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Title: The effectiveness and experience of self-management following acute coronary syndrome: a review of the literature

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Title page

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Contributors & Acknowledgements

PG and RH were responsible for the study conception and design. PG performed a comprehensive literature search, study selection and review. RH provided insightful guidance and double check in identification, collection and analysis of papers throughout this review. PG drafted the manuscript. RH and PG made critical revisions to the manuscript for important intellectual content. All authors approved the final manuscript and act as guarantors for the study.

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Conflicts of interest

None.

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The effectiveness and experience of self-management following acute  
coronary syndrome: a review of the literature

Abstract

**Objectives:** To evaluate the effectiveness of interventions used to support self-management, and to explore patients' experiences after acute coronary syndrome in relation to self-management.

**Design:** Scoping review.

**Data sources:** Keyword search of CINAHL Plus, Medline, the Cochrane Library, and PsycINFO databases for studies conducted with adult population and published in English between 1993 and 2014.

**Review methods:** From title and abstract review, duplicated articles and obviously irrelevant studies were removed. The full texts of the remaining articles were assessed against the selection criteria. Studies were included if they were original research on 1) effectiveness of self-management interventions among individuals following acute coronary syndrome; or 2) patients' experience of self-managing recovery from acute coronary syndrome.

**Results:** 44 articles (19 quantitative and 25 qualitative) were included. Most studies were conducted in western countries and quantitative studies were UK centric. Self-management interventions tended to be complex and include several components, including education and counselling, goal setting and problem solving skills which were mainly professional-led rather than patient-led. The review demonstrated variation in the effectiveness of self-management interventions in main outcomes assessed - anxiety and depression, quality of life and health behavioural outcomes.

For most participants in the qualitative studies, acute coronary syndrome was unexpected and the recovery trajectory was a complex process. Experiences of making adjustment and adopting lifestyle changes following acute coronary syndrome were influenced by subjective life experiences and individual,

sociocultural and environmental contexts. Participants' misunderstandings, misconceptions and confusion about disease processes and management were another influential factor. They emphasised a need for ongoing input and continued support from health professionals in their self-management of rehabilitation and recovery, particularly during the initial recovery period following hospital discharge.

*Conclusions:* Evidence of the effectiveness of self-management interventions among people with acute coronary syndrome remains inconclusive. Findings from the patients' experiences in relation to self-management following acute coronary syndrome provided important insights into what problems patients might have encountered during self-managing recovery and what support they might need, which can be used to inform the development of self-management interventions. Theoretical or conceptual frameworks have been minimally employed in these studies and should be incorporated in future development and evaluation of self-management interventions as a way of ensuring clarity and consistency related to how interventions are conceptualised, operationalised and empirically studied. Further research is needed to evaluate self-management interventions among people following acute coronary syndrome for sustained effect and within different health care contexts.

Keywords: Acute coronary syndrome; conceptual framework; experiences; interventions; scoping review; self-management

## Contribution of the Paper

What is already known about the topic?

- With the shift in predominant disease patterns from acute to chronic disease, the promotion of self-management amongst people with long-term conditions is central to current NHS priorities.
- Evidence has suggested the effects of self-management interventions on rehabilitation and recovery across a variety of chronic conditions. However, to date less is known about the extent of the literature on self-management for individuals following an acute cardiac event.
- Despite widespread use of the term 'self-management' and growing interest in the concept, defining how self-management is manifested in terms of observable behaviours remains challenging in the field of health and social care.

What this paper adds?

- Evidence showed varying effects of the self-management interventions among people following acute coronary syndrome when compared with usual care. Most studies in this review were conducted in western countries and quantitative studies were UK centric. Therefore, more research is needed to explore self-management among people following acute coronary syndrome within different health care contexts.
- Experiences of making adjustment and adopting lifestyle changes following acute coronary syndrome were influenced by subjective life experiences and individual, sociocultural and environmental contexts. Participants' misunderstandings, misconceptions and confusion about disease processes and management were another influential factor.
- Little attention was paid to the underlying theoretical basis of the self-management interventions being tested. Theoretical perspectives should be incorporated in future development and evaluation of self-management

interventions as a way of ensuring clarity and consistency related to how interventions are conceptualised, operationalised and empirically studied.

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## 1. Introduction

With the shift in predominant disease patterns from acute to chronic disease, the promotion of self-management amongst people with long-term conditions is important (Griffiths et al., 2005). Supporting self-management is driven by the role change of patients from being passive care recipients to taking an active role in their own health care, and the pressure on health and social services due to workforce shortages, rising demand for services, population increases and budgetary constraints (de Silva, 2011).

Self-management is commonly defined as an 'individual's ability to manage symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition' (Barlow et al., 2002, p.178). It involves the decision-making and behaviours performed by individuals to manage illness on a daily basis and promote health, with or without the help or collaboration of healthcare providers (Omisakin and Ncama 2011; Griffiths et al., 2005; Henderson et al., 2014). Accordingly, self-management interventions are important and complex interventions designed to encourage people to take an active part in the management of their condition, improve individuals' confidence and ability to live with chronic disease, and the intention is (in part at least) to reduce the reliance on healthcare providers (Lorig et al., 2001; Foster et al., 2007).

There has been a substantial increase in the body of literature to suggest the effects of self-management interventions on rehabilitation and recovery across a variety of chronic conditions such as stroke (Jones et al., 2009), lymphoedema (McGowan et al., 2013), chronic obstructive pulmonary disease (Fairbrother et al., 2013; Bourbeau et al., 2013) and vascular risk reduction (Sol et al., 2005; Sol et al., 2008; Mead et al., 2010; Maitland and Chalmers, 2010).



Despite widespread use of the term 'self-management' and growing interest in the concept, defining how self-management is manifested in terms of observable behaviours remains challenging in health and social care. Furthermore, little is known about the extent of the literature on self-management for individuals following an acute cardiac event. Acute coronary syndrome refers to a spectrum of unstable coronary artery disease from unstable angina to transmural myocardial infarction and it is an umbrella term for situations where the blood supplied to the heart muscle is suddenly blocked (American Heart Association, 2015). Acute coronary syndrome has been described as an extremely traumatic cardiac event (Herber et al., 2012) and the aftermath has been found to influence physical and psychosocial well-being for a significant time period (Kristofferzon et al., 2005).

A scoping review systematically maps and assesses the breadth of existing evidence in a particular field (Arksey and O'Malley, 2005) and is an appropriate approach, through which an overview and critical analysis of all relevant, existing evidence, improves conceptual clarity of self-management following acute coronary syndrome. Key messages and gaps identified from this review will provide an indication of research areas to explore further and at greater depth, and contribute to the design and delivery of self-management interventions or other alternative forms which are more targeted towards people with acute coronary syndrome.

## 2. Methods

### 2.1. Aim and objectives

Specific objectives of this review are to:

- examine the extent of published evidence on the effectiveness of self-management interventions among adults following acute coronary syndrome;

- improve our conceptualisation of self-management and develop an understanding of the role of self-management among people following acute coronary syndrome;
- identify self-management interventions (contents, formats, modes of delivery), study designs and outcome measures; and
- explore patients' experience after acute coronary syndrome in relation to self-management.

## 2.2. Search strategy

We searched CINAHL Plus, Medline, the Cochrane Library, and PsycINFO for studies conducted with adult population and published in English between 1993 and 2014 as limited research prior to this date focused self-management in acute coronary syndrome. In an attempt to comprehensively capture all relevant literature, we extended our search to reference lists of included studies and American Heart Association and British Heart Foundation websites. Advice on search strategy was provided by a university library information specialist.

Keywords included: self-management, self-care, self-efficacy, self-monitoring, self-responsibility, self-help, self-assessment, self-medication, self-measurement, secondary prevention, acute coronary syndrome, acute cardiac event, myocardial infarction, heart attack, unstable angina, newly diagnosed angina. Keywords were then mapped to database thesauri search terms, where available, and searched as text word terms in all databases. Keeping search terms broad resulted in many irrelevant studies but these studies were eliminated at the study selection stage.

## 2.3. Study selection

An abstract screening tool with specific inclusion/exclusion criteria was developed and piloted with a sub-sample of titles and abstracts retrieved from the CINAHL Plus database. Once a final set of inclusion/exclusion criteria were agreed upon,

PG reviewed all abstracts identified in the search. Studies were included if their abstracts indicated that they were original research on 1) effectiveness of self-management interventions among individuals following acute coronary syndrome; or 2) patients' experience of self-managing recovery from acute coronary syndrome. We excluded interventions that did not address self-management, e.g., traditional patient education interventions and skills training, whereby healthcare providers are more likely to simply tell patients what to do. Commentaries, editorial or study protocols were also excluded. All abstracts were independently reviewed by the second reviewer (RH) against the selection criteria. Any discrepancies were discussed between two reviewers until a final agreement was reached.

