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Participating in cardiac rehabilitation: a systematic review and meta-synthesis of qualitative data

Lis Neubeck^{1–3}, S Ben Freedman^{1–3}, Alexander M Clark⁴,
Tom Briffa⁵, Adrian Bauman⁶ and Julie Redfern^{1,7}

Abstract

Background: Participation in cardiac rehabilitation (CR) benefits patients with coronary heart disease (CHD), yet worldwide only some 15–30% of those eligible attend. To improve understanding of the reasons for poor participation we undertook a systematic review and meta-synthesis of the qualitative literature.

Methods: Qualitative studies identifying patient barriers and enablers to attendance at CR were identified by searching multiple electronic databases, reference lists, relevant conference lists, grey literature, and keyword searching of the internet (1990–2010). Studies were selected if they included patients with CHD and reviewed experience or understanding about CR. Meta-synthesis was used to review the papers and to synthesize the data.

Results: From 1165 papers, 34 unique studies were included after screening. These included 1213 patients from eight countries. Study methodology included interviews ($n = 25$), focus groups ($n = 5$), and mixed-methods ($n = 4$). Key reasons for not attending CR were physical barriers, such as lack of transport, or financial cost, and personal barriers, such as embarrassment about participation, or misunderstanding the reasons for onset of CHD or the purpose of CR.

Conclusions: There is a vast amount of qualitative research which investigates patients' reasons for non-attendance at CR. Key issues include system-level and patient-level barriers, which are potentially modifiable. Future research would best be directed at investigating strategies to overcome these barriers.

Keywords

Attendance, barriers and enablers, cardiac rehabilitation, patient experience

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Introduction

Coronary heart disease (CHD) remains a leading cause of morbidity and mortality globally.¹ Importantly, participation in secondary prevention and cardiac rehabilitation (CR) has been shown to reduce mortality,^{2,3} have substantial benefits on risk factor profiles, increase adherence to pharmacotherapy, and improve quality of life.³ Despite this, participation rates in CR are notoriously low; less than 50% attend worldwide.^{4,5} It is disquieting that those patients who are at highest risk are least likely to attend.⁶ Predictors of poor participation in CR have been widely studied through quantitative analysis and include distance from CR centre, language other than English, lower socioeconomic status, ethnicity, female gender, and older age.^{7,8}

While existing research has identified the factors that predict participation, it has not increased

understanding of the complex processes that may influence participation. Qualitative research can increase knowledge of these processes and associated factors

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and is particularly useful for exploring the social world.⁹ As such, qualitative research is particularly important for addressing issues which can prevent patients from participating in CR. However, it is often criticized for the lack of generalizability due to the small sample sizes typically used.⁹ Meta-synthesis brings together findings of qualitative research to facilitate knowledge development in an analogous fashion to meta-analysis in quantitative studies.¹⁰ Therefore, we aimed to synthesize the qualitative studies which have examined patients' reasons for choosing whether or not to participate in CR, to further our understanding of the barriers from the perspective of the patient, which is both rich in detail and generalizable.

Methods

Literature search strategy

Relevant qualitative studies were identified by searching multiple databases including MEDLINE (1990–2010), CINAHL (1990–2010), and EMBASE (1990–2010) using the keywords 'qualitative studies', 'focus groups', 'ethnography', 'phenomenology', 'cardiac rehabilitation', and 'secondary prevention'. We also searched the reference lists and bibliographies of any possible studies, relevant conference lists, and grey literature and did keyword searching (using Google) of the World Wide Web. References and abstracts identified from the search were imported into Endnote X4 bibliographic software (Thomson Reuters, Philadelphia, Pennsylvania, USA) and all duplicates removed. Where papers about the same study were reported in more than one journal, the later time point was used and those remaining were assessed by two reviewers against the inclusion and exclusion criteria.

