

# Women and cardiac rehabilitation: Moving beyond barriers to solutions?

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The prognostic benefit of cardiac rehabilitation, even in the contemporary era of advances in treatment for cardiovascular disease, is well-established.<sup>1,2</sup> Indeed, we might argue that fully realising the benefit of primary percutaneous coronary intervention for myocardial infarction (MI), new cardiovascular surgical procedures and drug therapy is not possible unless patients are supported to recover physiologically and psychologically, adhere to prescribed treatment and change unhealthy behaviours. Research shows that we still fail to achieve good control of risk factors in women and men with cardiovascular disease across Europe.<sup>3</sup> Thus, comprehensive cardiac rehabilitation is more important than ever, and must continue to evolve to keep up with innovation in treatment and to address the challenges of patients with different needs and preferences, and the world's ageing population.

Cardiac rehabilitation has already evolved from its roots in early ambulation post-MI in the 1960s to the comprehensive programme of exercise-based rehabilitation and secondary prevention of today.<sup>4</sup> And yet, despite demonstrated benefit, evidence indicates that only 20–50% of eligible patients participate in cardiac rehabilitation.<sup>5</sup> The problem is especially acute in certain groups, with women, older patients and minorities having much lower participation rates.<sup>6,7</sup> A recent Cochrane review of the effectiveness of exercise-based cardiac rehabilitation versus no exercise control on core outcomes (mortality, morbidity and quality of life) found that women accounted for fewer than 15% of the patients recruited within the included trials.<sup>8</sup>

Numerous papers have reviewed the barriers to low participation rates overall and specifically to high risk groups such as women.<sup>4,7,9</sup> Innovative models of delivery such as home-based programmes and telehealth interventions have similar outcomes to traditional centre-based rehabilitation, with the caveat that patients participating tend to be younger and healthier.<sup>10,11</sup> Unfortunately the uptake of innovative delivery remains limited. In the recent audit of cardiac

rehabilitation in the UK, group-based supervised cardiac rehabilitation remained the dominant mode of delivery (77%) with home-based (8%) and telephone supported (17%) infrequently provided.<sup>12</sup> Other groups have evaluated in-hospital cardiac rehabilitation programmes as a means to address the needs of high-risk groups such as those with heart failure and high comorbidity burden.<sup>13</sup>

In a narrative review in this issue, Vidal-Almela and colleagues<sup>14</sup> remind us that for women, barriers to cardiac rehabilitation participation are multiple and complex, traversing all levels of the ecological model of health. They also highlight the gender gap observed in cardiac rehabilitation and the dearth of research focusing exclusively on women or alternative modes of delivery that may better suit women. What differentiates this review from previous endeavours is the authors' willingness to look beyond strictly cardiovascular disease (CVD) focused programmes for insights into how we may improve appeal, uptake, completion and ongoing adherence. The rationale for looking to allied disciplines for solutions is clear: community and home-based physical activity and primary prevention programmes appear to attract substantial numbers of women, deliver high satisfaction levels and some achieve high rates of adherence and completion.

What do these community-based activity programmes offer women that cardiac rehabilitation may not? Such programmes tended to be embedded in the local community or convenient locations, much more

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attractive than the often hospital-based setting of cardiac rehabilitation. Programmes typically had more appealing and varied content that blended physical and social components, were more readily adapted to the individual and offered flexible options to enable participation. Vidal-Almela and colleagues rightly acknowledge that only a minority of women in the studies reviewed had established cardiovascular disease and advise caution when translating findings to exclusively CVD cohorts. However, many studies included women with cardiovascular risk factors and comorbid conditions such as hypertension, diabetes, obesity, arthritis, anxiety and depression. Moreover, some studies focused on high-risk groups, for example, unemployed, low socioeconomic status and minorities.