#### 2.4. Description of self-management

For the purpose of this review, 'self-management' refers to those activities that are initiated and performed by patients on their own, without the immediate involvement of healthcare professionals, or unqualified healthcare workers in maintaining life, health and wellbeing (Griffiths et al., 2005). 'Self-management interventions' are about developing and supporting individuals to consider for themselves how they are and what actions they need to take to manage and/or improve their health and wellbeing, e.g., asking questions of 'how am I feeling today?', 'what do I need to do today to reduce my cholesterol?' and 'what should I do to alleviate this mild chest pain and should I seek medical advice?'. The studies evaluating the self-management interventions designed to enable adults following acute coronary syndrome to 1) become self-directed and independent; 2) make informed decisions; 3) take unprompted and appropriate actions that attain, maintain and promote their own physical and psychosocial health and enhance quality of life were considered to include in our review. The included studies should fulfil this description of self-management, although it could be stated implicitly rather than explicitly in some studies.

### 2.5. Data extraction and synthesis

We collected full descriptive characteristics such as authors, countries of origin, type of research design, interventions and main findings from the reviewed articles to create a detailed spreadsheet database. As the studies had heterogeneous quantitative and qualitative features, different self-management interventions and outcome measures, a descriptive synthesis of the data is presented.

### 3. Results

2014 papers were found from electronic database search (688 from MEDLINE/CINAHL Plus, 404 from the Cochrane Library, 922 from PsycINFO) and then 124 duplicates were removed. Of 1890 abstracts screened, 155 potentially relevant papers were identified. 126 papers were excluded with reasons after evaluation of the full texts. Reference lists of the remaining 29 papers and relevant websites were scanned for additional literature. Finally, a total of 44 papers were included (Figure 1).

Figure 1 here

We organised findings into two specific categories: Effectiveness of self-management interventions (Table 1), and patients' experiences of self-management following acute coronary syndrome (Table 2).

Table 1 & 2 here

#### 3.1. Effectiveness of self-management interventions

Nineteen quantitative papers that examined the effectiveness of self-management interventions with acute coronary syndrome patients were published between 1995 and 2014 (Table 1). Nine were carried out in the UK (Lewin et al., 2002; Barlow et al., 2009; Lacey et al., 2004; Furze et al., 2012; Dalal et al., 2007;

Taylor et al., 2007; O'Rourke and Hampson, 1999; Zetta et al., 2011; Linden 1995), four in Australia (Fernandes et al., 2009; Hawkes et al., 2013; O'Neil et al., 2014; Turkstra et al., 2013) and one in each of the following countries: USA (Holmes-Rovner et al., 2008), Canada (Aish and Isenberg, 1996), Spain (Muniz et al., 2010), New Zealand (Petri et al., 2002), Philippine (Ocampo-Balabagno, 1999) and China (Wang et al., 2012).

### *3.1.1. Study designs*

These nineteen papers reported 16 studies (sample sizes ranging from 30 to 1510). Fourteen papers were randomised controlled trials (RCT) including three papers reporting the same ProActive Heart trial (Hawkes et al., 2013; Turkstra et al., 2013; O'Neil et al., 2014) and two papers reporting the same Heart Manual trial (Dalal et al., 2007; Taylor et al., 2007), and only one trial (Barlow et al., 2009) reported a nested qualitative study. The remaining five papers included one pilot RCT (Fernandes et al., 2009), two nonrandomised controlled design (Lacey et al., 2004; O'Rourke and Hampson, 1999), one pre- and post-test design without a control group (Ocampo-Balabagno, 1999) and one with a descriptive comparative design (Linden, 1995).

### *3.1.2. Conceptual frameworks*

Little attention was paid to the underlying theoretical basis of the intervention being tested. In some papers, the conceptual frameworks were briefly described such as social cognitive theory (Hawkes et al., 2013; Turkstra et al., 2013, O'Neil et al., 2014), transtheoretical model of behaviour change (Fernandes et al., 2009), cognitive-behavioural therapy (Lewin et al., 2002; Zetta et al., 2011), Orem's self-care deficit theory of nursing and theory of self-efficacy (Aish and Isenberg, 1996), social learning theory and self-regulation model (O'Rourke and Hampson, 1999) and Leventhal's self-regulation model (Petrie et al., 2002), while half of papers did not mention whether or not the interventions were grounded in

any conceptual framework. The intervention in the ProActive Heart trial (Hawkes et al., 2013; Turkstra et al., 2013, O'Neil et al., 2014) was grounded in social cognitive theory as it has been successfully used across a wide range of health behaviour interventions. The intervention was designed to focus on the core determinants of health behaviour including knowledge of the risks and benefits of the behaviour, self-efficacy or confidence, outcome expectations and individualised strategies for achieving positive health behaviour change, and all coronary heart disease risk factors. The intervention was tailored to support individual participants to achieve their risk factor goals.

The angina plan (Lewin et al., 2002; Zetta et al., 2011) was based on theoretical principles of cognitive behavioural therapy. The aim of cognitive behavioural therapy is to allow people to take control of their own problems, manage feelings and behaviours, and deal with future problems in an adaptive way. The intervention included a patient-held "work-book" providing information on angina and its management, and an audiotaped relaxation and information programme. Over 12 weeks, "goal setting and pacing" was used to introduce lifestyle changes and support recovery through four telephone follow-ups for all participants in the angina plan group.

### *3.1.3. Nature and structure of self-management interventions*

Interventions were home-based, with a range of duration from six weeks to six months (Table 3), except one short hospital-based intervention (Petrie et al., 2002). The majority were led by nurses or project-trained health professionals; one by the medical team (Muniz et al., 2010), psychologists (Petrie et al., 2002), the researcher (Wang et al., 2012), research assistant (Fernandes et al., 2009); and two by lay persons (Barlow et al., 2009; Furze et al., 2012). It was unclear what influenced who delivered the intervention, as the papers did not report the reasons why the person delivering the intervention was selected.

In terms of the formats, most studies used media-based (manual or/and audiotape) self-management interventions combined with verbal explanations in the form of face-to-face one-to-one instruction, or face-to-face group instruction, or telephone contact, or home visit or a mixture of these. Three studies (Petrie et al., 2002; Barlow et al., 2009; Ocampo-Balabagno, 1999) primarily depended on verbal explanations without the use of any media-based tools. In addition, among various formats of self-management interventions administered, face-to-face group instruction was exclusively used by Barlow et al. (2009) as a means of the Expert Patient Programme delivered by and for myocardial infarction patients.

Self-management interventions in most studies were complex and contained combination of several components: (1) generic and disease specific knowledge and skills in the self-management of stress, medication, physical activity and nutrition to be used on daily basis, (2) development of communication strategies and social networks, (3) behaviour change and motivation to change, and (4) skills in decision making, problem solving, and goal setting. The exception is Aish and Isenberg's study (1996), which focused mainly on self-management of nutrition. It is also worth noting that the content of self-management interventions in six papers emphasised secondary prevention of coronary heart disease and the importance of health-related lifestyle change for recovery among acute coronary syndrome patients (Fernandes et al., 2009; Hawkes et al., 2013; Turkstra et al., 2013; O'Neil et al., 2014; Muniz et al., 2010; Holmes-Rovner et al., 2008).

The health-related lifestyle self-management (HeLM) (Fernandes et al., 2009) was a structured brief cognitive behavioural intervention programme which comprised of goal-setting, bibliotherapy (a 50-page colour-coded booklet titled Take the HeLM, a self-help resource to provide skills training for modification of

health risk-related behaviour relating to smoking, physical activity and saturate fat intake), feedback of personal risk, collaboration and communication with GPs, three supportive phone calls during the 8-week intervention period, a refrigerator magnet and a health diary.

In the ProActive Heart trial conducted in Australia (Hawkes et al., 2013; Turkstra et al., 2013; O'Neil et al., 2014), the intervention group received up to 10 thirty minute scripted telephone health coaching sessions over a six-month period focusing on key determinants of health behaviour, individual action plans and support networks. Prior to the commencement of the intervention, a ProActive heart handbook was posted outlining the programme goals for coronary heart disease risk factors as well as the benefits of improving coronary heart disease risk factors and emotional wellbeing and an existing written educational resource produced by the National Heart Foundation of Australia ('My Heart My Life').

The Heart Manual was the most frequently implemented home-based cardiac rehabilitation self-management programme in the UK context (Lacey et al., 2004, Dalal et al., 2007; Taylor et al., 2007; O'Rourke and Hampson, 1999; Linden, 1995). It not only consisted of a user-friendly manual giving rehabilitation and lifestyle information to be used over six consecutive weeks, but it also included relaxation exercises and advice for patients and partners using audiotape and an exercise plan to be followed according to individual ability. Individuals using the manual were supported by a trained facilitator through telephone or through face-to-face meeting over six weeks after hospital discharge. A Chinese version of the Heart Manual was designed by Wang et al. (2012) incorporating appropriate sociocultural components such as tai chi, qi gong and Chinese diet but it was more simplified and briefer, without audiotapes or a facilitator.