Study selection

Two reviewers (LN and JR) independently scanned titles and abstracts and identified potentially relevant articles. Studies were considered relevant if they were empirical studies conducted in a research paradigm using qualitative techniques and if they evaluated patient barriers or patient enablers to participation in a CR or secondary prevention programme. We defined a CR or secondary prevention programme as a multifactorial behavioural intervention delivered after an acute cardiac event with the aim of reducing cardiovascular risk factors and improving patient quality of life. Where studies examined both participant and another person (staff or partner) we utilized only the patient perspective. Where studies used mixed methods we analysed only the qualitative data. We obtained full-text

manuscripts for all relevant trials and further assessed quality using the consolidated criteria for reporting qualitative research (COREQ) qualitative checklist¹¹ to determine to what quality standard was met for each of the three domains (research team and reflexivity; study design; and analysis and findings). The 32-item COREQ checklist is designed to promote comprehensive reporting of qualitative studies.¹¹

Data synthesis and analysis

All papers were independently reviewed by LN and JR. Any disagreement between reviewers was resolved by a third content expert opinion. Each paper was summarized to identify the main concepts of the study, setting, and participants. The papers were then systematically compared for similarities, themes, and differences. We contacted the primary study authors when further information was required. We used Charmaz's¹² iteration of the constant comparative approach to analyse and synthesize the data. Constant comparative analysis provides a systematic approach to analysis of qualitative data, which includes line-by-line coding and the use of memos to form categories, which enable us to construct theory. Constant comparative analysis is particularly concerned with discovering the processes which surround the research question. This makes it a particularly relevant tool for looking at the processes which enable or prevent people from participating in CR.

Results

Study selection and characteristics

A total of 1165 studies were screened for possible inclusion and 142 full manuscripts were reviewed (Figure 1). In total, 34 studies (1213 patients) from eight countries were included (Table 1). Of the studies that reported the sex of the participants, 48% were female and of those reporting age of participants (27/34), the mean was 63 ± 5 years. The majority of the patients were admitted with an acute coronary syndrome (41%, 491/1213), 39% 'eligible for CR', 10% post cardiac surgery, 5% after percutaneous coronary intervention, and 5% with heart failure. Duration from time of diagnosis was reported in 26 papers and varied from the in-patient stay to 5 years (mean 8.9 ± 9.7 months).

Quality

Quality was assessed using the COREQ checklist¹¹ and no papers fulfilled all the criteria (Table 2). The domain of research team and reflexivity was least well fulfilled, with 17/34 papers failing to report to any degree the researchers' interest in the subject matter or the