Population differences is only one of the limitations of this review. Community-based exercise programmes are by no means a panacea that should be immediately adopted. Literature critiquing community-based schemes highlight their heterogeneity and the programmes included in this review varied significantly in complexity and intensity. A recent systematic review concluded that although these programmes do seem to increase physical activity and decrease sedentary behaviour, the heterogeneity of programme components was substantial and reporting of programme components inadequate.<sup>15</sup> These factors prohibit establishing conclusively whether they are effective (or which components are effective) and resource efficient. Cardiac rehabilitation on the other hand is governed by standards and core components in most developed countries,<sup>16,17</sup> ensuring at least some consistency.

What can we learn from this review that can be applied to cardiac rehabilitation programmes? The authors acknowledge the challenges: cardiac rehabilitation often lacks resources (e.g. limited funding and staff) and serves patients with complex health problems. Adequate numbers of qualified staff who can assess, treat, teach, support and monitor high-risk patients are needed, which increases cost of delivery. Despite these challenges some of the features of the programmes reviewed could be incorporated: transporting staff and equipment to community settings can be time-consuming and cumbersome, but worth the effort if it increases access to and uptake of cardiac rehabilitation. Embedding cardiac rehabilitation in local communities seems very obvious when faced with statistics like those coming from analysis of the large SWEDHEART registry, which found the strongest predictor for non-attendance in 31,297 post-acute myocardial infarction patients was distance to the centre (odds ratio 1.75 (95% confidence interval 1.64–1.86)).<sup>18</sup>

Likewise, replacing some of the day classes with evening and/or weekend options could make it easier for

some patients to attend, a contention that is supported by numerous reviews of cardiac rehabilitation uptake.<sup>19,20</sup> Incorporating alternative forms of physical activity, such as dance, would be possible with staff training or recruitment of community instructors. Involving community physical activity programme leaders could then lead to stronger links with community programmes to provide continuing activity support. The social aspects of attendance could be facilitated by encouraging group interaction and peer support activities.

As long ago as 2013, a qualitative systematic review and meta-synthesis by Clark and colleagues<sup>19</sup> identified the strong influence that ‘perceptual’ and ‘consumer behaviour’ aspects hold over participation. It is perhaps these aspects that community programmes have more effectively operationalised, as their emphasis on health and well-being may be more appealing than illness rehabilitation. The ‘who’ (nurse or allied health professional) and ‘how’ (face-to-face delivery) of interventions can increase enrolment in cardiac rehabilitation,<sup>21</sup> and it may be that the effect is partially due to presenting a positive perspective on attendance.

Increasing participation of women (and others) also depends on adequate resources to enable cardiac rehabilitation providers to deliver more innovative and individually tailored programmes. Although this review by Vidal-Almela and colleagues by no means has all the solutions, when synthesised with other reviews<sup>19–21</sup> it may help bring us one step closer to unravelling the Gordian knot that is optimising women’s participation in cardiac rehabilitation.

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### References

1. Rauch B, Davos CH, Doherty P, et al. The prognostic effect of cardiac rehabilitation in the era of acute revascularisation and statin therapy: A systematic review and meta-analysis of randomized and non-randomized studies – The Cardiac Rehabilitation Outcome Study (CROS). *Eur J Prev Cardiol* 2016; 23: 1914–1939.
2. Sumner J, Harrison A and Doherty P. The effectiveness of modern cardiac rehabilitation: A systematic review of recent observational studies in non-attenders versus attenders. *PLoS One* 12: e0177658.