#### *3.1.4. Outcome measures used to evaluate effectiveness*



A variety of outcomes were measured, most commonly anxiety and depression, quality of life and health behavioural outcomes. The other outcomes included healthcare utilisation, self-efficacy, frequency and severity of angina pain, illness perception, knowledge and misconceptions, patient satisfaction, social support, return to work, functional health performance and compliance (Table 4). The length of follow up ranged from six weeks to a year. The majority of outcome measures heavily relied on self-report that required the participants to recall past events. Information bias may have been introduced due to recall period, selective recall and social desirability. Except one pre- and post-test study without a control group (Ocampo-Balabagno, 1999), evidence from the 18 papers showed varying effects of the interventions among people following acute coronary syndrome when compared with usual care.

#### 3.1.4.1. Anxiety and depression

Ten papers measured anxiety and depression and all used the Hospital Anxiety and Depression Scale (HADS) as the measurement tool. Of these, five suggested that self-management interventions were effective in reducing anxiety (Wang et al., 2012; Lewin et al., 2002; Lacey et al., 2004; Furze et al., 2012; O'Neil et al., 2014), whereas five did not demonstrate difference in anxiety scores between the intervention and control groups (Barlow et al., 2009; Dalal et al., 2007; O'Rourke and Hampson, 1999; Zetta et al., 2011; Linden, 1995). Four papers found a positive effect of self-management interventions on symptoms of depression (Lewin et al., 2002; Lacey et al., 2004; Furze et al., 2012; O'Rourke and Hampson, 1999) and six did not (Wang et al., 2012; Barlow et al., 2009; Dalal et al., 2007; Zetta et al., 2011; O'Neil et al., 2014; Linden, 1995).

#### 3.1.4.2. Quality of life

Quality of life was measured in nine papers using different measurement tools. Four papers reported the positive effects of self-management interventions on at

least one domain of quality-of-life measure (Wang et al., 2012; Hawkes et al., 2013; Zetta et al., 2011; Lewin et al., 2002), while the others did not demonstrate any difference between the two groups (Barlow et al., 2009; Furze et al., 2012; Lacey et al., 2004; Dalal et al., 2007; Holmes-Rovner et al., 2008). Four papers used the Short Form 36-Item Health Survey (SF-36), a generic tool, three (Wang et al., 2012; Barlow et al., 2009; Zetta et al., 2011) not only used the SF-36 but also a cardiac-specific quality-of-life questionnaire such as Myocardial Infarction Dimensional Assessment Scale (MIDAS), Seattle Angina Questionnaire (SAQ) or Cardiovascular Limitations and Symptoms Profile (CLASP). Barlow et al.'s study (2009) showed no evidence of any effect of the Expert Patient Programme on quality-of-life scores as measured by both the SF-36 and MIDAS. Wang et al. (2012) found that patients in the Chinese version of the Heart Manual group had significantly higher scores on four of the eight domains of the Chinese SF-36 (physical function, role physical, vitality and mental health) and on three of the seven dimensions of the MIDAS (physical activity, dependency and concerns over medication). In Zetta et al.'s study (Zetta et al., 2011), Angina Plan participants reported an increase in self-reported exercise, less functional limitation measured by SAQ and improvements in general health perceptions on SF-36 and social and leisure activities on CLASP compared to those receiving usual care without any self-management elements involved.

#### 3.1.4.3. Health behavioural outcomes

Of eight papers measuring health behavioural outcomes (Fernandes et al., 2009; Barlow et al., 2009; Hawkes et al., 2013; Muniz et al., 2010; Furze et al., 2012; Dalal et al., 2007; Zetta et al., 2011; Holmes-Rovner et al., 2008), two papers (Barlow et al., 2009; Dalal et al., 2007) did not report any difference between the two groups in terms of their health behavioural outcome measurement such as exercise capacity, smoking, BMI, BP, total cholesterol level, use of medication, coronary events and mortality. The other studies have indicated that self-

management interventions did produce improved outcomes in physical activity (Hawkes et al., 2013; Furze et al., 2012; Holmes-Rovner et al., 2008), BMI (Zetta, et al., 2011; Muniz et al., 2010), reported statins intake (Muniz et al., 2010), vegetable intake (Hawkes et al., 2013) and fruit intake (Fernandes et al., 2009) when compared to usual care. Borderline statistical significance was demonstrated for BMI and alcohol consumption (Hawkes et al., 2013) as well as waist circumference (Muniz et al., 2010). After adjustment for potentially important variables, Muniz et al. (2010) found that there were differences in proportion of patients who exercise regularly and those with total cholesterol below 175 mg/dl between the two groups.

#### 3.1.4.4. Healthcare utilisation and cost-effectiveness

Healthcare utilisation was measured in five papers (Turkstra et al., 2013; Furze et al., 2012; O'Rourke and Hampson, 1999, Zetta et al., 2011; Linden 1995). Of these, three did not conduct cost minimisation analysis and found that the two groups did not differ in the frequency of GP contact or/and hospital admission (O'Rourke and Hampson 1999; Zetta et al., 2011; Linden, 1995). Turkstra et al. (2013) examined the cost-effectiveness of a six-month coronary heart disease secondary prevention health coaching intervention for myocardial infarction patients (ProActive Heart) and showed that patients in the intervention group were significantly more likely to be admitted to hospital due to causes unrelated to cardiovascular disease than those in the usual care group. The overall cost for the intervention group was higher, mainly due to higher hospitalisation (both cardiac and non-cardiac) costs rather than the costs of running the intervention. The incremental cost-effectiveness ratio was \$85,423 per quality-adjusted life year which was high and above acceptable limits compared to usual care. They concluded that there was no intervention effect measured using the SF-36/SF-6D and ProActive Heart resulted in significantly increased costs. Another paper by Furze et al. (2012) suggested that a home-based, Lay-facilitated, Angina

Management Programme (Angina Plan) was considered cost-effective, which was in contradiction to the findings of Turkstra et al. (2013).

#### 3.1.4.5. Self-efficacy

Of three papers measuring self-efficacy (Barlow et al., 2009; Aish and Isenberg, 1996; O'Rourke and Hampson, 1999), only one paper found that patients receiving the Heart Manual reported stronger beliefs in their ability to control the illness at follow-up, compared with patients receiving a hospital-based exercise and education programme (O'Rourke and Hampson, 1999). Additionally, in three papers measuring frequency and/or severity of angina (Lewin et al., 2002; Furze et al., 2012; Petrie et al., 2002), Lewin et al. (2002) reported that Angina Plan patients showed a greater reduction in the frequency of episodes of angina per week and the use of number of short-acting glyceryle trinitrate (GTN) pills per week. Petri et al. (2002) found that at the three-month follow-up, patients who received three 30 - 40 minute illness perception intervention sessions by a psychologist reported a significantly lower rate of angina symptoms than those in the control group.

#### 3.1.4.6. Illness perception

Two papers measured illness perception using Illness Perception Questionnaire (IPQ) (O'Rourke and Hampson, 1999; Petrie et al., 2002). In Petri et al.'s study (Petri et al., 2002), the illness perception intervention used the patient's view of illness as a starting point and built the material around these existing perceptions and they found that the intervention caused significant positive changes in patients' views of their myocardial infarction. Another study by O'Rourke & Hampson (1999) did not report difference between the Heart Manual and usual care group. In addition, two papers evaluating the effect of Angina Plan measured misconceptions using York Angina Beliefs Questionnaire (YABQ) (Furze et al., 2012; Zetta et al., 2011) and demonstrated important difference favouring the

intervention group for angina misconceptions within a period of six month follow up.

#### 3.1.4.7. Other outcomes

Positive results of the effect of self-management interventions were also shown in the following outcomes such as functional health performance scores and compliance to the intervention (Ocampo-Balabagno, 1999), confidence of recovery and perception of progress (Linden, 1995) and readiness for hospital discharge and return to work (Petri et al., 2002). The intervention group was also found more satisfied and optimistic than the control group that their illness could be controlled or cured (Petri et al., 2002; O'Neil et al., 2014). There were no significant differences between the two groups in social support (O'Rourke and Hampson, 1999), perceptions of control over recovery (O'Rourke and Hampson, 1999), rehabilitation attendance (Petri et al., 2002) and nutritional self-care (Aish and Isenberg, 1996).

Table 3 & 4 here

#### 3.2. Patients' experiences of self-management following acute coronary syndrome

Twenty-five qualitative studies published between 1997 and 2012 were identified that explored the perceptions and experience of self-managing recovery (Table 2). However, none of the studies retrieved focused on patients' experiences of any specific self-management interventions following acute coronary syndrome or indeed used the term 'self-management' to describe patients' experience of recovery or treatment. Nevertheless, all the studies described patient's experiences and behaviours as being aligned to our description of self-management in section 2.4 i.e. being self-directed and independent, making informed decisions and taking unprompted and appropriate actions that attain, maintain and promote their own physical and psychosocial health. The studies

helped to explain when, how and why self-management interventions or their components work, and captured the concept and importance of 'self' in acute coronary syndrome recovery to some degree (e.g., self-beliefs, self-perception and support, adjusting lifestyle changes, learning to live with it, reconnecting self and a sense of control), even though none explicitly named it as 'self-management'. Furthermore, the use of the term self-management in healthcare is relatively recent and the included studies did contribute to understanding the elements of self-management although they did not use the term.