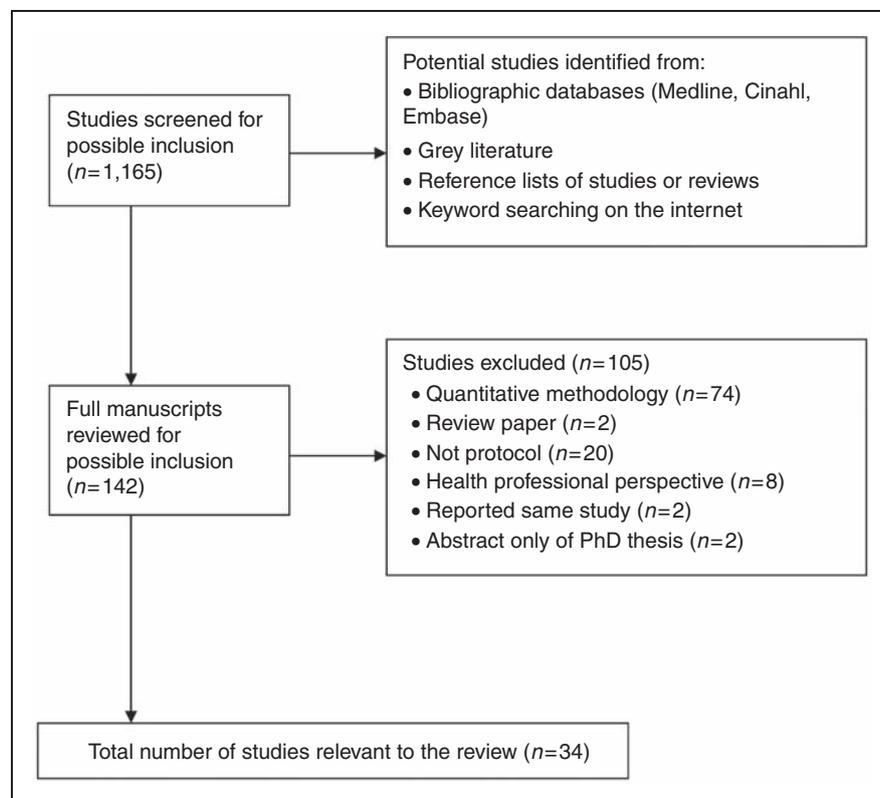


Figure 1. Process of study selection.

relationship they had to the participants. The domain of study design was at least partially fulfilled, with sufficient description of the study methods being given in 33/34 papers. The domain of analysis and reporting was partially fulfilled by all 34/34 papers, but none completely fulfilled the analysis domain and only 4/34 papers completely fulfilled the reporting domain.

Qualitative data synthesis

System and service barriers affecting CR attendance. A number of studies reported the importance of physician recommendation in the decision to participate in CR,^{13–17} particularly when the patient was ambivalent about participating (Figure 2). Some studies identified physicians as recommending against CR.^{18,19} Patient–physician communication was viewed as important, although patients perceived that physicians did not always communicate well, either with them or with other healthcare providers.²⁰

The in-patient experience and interaction with other healthcare providers influenced their decision to attend CR. Patients reported that the conversation about CR often took place at an inappropriate time during the in-patient stay, often when they could not remember due to recent surgery, proximity to the shock of the

diagnosis,¹⁷ or suffering with information overload.²¹ Furthermore, the advice was sometimes contradictory between healthcare providers, which negatively affected their decision to attend.^{20–23}

A large number of patients recalled not receiving information about CR during whilst in hospital.^{15,17,20,24} Of those who had received information about CR, many had not fully understood its purpose.^{16,25–27}

Another major theme was that participants believed CR was predominantly focussed on exercise.^{15,16,23,25,28,29} Some people either believed that they got enough exercise in their daily lives, or did not feel that the exercises would be individually tailored.^{25,26,27,30} To others, exercise was an enabler, as they valued the guidance that they got from healthcare professional^{19,26,31} and enjoyed the camaraderie.^{23,26,32,33,34}

Some patients were excluded from CR by the hospitals' inclusion and exclusion criteria,²⁹ or poor communication between the hospital and the community meant long delays in being able to participate in CR.²⁹ Indeed, one study found that the support received from the CR team varied dramatically from patient-to-patient and this did not relate to patient's own perceived needs for support.³⁵

Table 1. Studies included in analysis of patient participation in CR barriers and enablers

