attended at least some of program and had a formal re-assessment by staff at end of program) of CR. [6] The review also considered harms, costs, and equity (secondary outcomes).

Review methods

A search was performed through July 2018, to identify trials published since the previous systematic review. The Cochrane Library, MEDLINE, Embase, CINAHL, EBSCOhost, Conference Proceedings Citation Index, among other databases were searched. The reference

lists of relevant systematic reviews were hand-searched for additional trials, and two clinical trial registers were also searched.

Randomised controlled trials (RCTs) in adults with myocardial infarction, angina, undergoing coronary artery bypass graft surgery or percutaneous coronary intervention, or with heart failure who were eligible for CR were included. Interventions had to aim to increase utilisation of comprehensive (i.e., initial patient assessment, structured exercise, and at least one other strategy to control risk factors) phase II CR.

Methods outlined in the Cochrane Handbook were used to select eligible trials, assess risk of bias, extract and analyse data, as well as assess the certainty of evidence. Random-effects meta-regression was performed for each outcome, with pre-specified study and intervention characteristics explored.

Main results

Ultimately, 26 trials with 5299 participants (29 comparisons) were included: sixteen trials (3164 participants) reported interventions to improve enrolment in CR, 11 trials (2319 participants) reported interventions to improve adherence, and seven trials (1567 participants) reported interventions to increase programme completion. Participants were primarily male (64.2%); Ten (38.5%) trials included participants with heart failure. Most trials were rated as having low or unclear risk of bias.

Researchers tested a variety of interventions to increase CR utilisation, consisting of a mean of 14.5±32.3 contacts. In many trials, patient contacts were made by a healthcare provider during or shortly after an acute care hospitalisation. Authors of effective interventions were contacted to request their materials for posting open source; received materials are collated at: http://sgrace.info.yorku.ca/tools-to-promote-cardiac-rehabilitation-utilization/.

Table 1 shows the summary of findings. Low-quality evidence showed an effect of interventions on increasing programme enrolment (19 comparisons; risk ratio [RR] 1.27, 95% confidence interval [CI] 1.13 to 1.42). Meta-regression revealed that the intervention deliverer (nurse or allied healthcare provider [e.g., physiotherapists]; p=0.02) and the delivery format (face-to-face; p=0.01) were influential in increasing enrolment. Note that no trials tested physician intervention delivery.

Low-quality evidence showed interventions to increase adherence were effective (nine comparisons; standardised mean difference [SMD] 0.38, 95% CI 0.20 to 0.55), particularly when they were delivered remotely, such as in home-based programs (SMD 0.56, 95% CI 0.37 to 0.76).

Moderate-quality evidence showed interventions to increase programme completion were also effective (eight comparisons; RR 1.13, 95%CI 1.02 to 1.25), but those applied in multi-centre trials were less effective than those given in single-centre trials, leading to questions regarding generalisability.

A moderate level of statistical heterogeneity across trials reflected the heterogeneity in intervention approaches. There was no evidence of small-study bias for enrolment (insufficient trials to test for this in the other outcomes).

With regard to secondary outcomes, no trials reported on harms associated with the interventions. Only two trials examined costs, and these were trials testing the impact of delivering CR remotely versus supervised. A review on cost-effectiveness of home-based CR is available elsewhere. [7]

In terms of equity, trialists tested interventions designed to improve utilisation among women and older patients. Evidence is insufficient for quantitative assessment of whether

women-tailored programmes were associated with increased utilisation, and trials that assess motivating women are needed. For older participants, again while quantitative assessment could not be undertaken, peer navigation may improve enrolment.

Limitations

Despite the many strengths of this review, including application of GRADEpro for the first time for this review, and that this is the first time utilization trials have been pooled quantitatively, it suffers from some limitations as well. Due to the nature of the interventions, blinding of participants and personnel to treatment allocation was not possible. Instead, blinding of outcome assessors was evaluated. Nevertheless, the lack of blinding of participants and personnel may introduce a potential source of bias in all these trials.

Additionally, the evidence may not be applicable to the average cardiac patient (indirectness). Despite the fact that some included trials considered women and older patients specifically, most study participants included in this review were middle-aged male patients with acute coronary syndrome (± revascularisation).

Implications

There was significant heterogeneity, suggesting some strategies are more effective than others. For adherence, patients adhered to a greater degree to unsupervised programs. However, adherence ascertainment in supervised and unsupervised settings may not be comparable, therefore the latter finding should be interpreted with caution. Investigating differences in functional capacity in future research may overcome this incomparability. However, CR is shown to be of equivalent efficacy regardless of setting, [7] thus if offering CR remotely improves utilisation, better outcomes could be achieved. Many programs offer alternative models, but a low proportion of patients are treated in these settings. [8]

To translate these findings into actionable recommendations, a joint Canadian Association of Cardiovascular Prevention and Rehabilitation and International Council of Cardiovascular Prevention and Rehabilitation position statement was developed using best practices.[9] It has been endorsed by 23 associations. Moreover, as a guideline implementation tool, an online course was developed to inform inpatient cardiac healthcare providers about communicating with patients about CR (see: http://learnonthego.ca/Courses/promoting_patient_participation_in_CR/story_html5.html). It has a corresponding tool summarizing key points for the point-of-care. No such educational activity exists globally to our knowledge. Results of the course evaluation are forthcoming.

More research is needed to understand how to increase CR completion. A recently-published trial suggests financial incentives may be effective, [10] including in patients of low socioeconomic status, who are under-represented in programs despite great need. Results of some other ongoing trials are also eagerly anticipated.[11][12] What healthcare providers should communicate to patients when interacting with them face-to-face to optimise utilisation needs to be established. [13] This would likely most feasibly and cost-efficiently be achieved at the bedside. Feasibility of offering effective interventions at scale must also be considered.

In conclusion, in this first quantitative pooling of randomized trials of interventions to increase CR utilisation, it was established that such approaches are indeed successful, resulting in greater enrolment, adherence, and completion than is observed with usual care. Enrolment interventions were most successful if delivered by nurses or other allied healthcare professionals, face-to-face, which is likely most feasibly achieved at scale through bedside discussions before hospital discharge. Interventions to increase adherence and completion require expeditious study.

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Table 1. Summary of Findings Table

Outcomes	№ of participants (trials) Follow up	Certainty of the evidence (GRADE)	Relative effect (95% CI)	Anticipated absolute effects* (95% CI)	
				Risk with no interventions to promote utilization of CR	Risk difference with interventions to promote utilization of CR
				Study population	
Enrolment	3096 (19 RCTs)	⨁⨁◯◯ LOW [1 2]	RR 1.27 (1.13 to 1.42)	406 per 1,000	110 more per 1,000 (53 more to 171 more)
Adherence	1654 (9 RCTs)	⨁⨁◯◯ LOW [1 2]	-		SMD 0.38 SD higher (0.20 higher to 0.55 higher)
				Study population	
Completion	1565 (8 RCTs)	⨁⨁⨁◯ MODERATE [2]	RR 1.13 (1.02 to 1.25)	649 per 1,000	84 more per 1,000 (13 more to 162 more)

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI). CI: Confidence interval; RCT: Randomised controlled trial; RR: Risk ratio; SD: Standard deviation SMD: Standardized mean difference

Footnotes

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