Seven studies were conducted in Canada (Galdas et al., 2012a; Galdas et al., 2012b; Kerr and Fothergill-Bourbonnais, 2002; Sutherland and Jensen, 2000; Benson et al., 1997; Doiron-Maillet and Meagher-Stewart, 2003; Tobin, 2000), five in the UK (White et al., 2007; Hutton and Perkins, 2008; Webster et al., 2003; White et al., 2011; Gregory et al., 2006), five in Sweden (Hildingh et al., 2006; Kristofferzon et al., 2007; Alsen et al., 2008; Sjöström-Strand et al., 2011; Johansson et al., 2003), five in Australia (Everett et al., 2011; Davidson et al., 2011; Jackson et al., 2000; Worrall-Carter et al., 2005; Daly et al., 2000), each in USA (Coyle, 2009), Ireland (Condon and McCarthy, 2006) and Faroe Islands (Askham et al., 2010).

These studies involved a total of 546 participants including 457 patients with sample size ranging from 5 to 97. Davidson et al. (2011) not only collected interview data from eight patients but also conducted focus groups with 76 community members and interviews with 13 health professionals. Various qualitative research designs were used including phenomenology and grounded theory. The majority of these studies conducted individual, face-to-face semi-structured interviews in the patients' homes, each of which lasted between 30-140 min. Two studies conducted focus groups with the patients (Benson et al., 1997; Gregory et al., 2006).

### *3.2.1. Self-management as part of a complex process of recovery*

For most participants, acute coronary syndrome was unexpected and the recovery trajectory was considered as a complex process (Jackson et al., 2000). In an initial stage, they were confronted with uncertainty about life and death as well as the body (Doiron-Maillet and Meagher-Stewart, 2003), fear and worries and the overwhelming sense of vulnerability (Webster et al., 2003; Kristofferzon et al., 2007; Johansson et al., 2003). Data from the included qualitative papers revealed that normal life was often markedly threatened by the acute coronary syndrome experience. Having a myocardial infarction was viewed by the participants as a crisis and/or a trauma (Coyle, 2009). The consequences of a myocardial infarction could interfere daily life of some patients even five years after the event (Sjöström-Strand et al., 2011).

Physical symptoms and emotional distress were the most commonly described problems after a myocardial infarction (Alsen et al., 2008; Kristofferzon et al., 2007). The participants managed the problems by accepting the limitations acute coronary syndrome has caused and establishing boundaries, negotiating with themselves, relying on their own capabilities, changing attitudes and behaviours and taking their own decisions and actions (Kristofferzon et al., 2007). Alsen et al. (2008) found that fatigue was a major health problem for the participants in their study. However the participants had no entirely effective self-care coping strategy, therefore the result was moderate relief of fatigue rather than complete recovery.

Experiences of making adjustment and adopting lifestyle changes following acute coronary syndrome were influenced by subjective life experiences and individual, sociocultural and environmental contexts (Galdas et al., 2012a; Galdas et al., 2012b; Davidson et al., 2011; Kerr and Fothergill-Bourbonnais, 2002). Four inter-related barriers to sustained engagement in physical activity emerged from

interviews with 15 Punjabi Sikh patients in Canada (Galdas et al., 2012a). They included (1) difficulty in determining safe exertion levels independently, (2) fatigue and weakness, (3) preference for informal exercise such as walking, and (4) migration-related challenges such as limited social networks and reduced labour-intensive farming and domestic work when participants migrated from the north Indian state of Punjab to Canada. In Everett et al.'s study (Everett et al., 2011) interviewing 25 survivors of an acute cardiac event in Australia, data revealed two types of patient-related barriers to behaviour change and self-management. Discrepancies between what participants felt they should be doing and what they actually were doing reflected their ambivalence toward change. Participants' misunderstandings, misconceptions and confusion about disease processes and management were another influential factor. These findings provided important insights into what problems participants might have encountered in acute coronary syndrome self-management and what support they might need, which can be used to inform the development of self-management interventions.

In the later stage, participants presented a fairly positive view of their situation and prospects for the future. They related this to an increased and liberating awareness of what was most important to them and their health condition and to having made healthy lifestyle changes (Sjöström-Strand et al., 2011). The recovery process made progress toward reorientation enabling a new life focus and a new balance in self and relationships (Hildingh et al., 2006). Participants expressed their desire to 'get back to normal' (Sutherland and Jensen, 2000; Tobin, 2000; White et al., 2011) and described spending a great degree of time during the first few weeks planning and initiating a variety of strategies to take care of themselves such as conserving energy in performing household chores and meal preparation (Kerr and Fothergill-Bourbonnais, 2002). By the end of the



third week following hospital discharge, participants generally expected to be able to return to work and resume their previous activities (Jackson et al., 2000).

### *3.2.2. Importance of ongoing needs and support during self-managing recovery*

The initial recovery period following hospital discharge is emotionally and physically challenging and support is important throughout this period. Askham et al. (2010) interviewed eight women aged from 48-70 years diagnosed with acute coronary syndromes in the Faroe Islands. The findings highlighted information needs and access to multimodal forms of education, discharge planning and planning for contingencies after hospital discharge and facilitating support resources as important areas for service improvement. Another study (Condon and McCarthy, 2006) found that the difficulties encountered by participants six weeks following hospital discharge were due to the implementation of too many life style changes at once as well as the lack of professional help in the community to support them to make lifestyle changes. In Gregory et al.'s study (2006), most participants commented that a form of ongoing long-term follow up and support beyond any cardiac rehabilitation would be helpful. It might include providing advice on lifestyle change, regular contact with medical/health professionals for confirmation of good health and to ask questions, reassurance to other family members and sharing with people with similar experiences.

An unmet need for reliable information was identified by ten female survivors of first-time myocardial infarction in Australia (Jackson et al., 2000). The women explained that as their comprehension and recall could be affected by myocardial infarction experience, they might have had little understanding or memory of information provided. In addition, they showed little interest in participating in formal cardiac rehabilitation programmes but suggested that the most successful intervention for the provision of information would be the written information augmented by the availability of telephone counsellors who were able to answer

questions and clarify information. Majority of the interventions tested in the review included written materials and telephone-delivered health coaching sessions such as the ProActive trial (Hawkes et al., 2013; O'Neil et al., 2014; Turkstra et al., 2013).

Sharing experiences with a layperson or in a peer support group has been found to be an important part of recovery (Hildingh et al., 2006). Particularly, emotional, informational and practical support from family and social networks in the recovery process was significant (Webster et al., 2003; Worrall-Carter et al., 2005). The participants in Kristofferzon et al.'s study (Kristofferzon et al., 2007) felt that the network was generally supportive but they often experienced communication problems when they interacted with their network. Overprotection by family members was also identified as a source of frustration and aggravation for participants (Condon and McCarthy, 2006). This suggested that participants valued the opportunity to self-manage their recovery.

#### 4. Discussion

Given the ongoing interest in self-management, it is timely to conduct a scoping review to provide conceptual clarity and inform the future direction for practice and research within the field of acute coronary syndrome.

##### 4.1. Conceptual clarity of self-management

The findings from this review make a modest contribution to clarifying the concept of self-management generally and in understanding the role of self-management among people with acute coronary syndrome. Theoretical or conceptual frameworks have been minimally employed in the design, evaluation and implementation of these self-management interventions. Few studies clearly defined what successful self-management means and what it looks like in terms of patient activity and how they think about their life with acute coronary

syndrome. Furthermore, most studies did not mention or explicitly explain the theoretical underpinning of the development and delivery of these interventions.

Generally, these interventions supported individuals to learn sufficient knowledge of the condition and its treatment, perform activities to manage their condition after discharge and incorporate those particular self-management skills into their everyday life to attain the best possible health outcomes. This is consistent with Newman et al.'s work (2004) which suggests that the core components of self-management interventions are knowledge and behaviour change and to be effective imply a level of self-responsibility, more than simple adherence to guidance. Furthermore, the studies which explored patients' experiences of recovery emphasise the influence of individual life experiences and sociocultural context on adopting lifestyle changes suggesting that self-management interventions require health professionals to practise from a collaborative care perspective where they support and facilitate patients to take action to achieve health and provide opportunities for them to learn self-management skills and how to incorporate those skills into their everyday life (Holman & Lorig 2004).

Some existing interventions for people with acute coronary syndrome which provide opportunities to learn self-management knowledge and skills may not be labelled as self-management interventions. Inconsistent terminology used in the literature and a lack of detailed definition resulted in a lack of clarity which was challenging in all stage of the review but particularly in literature searching and selection. However, search terms used for this review included self-management and related concepts such as self-care, self-monitoring and secondary prevention helped to identify relevant literature.