Study	Country	Method	Participants	Diagnosis
Astin et al. (2008) ⁴⁵	UK	Semi-structured interviews	64 patients: 45 South Asian, 20 White-European 54 carers: 37 South Asian, 20 White-European	MI or CABG
Banerjee et al. (2010) ¹³	Canada	Semi-structured interviews	18 Canadian South Asian patients	Angina, atherosclerosis, MI, CHF
Bergman and Bertero (2001) ³⁶	Sweden	Semi-structured interviews	8 patients	CAD
Chauhan et al. (2010) ⁴⁴	UK	Semi-structured interviews	20 patients: 12 Pakistani, 6 Indian, 2 Bangladeshi	MI, CABG, PCI
Clark et al. (2004) ²³	UK	Focus groups	44 patients in 8 focus groups	Eligible for CR
Clark et al. (2005) ³	UK	Focus groups	47 patients in 8 focus groups	MI or CABG
Condon and McCarthy (2006) ³¹	Ireland	Semi-structured interviews	10 patients	MI
Cooper et al. (2005) ²⁸	UK	Semi-structured interviews	13 patients	MI
Darr et al. (2008) ³⁷	UK	Semi-structured interviews	65 patients: 20 Pakistani-Muslim, 13 Indian-Hindu, 12 Indian-Sikh, 20 Europeans	UAP, MI or CABG
Day and Batten (2006) ³⁵	New Zealand	Semi-structured interviews	10 female patients	MI
Dolansky et al. (2006) ¹⁴	USA	Semi-structured interviews	30 female patients	MI or CABG
Grewal et al. (2010) ¹⁵	Canada	Semi-structured interviews	16 South Asian patients	ACS
Heid and Schmelzer (2004) ¹⁸	USA	Semi-structured interviews	30 female patients	MI, atherosclerosis, UAP, angina, chest pain
Hird et al. (2004) ²⁵	UK	Semi-structured interviews	50 patients	CABG and/or valve surgery
Jolly et al. (2004) ³⁹	UK	Semi-structured interviews	41 patients: 34 South Asian & 7 African Caribbean	MI, CABG, valve surgery, PCI
Jones et al. (2003) ¹⁶	Canada	Semi-structured interviews	29 patients	MI, CABG, PCI
Jones et al. (2007) ²⁴	UK	Semi-structured interviews	49 patients	MI, PCI, CABG
Jones et al. (2009) ²⁷	UK	Focus groups	26 patients in 5 focus groups	MI or revascularization
MacInnes (2006) ³⁷	UK	Semi-structured interviews	10 female patients	MI
McCorry et al. (2009) ²²	UK	Semi-structured interviews	14 patients	MI
McSweeney and Crane ¹⁹ (2001)	USA	Semi-structured interviews	40 female patients	MI
Mead et al. (2010) ²⁰	USA	Focus groups	387 patients in 33 focus groups	CAD/AMI, CHF, other CVD
Mitchell et al. (1999) ³²	USA	Semi-structured interviews	15 patients	MI, PCI, heart transplant
Mitoff et al. (2005) ¹⁷	Canada	Semi-structured interviews	31 patients	Eligible for CR
O'Driscoll et al. (2007) ²¹	UK	Semi-structured interviews & participant observation	3 patients and 11 healthcare professionals	MI

(continued)

Table 1. Continued

Study	Country	Method	Participants	Diagnosis
Pullen et al. (2009) ⁴⁰	UK	Semi-structured interviews	8 female patients	MI, CABG, PCI
Schou et al. (2008) ³⁴	Denmark	Focus groups	6 female patients	MI
Taylor et al. (2010) ³⁰	Australia	Semi-structured interviews	15 aboriginal patients	Cardiac patients
Tod et al. (2002) ²⁹	UK	Semi-structured interviews	20 patients and 15 staff	MI
Tolmie et al. (2009) ⁴³	UK	Mixed methods; questionnaires & semi-structured interviews	31 patients (65 years and over)	MI
Visram et al. (2008) ⁴¹	UK	Semi-structured interviews & focus group	8 healthcare professionals (interviews) 9 South Asian patients (focus group)	Eligible for CR
White et al. (2010) ⁴⁶	UK	Semi-structured interviews	15 patients	MI
Wingham et al. (2006) ³³	UK	Semi-structured interviews	17 patients	MI
Wyer et al. (2001) ⁴²	UK	Semi-structured interviews	21 patients	MI

ACS, acute coronary syndrome; AMI, acute myocardial infarction; CABG, coronary artery bypass graft; CAD, coronary artery disease; CHF, chronic heart failure; CR, cardiac rehabilitation; CVD, cardiovascular disease; MI, myocardial infarction; PCI, percutaneous coronary intervention; UAP, unstable angina pectoris.