3. Kotseva K, De Backer G, De Bacquer D, et al, on behalf of the EUROASPIRE Investigators. Lifestyle and impact on cardiovascular risk factor control in coronary patients across 27 countries: Results from the European Society of Cardiology ESC-EORP EUROASPIRE V registry. *Eur J Prev Cardiol* 2019; 26: 824–835.
4. Sandesara PB, Lambert CT, Gordon NF, et al. Cardiac rehabilitation and risk reduction: Time to “Rebrand and Reinvigorate”. *J Am Coll Cardiol* 2015; 65: 389–395.
5. Dalal HM, Doherty P and Taylor RS. Cardiac rehabilitation. *BMJ* 2015; 351: 1–8.
6. Mampuya WM. Cardiac rehabilitation past, present and future: An overview. *Cardiovasc Diagn Ther* 2012; 2: 38–49.
7. Galati A, Piccoli M, Tourkmani N, et al.; on behalf of the Working Group on Cardiac Rehabilitation of the Italian Society of Cardiology. Cardiac rehabilitation in women: State of the art and strategies to overcome the current barriers. *J Cardiovasc Med* 2018; 19: 689–697.
8. Anderson L, Thompson DR, Oldridge N, et al. Exercise-based cardiac rehabilitation for coronary heart disease. *Cochrane Database Syst Rev* 2016; CD001800.
9. Bjarnason-Wehrens B, Grande G, Loewel H, et al. Gender-specific issues in cardiac rehabilitation: Do women with ischaemic heart disease need specially tailored programmes? *Eur J Cardiovasc Prev Rehabil* 2007; 14: 163–171.
10. Jin K, Khonsari S, Gallagher R, et al. Telehealth interventions for the secondary prevention of coronary heart disease: A systematic review and meta-analysis. *Eur J Cardiovasc Nurs* 2019; 18: 260–271.
11. Rawstorn JC, Gant N, Direito A, et al. Telehealth exercise-based cardiac rehabilitation: A systematic review and meta-analysis. *Heart* 2016; 102: 1183–1192.
12. British Heart Foundation. The national audit of cardiac rehabilitation: Quality and outcomes report, [www.cardiacrehabilitation.org.uk](http://www.cardiacrehabilitation.org.uk) (2018, accessed 6 February 2020).
13. Scalvini S, Grossetti F, Paganoni AM, et al. Impact of in-hospital cardiac rehabilitation on mortality and readmissions in heart failure: A population study in Lombardy, Italy, from 2005 to 2012. *Eur J Prev Cardiol* 2019; 26: 808–817.
14. Vidal-Almela S, Czajowski B, Prince SA, et al. Lessons learned from community- and home-based physical activity programs: A narrative review of factors influencing women’s participation in cardiac rehabilitation. *Eur J Prev Cardiol* 2020. Epub ahead of print, DOI: 10.1177/2047487320907748.
15. Pavey TG, Taylor AH, Fox KR, et al. Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: Systematic review and meta-analysis. *BMJ* 2011; 343: d6462.
16. Cowie A, Buckley J, Doherty P, et al.; on behalf of the British Association for Cardiovascular Prevention and Rehabilitation (BACPR). Standards and core components for cardiovascular disease prevention and rehabilitation. *Heart* 2019; 105: 510–515.
17. Piepoli MF, Corra U, Adamopoulos S, et al. Secondary prevention in the clinical management of patients with cardiovascular diseases. Core components, standards and outcome measures for referral and delivery: A policy statement from the cardiac rehabilitation section of the European Association for Cardiovascular Prevention & Rehabilitation. Endorsed by the Committee for Practice Guidelines of the European Society of Cardiology. *Eur J Prev Cardiol* 2014; 21: 664–681.
18. Borg S, Oberg B, Leosdottir M, et al. Factors associated with nonattendance at exercise-based cardiac rehabilitation. *BMC Sports Sci Med Rehabil* 2019; 11: 13.
19. Clark AM, King-Shier KM, Spaling MA, et al. Factors influencing participation in cardiac rehabilitation programmes after referral and initial attendance: Qualitative systematic review and meta-synthesis. *Clin Rehabil* 2013; 27: 948–959.
20. Neubeck L, Freedman SB, Clark AM, et al. Participating in cardiac rehabilitation: A systematic review and meta-synthesis of qualitative data. *Eur J Prev Cardiol* 2011; 19: 494–503.
21. De Araujo Pio CS, Chaves G, Davies P, et al. Interventions to promote patient utilisation of cardiac rehabilitation: Cochrane systematic review and meta-analysis. *J Clin Med* 2019; 8: E189.