4.2. Implications for future development of self-management practice and research

An important finding about the development and nature of self-management interventions was that they were mainly professional-led rather than patient-led. There was no element of patient and public involvement either during the development of the self-management interventions or within the design of the research studies reviewed. This seems somewhat contradictory that the development and evaluation of interventions to increase self-management does not involve the people who are expected to become more self-determining and independent to ensure that the intervention addresses their needs in an acceptable way and that outcome measures used reflect key patient concerns.

Furthermore, although self-management was not explicitly mentioned several of the studies that explored patients' experience of recovery demonstrated clear, unprompted self-management actions by patients which indicate the importance and value of their involvement in designing useful and acceptable interventions. Any potential power imbalance in the health professional-patient relationship may be a barrier to authentic self-management to change patients' long-term behaviours and enable patients to actively engage in decision-making discussions (Joseph-Williams et al., 2014) and this needs to be addressed when designing and implementing any self-management intervention. Therefore, such interventions need to be not only based on current clinical guidelines on cardiac rehabilitation and planned in consultation with health professionals such as cardiologists, psychologists and physiotherapists, but more importantly these should also be based on patient need and planned and developed in consultation with patients and their families.

The qualitative research studies demonstrated that patients' beliefs and perceptions of the cause of their acute coronary syndrome may have a major influence on making their decision on health behavioural changes and their overall recovery. This is consistent with a paper by Thompson and Lewin (2000).

Individuals' needs, concerns and experience during recovery after acute coronary syndrome play an important role in the development of self-management interventions. If self-management interventions are designed to address the specific needs of this group at the right time, it is more likely to lead to improved health benefit, and reduced morbidity and mortality (de Silva, 2011).

There was a lack of consensus in the literature about the optimal format and the best approach or strategies to self-managing for this group of patients. The main features of these self-management interventions tended to be complex and included multi-components, but involved similar principles which were to improve self-management by reducing people's dependence on health professionals and increasing their sense of control and wellbeing. Most interventions were delivered by health professionals and varied in duration. As the greater part of any verbal communication could be quickly forgotten, the majority of the interventions were backed up with written and audio materials. These complexities and differences in self-management interventions, and the scarcity of research addressing feasibility of implementation, acceptability to patients and cost-effectiveness, make it difficult to advance research and for clinicians to select evidence-based strategies for implementing self-management interventions.

#### 4.3. Future research

Among a variety of outcomes measured, inconclusive evidence was found for the effectiveness of self-management interventions and little exploration for understanding when, how and why interventions work for people following acute coronary syndrome. The outcomes used in these included studies were typically self-reported so may be biased due to selective recall. There is the need to include more objective measurement of the outcome of self-management e.g. physiological measures in future research.

In the evaluation of self-management interventions, longer-term follow-up of longer than one year is needed, along with assessment of cost-effectiveness and process evaluation through qualitative studies. There is also a need to conduct more studies which explore the acceptance and feasibility of using innovative approaches such as internet-based self-management interventions for people with acute coronary syndrome and the involvement of their families, especially partners. In addition, theoretical perspectives should be incorporated in future development and evaluation of self-management interventions to ensure clarity and consistency in how interventions are conceptualised, operationalised and empirically studied.

Most studies in this review were conducted in western, developed countries. Evidence generated from these existing studies cannot be directly transferred to the non-western context of healthcare delivery without a more critical and context-specific investigation as self-management has been recognised to be situation specific and socially and culturally influenced (Song and Lipman, 2008; Henderson et al., 2014).

#### 4.4. Strengths and limitations

This scoping review is a comprehensive account of available literature on self-management interventions, outcomes, evidence relating to effectiveness and economic aspects, and the findings of the review enable us to make comparisons across intervention types, identify contradictory evidence and numerous gaps in the evidence base.

Assessment of methodological quality was not performed. Studies of poorer quality and small sample size were also included, which may restrict the generalisability of our conclusions. This is a scoping review and the focus of this review was to provide a broader picture of the existing literature. Capturing the

heterogeneity of self-management interventions in terms of the components, frequency, duration, timing and mode of delivery and the difference in the outcome instruments used helped to gain a broader picture, however, it may even further restrict the generalisability of our conclusions. In addition, due to time and resource restraints, we were unable to review papers published in non-English. Exclusion of the non-English papers relevant may have limited the scope of research activity carried out in developed countries.

## 5. Conclusions

This scoping review has demonstrated that the evidence of the effectiveness of self-management interventions among people following acute coronary syndrome is inconclusive. Findings from the patients' experiences of self-management have identified important implications for health professionals regarding how to support this group of patients in managing their health and suggested that people during rehabilitation and recovery still want and need ongoing input and continued efforts from health professionals to promote and support patient self-management. Therefore, self-management does not completely substitute for medical management and does not mean that patients will be left alone. A collaborative partnership between patients, family members and health professionals which respects equality, reciprocity and mutual understanding is considered an important way forward to facilitate effective and efficient self-management for patients with chronic conditions to enable them to achieve optimal control over their condition.

Theoretical or conceptual frameworks have been minimally employed in the reviewed studies, which leads to a modest contribution to the conceptual clarity of self-management. Theoretical perspectives should be incorporated in future development and evaluation of self-management interventions as a way of ensuring clarity and consistency related to how interventions are conceptualised,

operationalised and empirically studied. Further research is needed to evaluate self-management interventions among people following acute coronary syndrome for sustained effect and within different health care contexts.

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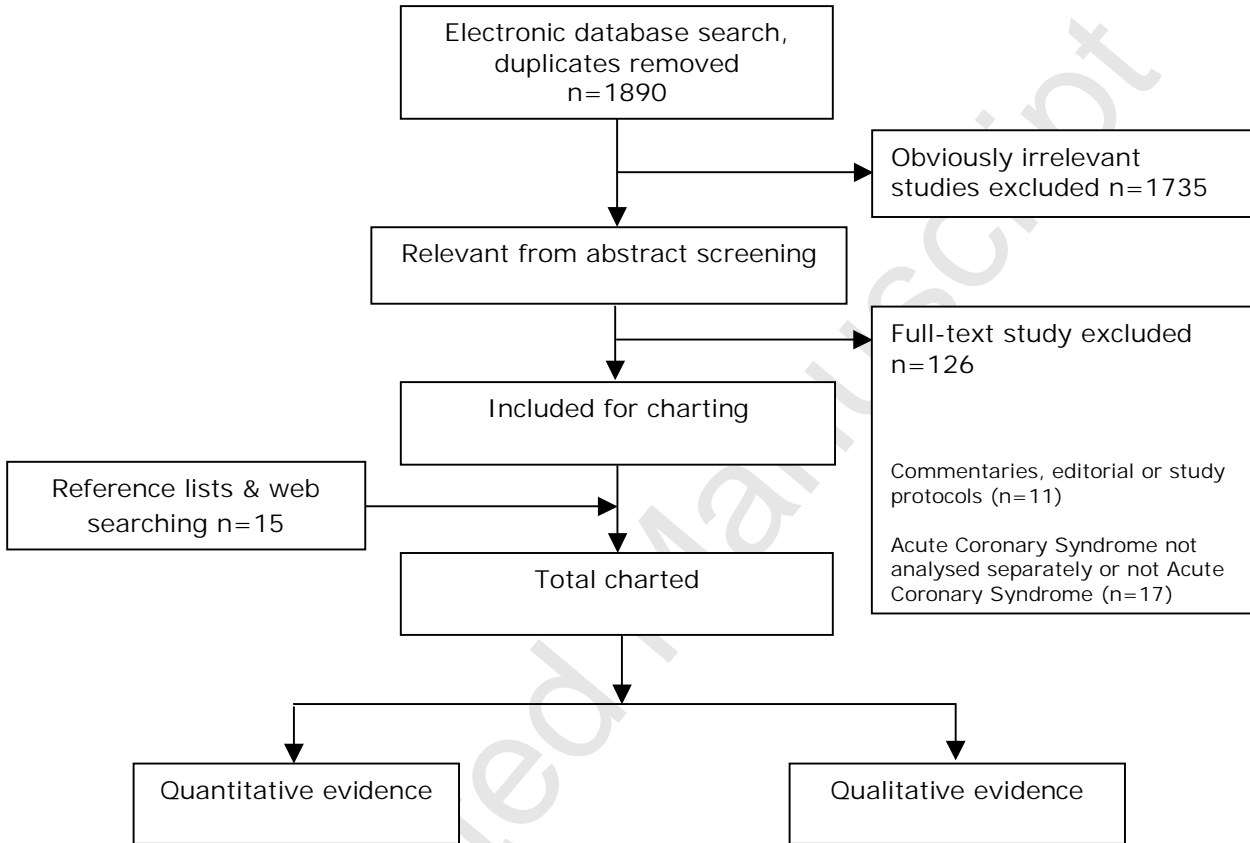