Emotions surrounding CHD diagnosis. People spoke of the distress surrounding the CHD diagnosis.^{31,36} Participants experienced disbelief and denial.³³ They experienced a loss of confidence and felt vulnerable in the face of a diagnosis which was mostly unexpected and confusing.^{16,33,37} They were frustrated by the illogical way in which they perceived that CHD 'strikes'.^{31,37} Many people focussed on survival in the early recovery period and decided to take part in CR as a result.^{31,33} Independent of participation in CR, the diagnosis of CHD caused a great deal of life stress and introspection.^{23,31,36,37}

Physical barriers affecting CR attendance. For some people there were a number of physical barriers which prevented them from participating in CR. The main factors included: no or restricted transportation;^{15,16,18,19,25,28,29,33,39-41} lack of parking at CR facility;^{15,16,18,28,33,42} competing work commitments^{15,16,18,28,33,34} or care for others commitments;^{25,30} inconvenient programme scheduling;^{28,40} personal safety concerns;⁴² financial cost;^{19,20,32} and language barriers.^{21,29,39,43,44} One study reported that taking part in CR disrupted the entire day.¹⁹

For others these physical barriers were overcome through a variety of solutions. Firstly the use of flexible programme formats;¹³ home-based options;³⁹ and importantly language- or culture-specific programmes.^{30,41}

Personal barriers affecting CR attendance. Opinions surrounding the diagnosis and management of CHD were polarized. For some participants, the decision not to attend CR was because of specific beliefs around the nature of CHD and the benefits, or lack thereof, of CR.^{20,23,28,43} These participants recalled that advice received at all stages of their treatment was contradictory.^{20,44,46} They perceived the healthcare professionals as coercive and didactic.^{21,23} In general, these participants had a poor understanding of CHD risk, tending to focus on the psychosocial aspects of CHD, such as believing CHD was caused entirely by stress.^{23,39} They also perceived themselves as having little control over their cardiovascular risk factors, believing change was pointless.^{17,22,23} Some participants also had negative perceptions of people who choose to participate in CR, believing that they were elderly or 'needy'.^{16,19,23} They were also embarrassed about participating in any group exercise.^{23,25,28,32,39}

CR participants expressed vastly different opinions about CHD and preventing recurrence. Firstly, they perceived the healthcare professionals as being experts in CHD, who minimized the contradictions in their explanations.^{13,19,23,33} The participants had a clearer understanding of CHD risk, focussing mainly on

Table 2. Quality checklist

Publication	Domain 1: Research team and reflexivity		Domain 2: Study design			Domain 3: Analysis and findings		
	Personal characteristics	Relationship with participants	Theoretical framework	Participant selection	Setting	Data collection	Data analysis	Reporting
Astin et al. (2008) ⁴⁵	p	×	p	p		p	p	p
Banerjee et al. (2010) ¹³	×	×	p	p	p	p	p	p
Bergman and Bertero (2001) ³⁶	p	×	✓	p	p	p	×	p
Chauhan et al. (2010) ⁴⁴	p	×	✓	✓	p	p	p	p
Clark et al. (2004) ²³	p	p	p	✓	✓	p	p	✓
Clark et al. (2005) ³	×	×	p	✓	✓	p	p	✓
Condon and McCarthy (2006) ³¹	×	×	p	✓	p	p	p	p
Cooper et al. (2005) ²⁸	×	×	✓	✓	p	p	p	p
Darr et al. (2008) ³⁸	×	×	p	p	p	p	p	p
Day and Batten (2006) ³⁵	p	×	✓	p	p	p	p	p
Dolansky et al. (2006) ¹⁴	p	×	p	p	p	p	p	p
Grewal et al. (2010) ¹⁵	p	×	✓	p	p	p	p	p
Heid and Schmelzer (2004) ¹⁸	×	×	✓	p	p	p	p	p
Hird et al. (2004) ²⁵	×	×	p	p	p	p	p	p
Jolly et al. (2004) ³⁹	×	×	✓	p	p	p	p	p
Jones et al. (2003) ¹⁶	×	×	p	✓	p	p	p	p
Jones et al. (2007) ²⁴	p	×	×	✓	p	p	p	p
Jones et al. (2009) ²⁷	×	×	p	p	p	p	p	p
MacInnes (2006) ³⁷	p	×	✓	p	p	p	p	p
McCorry et al. (2009) ²²	×	×	p	p	p	p	p	p
McSweeney and Crane ¹⁹ (2001)	×	×	p	p	p	p	p	p
Mead et al. (2010) ²⁰	×	×	p	p	p	p	p	p
Mitchell et al. (1999) ³²	×	×	✓	p	p	p	p	p
Mitoff et al. (2005) ¹⁷	p	×	✓	p	p	p	p	p
O'Driscoll et al. (2007) ²¹	p	×	✓	p	p	p	p	p
Pullen et al. (2009) ⁴⁰	p	p	✓	p	p	p	p	p
Schou et al. (2008) ⁵⁷	p	×	✓	p	p	p	p	p
Taylor et al. (2010) ³⁰	p	p	p	p	p	p	p	✓
Tod et al. (2002) ²⁹	×	×	p	✓	✓	p	p	p
Tolmie et al. (2009) ⁵⁸	p	×	p	p	p	p	p	p
Visram et al. (2008) ⁴¹	×	×	✓	p	p	p	p	p
White et al. (2010) ⁴⁶	p	×	p	p	p	p	p	✓
Wingham et al. (2006) ³³	p	×	✓	p	p	p	p	p
Wyer et al. (2001) ⁴²	×	×	p	✓	p	p	p	p