Figure 1 Flow diagram of study selection process

Table1 Summary of the reviewed quantitative evidence (n=19)

Author/Setting	Aims	Designs	Populations	Interventions/Comparisons	Main outcomes
Aish & Isenberg 1996 Canada	Effect of a nursing intervention on nutritional self-care	RCT	104 MI Mean age 62 years (34-83 years old) 62 male, 42 female	Intervention group (n=52): two home visits and three telephone calls dealing with nutritional goal setting and review, question and discussion about diet, a booklet about how to modify lifestyle. Control group (n=52): the second home visit and three phone calls not focusing on diet.	Total/saturated fat (diet record): improved at 7 weeks* Cholesterol intake (diet record): no difference Food habits (FHQ): improved at 7 weeks* Self-care agency (ASA): no difference Self-efficacy for healthy eating (EHCS): no difference
Barlow et al. 2009 UK	Effectiveness of the Expert Patient Programme (EPP)	RCT, with a nested qualitative study	192 MI Mean age 66 years 138 male, 54 female	EPP group (n=96): six weekly sessions by lay tutors covering pain, extreme tiredness, depression, relaxation, exercises, healthy eating, communication and future plan. Control group (n=96): a 4-month waiting-list.  Telephone interviews with 19 intervention group participants (10 male, 9 female).	General health status (SF-36): no difference MI specific health status (MIDAS): no difference Self-efficacy (two sub-scales): no difference Psychological well-being (HADS): no difference Lifestyle and self-management behaviours (scales evaluating Chronic Disease Self-Management Course): no difference The EPP was viewed as being more about discussion, mutual support and goal setting. Male valued information exchange whereas female preferred emotional support and social interaction.
Dalal et al. 2007 UK	Effectiveness of the Heart Manual	RCT	230 MI (104 in randomised groups, 126 in preference groups) Mean age 63 years 188 male, 42 female	104 consented to randomisation (60 to home, 44 to hospital) and 126 chose (72 chose home, 54 chose hospital). Home-based rehabilitation: Heart Manual, a home visit and follow-up telephone calls by a cardiac rehabilitation nurse. Hospital-based rehabilitation: outpatient classes by multidisciplinary teams once a week for 8-10 weeks.	Anxiety and depression (HADS): no difference Quality of life (MacNew): no difference Total cholesterol: no difference Exercise capacity, smoking, BMI, BP, coronary events, use of medication and mortality: no difference No difference found in outcomes between the preference groups.
Fernandes et al. 2009 Australia	Feasibility of the HeLM intervention to decrease cardiovascular risk following ACS	Pilot RCT	51 ACS Mean age 57 years 40 male, 11 female	Health-related lifestyle self-management (HeLM) group (n=29): goal setting, bibliotherapy, feedback of risk, communication with GP, phone calls, a refrigerator magnet and health diary. Standard cardiac rehabilitation group (n=22): information relating to heart disease by health professionals.	Systolic BP, diastolic BP, cholesterol level, waist circumferences and BMI: no difference Fat intake and vegetable intake: no difference Fruit intake: increased* Patients reported high levels of satisfaction with this intervention.
Furze et al. 2012	Effectiveness and costs of a	RCT	142 new angina Mean age 64	Angina plan group (n=70): a workbook targeting misconceptions about angina	Angina frequency (diary): no difference 6 months Health status (SAQ): no difference

UK	Lay-facilitated Angina Management Programme		years 75 Male, 67 female	and goal setting and pacing, a relaxation programme on CD, a lay-facilitated introductory interview and follow up telephone or home visits. Control group (n=72): advice from an angina nurse specialist.	Anxiety (HADS): 3 months* and 6 months* Depression (HADS): 6 months* Misconceptions (YABQ): 3 months* and 6 months* Activity level (self-rated questionnaire): 3 months* Smoking, cholesterol, BP and BMI: no difference Cost utility (EQ-5D and healthcare utilisation): the intervention was considered cost-effective
Hawkes et al. 2013 Australia	Effectiveness of a telephone-delivered secondary prevention programme (ProActive)	RCT	430 MI Mean age 61 years 321 male, 109 female	Secondary prevention group (n=215): 10x30 min scripted telephone health coaching sessions on the core determinants of health behaviour, goal setting, support networks, a ProActive heart handbook and existing written educational resource (My Heart My Life). Usual care group (n=215): existing written educational resource (My Heart My Life) and a quarterly newsletter.	Quality of life (SF-36): mental component*, social functioning*, role emotional* Physical activity (Active Australia Survey): improved* Dietary intake (food frequency questionnaire): vegetable intake* BMI: borderline Alcohol consumption: borderline
Holmes-Rovner et al. 2008 USA	Effectiveness of the outpatient telephone coaching to improve secondary prevention	RCT	525 ACS Mean age 60 years 191 male, 334 female	Telephone coaching group (n=268): a six weekly health behaviour change telephone counselling sessions including goal setting and other behaviour change strategies. Usual care group (n=257): a written discharge contract listing recommended outpatient medication, rehabilitation and health behaviour changes.	Physical activity (stages-of-change scale): 3 months* Smoking (stages-of-change scale): no difference Medication use: no difference Physical functioning (DASI): no difference Quality of life (EQ-5D): no difference
Lacey et al. 2004 UK	Impact of the Heart Manual on psychological morbidity and health status	Non randomised controlled trial	152 MI Mean age 67 years 101 male, 51 female	Intervention group (n=61): Heart Manual giving rehabilitation and lifestyle information and advice, relaxation exercises and audiotape, an exercise plan, a facilitator. Control group (n=91): standard cardiac rehabilitation.	Anxiety and Depression (HADS): improved* Health status (EuroQol): no difference Patients who attended hospital-based rehabilitation classes and those aged over 80 years, also benefited from the intervention.
Lewin et al. 2002 UK	Effect of the angina plan on psychological adjustment	RCT	142 newly diagnosed angina Mean age 67 years 85 male, 57 female	Angina plan group (n=68): a work-book and audiotaped relaxation programme including misconception discussion, goal setting, relaxation practice, phone calls, written information and standard advice. Routine care group (n=74): a practice nurse-led secondary prevention educational session discussing risk factor and angina and heart disease in general.	Anxiety and depression (HADS): improved* Frequency of angina, use of glyceryl trinitrate (diary): reduced* Severity of angina (scale of 1-100): no difference Duration of angina (diary): no difference Quality of life (SAQ): physical limitation* but no difference on other sub-scales.



Linden 1995 UK	Indication of effectiveness of the Heart Manual	Descriptive comparative design	34 MI Mean age 62 years 23 male, 11 female	Intervention group (n=17): Heart Manual programme providing specific information and discussion about exercise and relaxation, with regular follow-up and advice 1, 3, and 6 weeks after discharge. Control group (n=17): general advice and a prepared package of information booklets with similar follow-up at 1, 3 and 6 weeks after discharge.	Confidence of recovery and perception of their progress: improved* GP visits: no difference Anxiety (HADS): improved within intervention group, little change within control group Depression (HADS): unchanged within intervention group, increased within control group
Muniz et al. 2010 Spain	Effects of an secondary prevention intervention on cardiac risk	RCT	1757 ACS, 1510 completed Mean age 63 years (18-80 years old) 1347 male, 410 female	Intervention group (n=762): a personalised interview at discharge, a signed patient/physician agreement on the secondary prevention objectives, written back-up information and a follow-up visit two months after discharge. Control group (n=748): usual care.	BMI: reduced* Waist circumference: borderline Proportion of patients who exercise regularly: increased* Proportion of patients with total cholesterol below 175mg/dl: increased* Reported intake of medications: no difference except for statins*
Ocampo-Balabagno 1999 Philippines	Functional performance outcomes of compliance to home instruction programme	Pre-/post-test design without a control group, with focus group discussion	30 MI Mean age 53 years All male	Home instruction programme included cognitive information on MI, walking programme and self-care monitoring strategies during home visits, mutual goal setting, physical assessment and a self-care monitoring diary.	75% of the clients were compliant to the intervention. Treadmill exercise test: improved* Total functional health performance: improved* Focus group discussion showed the intervention helped facilitate adjustment process.
O'Neil et al. 2014 Australia	Effects of a telephone-delivered health coaching (ProActive)	RCT	430 MI Mean age 61 years 321 male, 109 female	Same as above	Anxiety (HADS): reduced* Depression (HADS): no difference Patient satisfaction (self-administered questionnaire): 85% completed 5-10 telephone sessions
O'Rourke & Hampson 1999 UK	Efficacy of the Heart Manual on psychosocial outcomes	Six-month longitudinal design	70 MI Mean age 59 years (under 76 years) 52 male, 18 female	Hospital 1 (n=45): Edinburgh Heart Manual incorporating education, exercise and stress management components with follow up by a trained facilitator. Hospital 2 (n=25): a hospital-based exercise and education programme.	Social support (SOS): no difference Perceptions of control over recovery (RLOC): no difference Self-Efficacy (GSES): improved* Illness perception (IPQ): no difference Anxiety (HADS): no difference Depression (HADS): reduced* Healthcare utilisation (GP contact and hospital admission): no difference
Petrie et al. 2002 New Zealand	Effects of an early psychological	RCT	65 MI Mean age 56 years (under 65)	Intervention group (n=31): three 30-40 min individualised sessions including explanation of pathophysiology of MI, risk	Illness perception (IPQ): improved* Patient satisfaction (hospital ratings): better prepared for leaving hospital*

	intervention		years) 47 male, 18 female	factors, a written recovery action plan, plan review and symptom discussion. Standard care group (n=34: cardiac rehabilitation nurse in-hospital visits and standard MI educational material.	Return to work (days between hospital discharge and the first day back to work): faster* Angina symptoms: lower rate* Rehabilitation attendance (programme records): no difference.
Taylor et al. 2007 UK	Cost- effectiveness of the Heart Manual	RCT	104 MI Mean age 62 years 84 male, 20 female	Same as above	Overall healthcare costs: no difference Costs of running programmes: no difference Quality adjusted life-years: no difference
Turkstra et al. 2013 Australia	Cost- effectiveness of the ProActive Heart intervention	RCT	430 MI Mean age 61 years 321 male, 109 female	Same as above	Health utility (SF-6D): no difference Health care utilisation (self-reported): more likely to be admitted to hospital due to non-cardiac causes for the intervention group* Overall cost: higher for the intervention group* mainly due to higher hospitalisation costs (both CHD and non-CHD).
Wang et al. 2012 China	Effects of a home-based rehabilitation on quality of life and psychological status	RCT	160 MI randomised but 133 completed Age range 36-78 111 male, 22 female	Home-based rehabilitation group (n=80): Chinese version of the heart manual without audiotapes or a facilitator. Usual care group (n=80): instructions on medications, information leaflets about cardiac risk factors.	Quality of life (SF-36 and MIDAS): physical function*, role physical*, vitality*, mental health* on SF-36 and physical activity*, dependency*, concerns over medication* on MIDAS Anxiety (HADS): improved* Depression (HADS): no difference
Zetta et al. 2011 UK	Effect of the Angina Plan	RCT	233 angina randomised but 218 completed Mean age 65 years 149 male, 69 female	Angina plan group (n=116): a work-book, an audiotaped relaxation and information programme using goal setting and pacing techniques, follow up telephone calls. Standard care group (n=117): advice on patients' condition and risk factor reduction during admission depending on staff workload and skill mix.	Anxiety and depression (HADS): no difference Misconceptions (YABQ): reduced* Behaviour change (stages of change scale): BMI* Cardiovascular symptoms (SAQ and CLASP): exercise*, functional limitation*, social and leisure activities* Quality of life (SF-36): general health perceptions* Healthcare utilisation: no difference

\*, P<0.05; MI, Myocardial Infarction; ACS, Acute Coronary Syndrome; CHD, Coronary Heart Disease; SF-36, the Short Form 36-Item Health Survey; MIDAS, Myocardial Infarction Dimensional Assessment Scale; HADS, Hospital Anxiety and Depression Scale; SAQ, Seattle Angina Questionnaire; YABQ, York Angina Beliefs Questionnaire; DASI, Duke Activity Status Index; FHQ, Food Habits Questionnaire; ASA, Appraisal of Self-care Agency; EHCS, Eating Habits Confidence Scale; SOS, Significant Others Scale; RLOC, Recovery Locus Of Control Scale; GSES, Generalised Self-Efficacy Scale; IPQ, Illness Perception Questionnaire; CLASP: Cardiovascular Limitations and Symptoms Profile

Table 2 Summary of the reviewed studies with qualitative designs (n=25)

Author/Setting	Aims	Populations	Methods	Main themes
Alsen et al. 2008 Sweden	Gain a deeper understanding of what fatigue means to patients with recent MI and how they manage to deal with the consequence of this symptom.	19 patients (11 male and 8 female, age 38-78) with recent MI.	Semi-structured interviews (each 40-90 min) focusing on their experience of tiredness after MI. Data collection and analysis informed by a grounded theory approach.	The core category 'living with incomprehensible fatigue' described what fatigue meant to patients 4 months after their MI and how they handled it. 1. Consequences: being restricted and feeling defeated 2. Management: fumbling coping strategies (alteration of sleep-wake pattern, adjust life to their fatigue, struggle against fatigue, distract oneself, social comparison, eating a balanced diet) 3. Finally, one category concerns the outcome: moderate relief of fatigue.
Askham et al. 2010 Faroe Islands	Describe the information and support needs of Faroese women after their hospitalisation for ACS through a descriptive-exploratory approach.	8 women (aged from 48-70 years) diagnosed with ACS	Semi-structured interviews (45 min each) with participants 3 to 4 weeks after hospital discharge for their first ACS event. Burnard's (1991) stages of analysis facilitated the development of key themes.	1. Discharged home, now what?: education and information needs post admission, unexpected symptoms and work 2. Risk factor management and lifestyle adjustments: perceptions of risk, self-perception and support
Benson et al. 1997 Canada	Explore the unique experiences and needs of women after a first MI.	14 women (aged 39-87 years) who had been hospitalised for a MI within the previous 6 months	Phenomenological study design Focus groups were limited to a maximum of 6 participants and were 2 hours in duration. Constant comparison method	Having a heart attack is a major emotional and life-threatening event for women. 1. Seeking validation (details of the heart attack and hospitalisation, the immediate recovery phase, and managing the challenges of living after a heart attack) 2. Perceived gender differences 3. Role expectations/role tensions 4. Helps and hindrances to recovery
Condon & McCarthy 2006 Ireland	Explore patients' perspective of making lifestyle changes following MI.	10 participants (9 male and 1 female, aged 38-75 years) at 6 weeks following hospital discharge	Semi-structured interviews (40-75 min each) were transcribed verbatim within 1 day of recording. Thematic analysis	1. Lifestyle warning signs (survival) 2. Taking responsibility for lifestyle changes (identifying causes, reality of making changes, overprotection) 3. Professional support 4. Looking forward to the future
Coyle 2009 USA	Explore the experience of having an MI and performing self-care.	62 (39 male and 23 female, aged 37-86) who were hospitalised	Hospitalisation interview and follow up telephone interview at 2 weeks and 30 days post-MI.	1. The story surrounding the MI 2. Symptom explanations 3. Stresses and loss surfaced during the

		for an MI	Colaizzi's method of phenomenological analysis.	<p>reflections</p> <ol style="list-style-type: none"> <li>4. Fearing death</li> <li>5. Changing self-care behaviours</li> <li>6. Reflections on death</li> <li>7. Being grateful and transitions.</li> </ol>
Daly et al. 2000 Australia	Explore health status, perceptions of coping and social support after discharge of MI survivors	38 survivor (26 male and 12 female, aged 45-77 years) in the first 3 weeks after hospital discharge	A descriptive, exploratory approach with triangulated methodology 4-phase data collection: in the hospital (demographic and clinical baseline data) and semi-structured interviews (each 1 hour including the administration of the questionnaires such as SF-36 and the coping scale) at 7, 14 and 21 days after discharge.	<p>Patients pass through 4 stages of adjustment after MI:</p> <ol style="list-style-type: none"> <li>1. Regain personal control</li> <li>2. Acceptance of limitations</li> <li>3. Refocusing on other life issues</li> <li>4. A sense of control</li> </ol> <p>Similarities and differences were found between male and female survivors. The health status of participants was relatively stable during the 3-week period. The most common and effective coping strategies adopted were confrontation, optimism and self-reliance.</p>
Davidson et al. 2011 Australia	Describe the experiences of Chinese Australians following hospital discharge for an acute cardiac event.	76 community members for focus group, 8 patients (6 male and 2 female, aged 69-79) recently discharged from hospital for interviews, 13 Chinese-born health professionals now working in Australia for interviews	10 focus groups with community members (60-90 min each, perspectives of culturally and linguistically diverse groups). In depth interviews with both patients (key issues from the focus groups) and health professionals (perspective incorporating the Chinese cultural background and knowledge of cultural dynamics of the health care system). Qualitative thematic analysis	<p>Data from all sources revealed a strong emphasis on collectivism and the importance of family and tradition.</p> <ol style="list-style-type: none"> <li>1. Linking traditional values and beliefs with Western medicine</li> <li>2. Reverence for health professionals and family</li> <li>3. Juxtaposing traditional beliefs and self-management</li> </ol>
Doiron-Maillet & Meagher-Stewart 2003 Canada	Explore the supportive-educative experiences of women's early recovery process following an MI.	8 women (ages 33-61) in their early recovery process following a first MI	Non-hierarchical, reciprocal, reflexive research design Two private interviews in their home setting (each 90-120 min, the first semi-structured interview within two weeks of hospital discharge and second interview six to eight weeks later). Thematic analysis	<p>Their journey of recovery was an overwhelming sense of uncertainty while living with heart disease.</p> <ol style="list-style-type: none"> <li>1. Truths learned from others</li> <li>2. Rude awakening</li> <li>3. Disconnected knowing</li> <li>4. Reconnecting self</li> </ol>
Everett et al. 2011 Australia	Describe the experience of behaviour change of survivors of an acute cardiac event.	25 participants (16 male and 9 female, mean age 61 years)	Semi-structured interviews focusing on participants' meanings of behaviour change. An inductive process of qualitative	<ol style="list-style-type: none"> <li>1. Ambivalence to change, where participants were aware of their conflicting thoughts and behaviours</li> <li>2. Misconceptions and confusion about</li> </ol>