✓, criteria fulfilled; p, criteria partly fulfilled; ×, criteria not fulfilled.

modifiable risks, such as lifestyle, and understanding the need to make lifestyle changes.^{13,16,18,23,37,39} CR participants felt they had control over their cardiovascular risk factors and were able to make meaningful changes.^{23,26,38} They valued the peer support and enjoyed the camaraderie.^{23,32,33} Interestingly, participants also spoke of being embarrassed, but that they had overcome it and began to enjoy CR.^{23,26}

Culturally and linguistically diverse populations. Specific barriers to attendance exist within culturally and linguistically diverse (CALD) populations. Eight papers focussed on the experiences of CALD populations. Six of these examined the experiences of South Asian patients,^{13,15,38,39,43,45} one examined the experiences of South Asian and African Caribbean patients,³⁹ and one explored the experiences

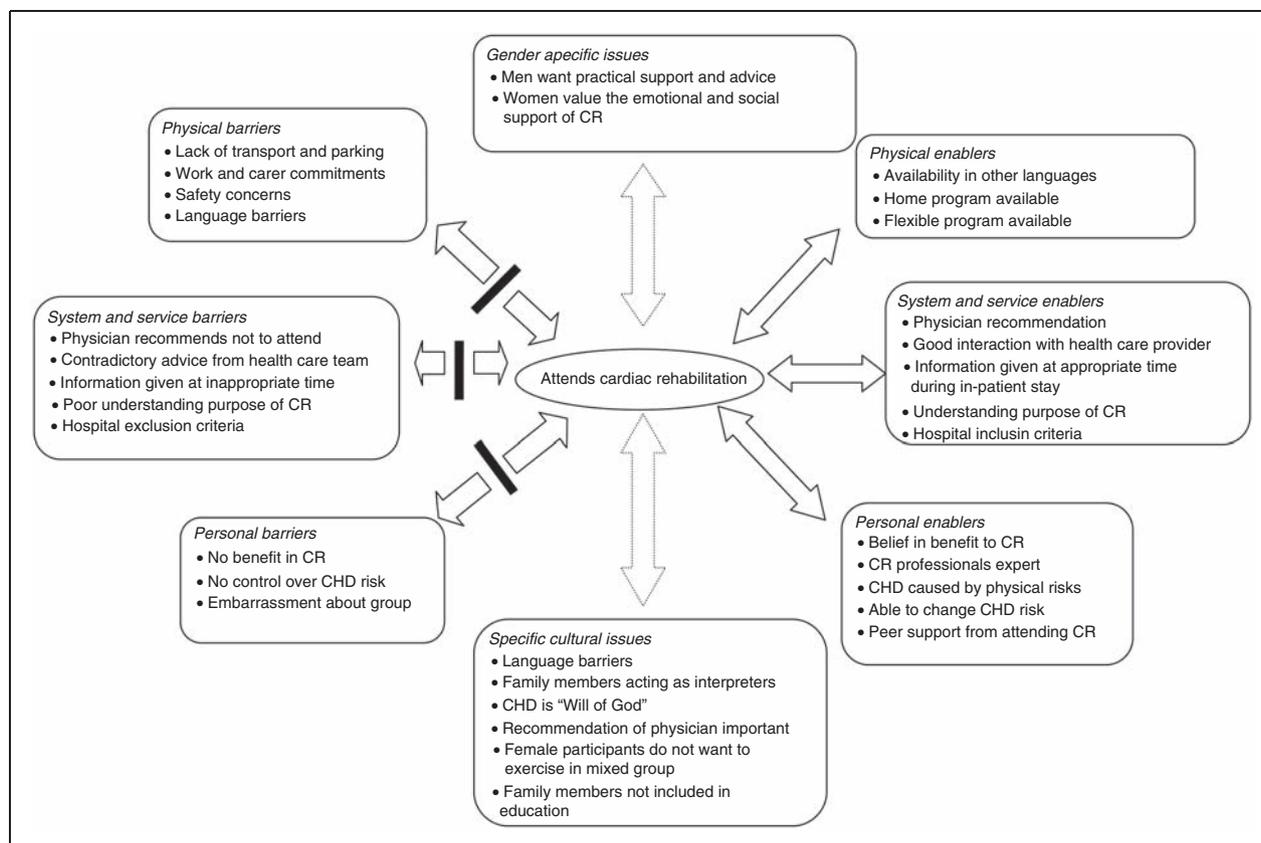


Figure 2. Results of the meta-synthesis.

of Australian Aboriginal patients.³⁰ For the South Asian patients, language was a major barrier to participation.^{39,45} Participation was highest where all participants spoke English.¹³

Some issues arose around translation of material, with family members often acting as interpreters.⁴⁵ When this occurred, family members avoided passing on what they believed might be distressing information, and therefore some healthy heart messages were lost.⁴⁵ A number of South Asian patients believed that CHD was caused by divine intervention and as such they should accept it as the will of God.^{38,44} It was particularly important to have the recommendation of the physician to participate, as physicians are highly respected within the South Asian culture.^{13,15} Among Australian Aboriginals there were also issues relating to colonialism and healthcare, and their younger age of CHD onset.³⁰ Also, Australian Aboriginals experienced disempowerment to make lifestyle changes secondary to the confronting messages in the media about their poor health outcomes.³⁰

Some female CALD participants were embarrassed at exercising in a mixed group and believed that they did not have the right clothing or footwear to participate.⁴¹ Female partners of male CALD patients

attending CR, who were responsible for meal preparation, were not always included in information sessions about healthy eating or were unable to understand the information which was delivered in English.⁴³ Yet another problem existed when patients from CALD background were given dietary advice which was not culturally sensitive. This caused distress to the participants and led them to believe that CR was not relevant to them.⁴¹

Gender differences. Although the majority of reasons for deciding whether or not to participate in CR were the same for men and women, they did have different expectations from CR. Men typically wanted practical support and advice,¹⁴ whereas women wanted emotional and social support.¹⁴ Women also spoke of the decision to attend CR requiring courage.¹⁹

Discussion

This study presents the first major systematic review and meta-synthesis of qualitative studies examining patients' decisions about attending CR. Our results show that there are a number of reasons affecting the decision to attend CR. Firstly, there are service and

system level barriers: physician recommendation, interaction with the healthcare team, and misconceptions surrounding CR. Secondly there are practical barriers: transport and parking, cost, and language. Thirdly there are personal barriers: perception of CHD and CR, and belief in ability to control CHD. Finally there are specific issues which affect CALD patients and women more particularly.

By working together to ensure that consistent advice is given across the healthcare team and that physicians recommend CR to all eligible patients, for example by using timely maintained electronic health records,⁴⁷ we can minimize the perceptions patients have of contradictions with the advice they are given. While one of the issues which our review highlighted was poor timing of the invitation to participate, we did not find any studies which had specifically addressed this. However, some studies have suggested that using an automatic referral system to CR may increase participation.^{48–50}

Notable was the large number of participants who had a poor understanding of what CR was, and many believed it was solely, or predominantly, about exercise. While some participants were encouraged to participate by this belief, others were discouraged. In one review of the literature, it was suggested that marketing CR as multiple risk reduction programmes may enhance uptake.⁸ Practical barriers, such as transport, parking, working, language, and scheduling, which have been widely cited in the literature, are also conceptualized by the participants in the current analysis. Attendance at CR might increase if out-of-hours services are provided, or if transport is provided, yet no studies have demonstrated if this is the case. Attendance has been increased where services are provided in other languages,^{13,43} or where a flexible or remote model has been used.⁵¹

However, marketing and adapting CR may only be part of the solution. While there were misconceptions surrounding CR, we also noted a difference in peoples' beliefs about their CHD, its trajectory, and CR.^{17,22,23,25,26,31,37,39,41} Those who were most likely to attend were also most likely to believe CHD was caused by biomedical risk factors and that they had some control over it. Those who were least likely to attend believed that CHD was caused by psychosocial factors and that they had little or no control over it. Taking a direct didactic approach to attendance at CR is likely to cause resistance.⁵² Instead, techniques such as motivational interviewing, combined with flexible community alternatives to facility CR, can promote the uptake in people who have declined CR.⁵³ A further solution could enlist peer-group support.²³

The main barriers to participation for patients from CALD backgrounds are related to language. However, we also found fatalistic health beliefs, and culturally

insensitivity can act as barriers to participation. Programmes which are specifically tailored to cultural beliefs and needs could therefore increase uptake.⁴¹ Specific strategies to increase uptake include cultural awareness training for non-indigenous staff, involving Aboriginal health workers and family members in CR, engaging with community elders and incorporating CR into existing community-based programmes.⁵³

While we noted similar barriers to participation in CR for men and women, we highlighted that women value the social support of CR more than other aspects of the programme. Another study has found women were significantly more anxious than men and also scored more highly for social inhibition, which may explain the lower participation and completion rates in CR by women.⁵⁴

Given the broad and extensive range of barriers which prevent people from participating in CR, it is unlikely that there will be a single solution. Rather, we need to develop a suite of solutions, which are flexible, responsive to the needs of the patients, are delivered in a variety of settings and modes, and are commensurate with the resources available. One proposed model for this is Secondary Prevention of coronary heart disease for All in Need (SPAN).⁵⁵ SPAN is inherently flexible yet provides a minimum level of health service standardization. It can be delivered across any area health service regardless of a patient's age, gender, ethnicity, geographical location, or socio-economic status. Importantly, the setting, communication technologies, and components of each patient's care are governed and woven into continuing care provided by the family physician in concert with a cardiac care facilitator.

Our review is limited by the quality of the included studies. Quality was assessed by using the COREQ checklist, but this provides guidance towards quality rather than categorical scoring. In addition, although the included papers all addressed participation in CR, the methodologies of the individual papers and the data collection techniques were quite diverse, which may hinder effective data synthesis.⁵⁶ Further, the length of time from diagnosis to study may have created recall bias in some participants. It was also not possible to assess whether there were associations between different variables, nor were we able to assess the impact of diagnostic group on attendance at CR. Future research should be directed to answer important questions about how successful the proposed strategies are in overcoming the barriers to participation.

Conclusions

There is a sizable body of qualitative research which investigates patients' reasons for non-attendance

at CR. This study presents the first major systematic review and meta-synthesis of qualitative studies examining patients' decisions about attending CR. Our results show that there are a number of reasons affecting the decision to attend CR. These include system-level and patient-level barriers, which are potentially modifiable. Future research would best be directed at investigating strategies to overcome these barriers. Development of a suite of flexible options around service provision that are responsive to the needs of the patients is paramount.

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Conflict of interest

None.

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