			thematic analysis was used to interpret the study data.	terminology, and misunderstandings that participants were unaware of regarding beliefs they held about their health and behaviour change. Both types of contradictions highlight patient-related barriers to behaviour change and self-management.
Galdas et al. 2012a Canada	Describe Punjabi Sikh patients perceived barriers to engaging in physical exercise following MI.	15 (10 male and 5 female, aged 48-80) who were diagnosed with MI in the past 12 months	Semi-structured interviews (1 hour each). Data were analysed using an interpretive thematic approach that involved the iterative process of coding and constant comparison.	<ol style="list-style-type: none"> <li>1. Difficulty in determining safe exertion levels independently</li> <li>2. Fatigue and weakness</li> <li>3. Preference for informal exercise</li> <li>4. Migration-related challenges</li> </ol>
Galdas et al. 2012b Canada	Describe how cultural underlies Canadian Punjabi Sikh men's experiences of adopting lifestyle changes following MI.	27 Canadian Punjabi Sikh men diagnosed with an MI in the past 12 months	Semi-structured interviews ranging in duration from 30 to 140 min. Data were analysed using constant comparative methods.	Cultural influences were identified in their experience of adopting lifestyle changes related to <ol style="list-style-type: none"> <li>1. Food consumption,</li> <li>2. Physical exercise, and</li> <li>3. Faith and religion.</li> </ol>
Gregory et al. 2006 UK	Identify views and experiences of people recovering from MI, specifically barriers to, and facilitators of, following advice about lifestyle change and maintenance.	53 people (35 male and 18 female; under 65 years old) after hospital discharge	9 focus groups (5 male-only groups, 2 female-only groups and 2 mixed groups) 3 individual interviews with female participants. Drawing upon a grounded theory approach	A major finding was participants' desires for ongoing long-term monitoring and support beyond cardiac rehabilitation. <ol style="list-style-type: none"> <li>1. Lifestyle advice</li> <li>2. Adhering to lifestyle advice</li> <li>3. Lifestyle advice and leading a normal life</li> <li>4. Help with adhering to lifestyle advice</li> </ol>
Hildingh et al. 2006 Sweden	Elucidate recovery patterns after MI with regards to the content of patients' experiences.	16 men and women, (aged 45-77) who were 8-9 months after their MI.	Each person was interviewed once for an average of 1 hour about experiences of recovery. Content analysis.	The theme 'access to the world' formulated from three categories: ability, restraints, and reorientation. 12 subcategories: approachability, competence, confirmation, mutuality, practical attainments; fear, vigilance, physical pain, psychosocial pain; new values, motivation for changes, and balance.
Hutton & Perkins 2008 UK	Explore how men experience MI and cardiac rehabilitation.	10 men (aged 40 and over) who had a first MI within the last 6 months	Semi-structured interviews (45-90 min each, followed by a standardised debriefing). A follow-up telephone interview 2 months later to enquire briefly about any changes. Interpretative Phenomenological Analysis.	<ol style="list-style-type: none"> <li>1. Making sense of the event</li> <li>2. Cognitive and emotional responses</li> <li>3. Relationships with others</li> <li>4. Coping strategies</li> <li>5. Experiences of health care</li> </ol>
Jackson et al. 2000	Explore the recovery experiences of a group of	10 women (ages 43-77 years) MI survivors	Exploratory descriptive design and feminist research principles	Findings revealed that recovery was experienced as a complex process.

Australia	women survivors of first-time MI in the initial post-discharge period.		Open-ended semi-structured interviews at 7, 14 and 21 days post-hospital discharge (45-60 min each, 28 hours). Three-step method: moral language in the narrative text, metastatements focusing on contradictions between expectations and actual events, logic of the narrative.	<ol style="list-style-type: none"> <li>1. Fear and uncertainty and emotional liability. Participants expected to slow down, rest, and make major changes in their level of activity.</li> <li>2. A more positive outlook, a return of energy, and a sense of confidence in the future.</li> <li>3. Recover their health, and be able to the workforce or resume their previous activities.</li> </ol>
Johansson et al. 2003 Sweden	Explore women's experiences following a MI.	8 women (age not reported) who had been living with MI for 2 to 25 years	A method of reflective life world research design, based upon phenomenological epistemology Semi-structured interview by the main researcher in participants' homes. Data were analysed by using a phenomenological approach (whole-parts-whole).	<p>After a MI the patient's natural and unreflective relationship with the body and the lived word is interrupted. The women can re-establish a natural relationship with their bodies and life worlds.</p> <ol style="list-style-type: none"> <li>1. My heart and my life</li> <li>2. Living with an unreliable body</li> <li>3. When life fails</li> <li>4. Feeling vulnerable and lacking participation</li> <li>5. Trying to achieve reconciliation</li> </ol>
Kerr & Fothergill-Bourbonnais 2002 Canada	Gain greater insight into older women's lived experiences after a MI.	7 women (age 67-86) during initial recovery from MI (within 4-6 weeks)	Heideggerian phenomenology design Unstructured interactive interviews by week 5 after hospital discharge (average 106 min). Thematic analysis	<p>Data revealed that recovery for these women was unique and highly contextual and consisted of life experience resembling a mosaic in which the women described how they created a new picture for themselves.</p> <ol style="list-style-type: none"> <li>1. Life is scattered (shock and surprise, feeling restricted, loss of personhood)</li> <li>2. Trying to make sense of it (reliving the acute MI experience, living with changes in body responses, making comparisons)</li> <li>3. Learning to live with it (playing by the rules, cheating, taking care of themselves, receipt of supportive measures)</li> <li>4. Getting settled (seeking physician validation, beginning to feel better, moving forward)</li> </ol>
Kristofferzon et al. 2007 Sweden	Describe experiences of daily life of women and men during the first four to six months after a MI.	39 (19 male and 20 female, age 47-90) who had experienced an MI four to six months earlier.	Semi-structured interviews (each 30-90 min) covering contextual issues (family, work and rehabilitation), problems related to their heart disease and treatment, managing these problems and type of support they	<ol style="list-style-type: none"> <li>1. Threatening ordinary life: experiences of changes in body and mind, feelings of uncertainty, problems with behavioural changes and hospital restrictions</li> <li>2. Struggling for control: negotiating with themselves, trying to rely on their own</li> </ol>

			received or lacked from their social network. Qualitative content analysis.	capabilities, changing attitudes and behaviours and taking their own decisions and actions when managing daily problems. 3. The ambiguous network: emotional support, specific knowledge, and practical assistance dealt with the source and the kind of support the informants received, communication problems.
Sjöström-Strand et al. 2011 Sweden	Explore how women conceived their health and daily life 5 years after an MI.	12 women (age 40-90)	Each interview 60-90 min. The data were analysed using the phenomenographic procedure.	1. Consequences of a MI: fear and anxiety for the future, suffering from other serious illness, medication and secondary effects, rehabilitation, fatigue and other health complaints, fearing another MI, and downgrading 2. Adjustment to a new life situation: moving forward with difficulties, gratefulness, taking responsibilities for lifestyle changes, the recovery process, interaction with family and friends, being aware of the heart, and financial stress
Sutherland & Jensen 2000 Canada	Explore elderly women's perceptions of having a MI.	11 women (aged 70-85 years) who were 8 weeks post-MI	Structured and unstructured, open-ended, face-to-face interviews in their homes and the emerging categories and themes validated in telephone interviews. Content analysis	The central theme was living with change. 1. Searching for a diagnosis (becoming aware, diagnosing the self, managing symptoms, seeking help) 2. Being hit with the reality (verifying the symptoms, reacting to the diagnosis, reflecting back on the diagnosis) 3. Discovering the nature of the changes (being vulnerable, facing death, relating to others, anticipating discharge) 4. Adjusting to the change (setting limits, depending on others, testing themselves, relearning) 5. Moving on with the change (getting on with life, looking ahead)
Tobin 2000 Canada	Determine the recovery process for women who experienced a MI.	12 women (aged 60-80 years) who were 8 weeks post-hospital discharge	Grounded theory Unstructured formal interviews (45-90 min each) at their home Constant comparative method	The recovery process is variable and the core variable in women's recovery after a MI was the basic social-psychological process of getting back to normal. 1. Accepting what has happened 2. Establishing boundaries

				<ol style="list-style-type: none"> <li>3. Making adjustments</li> <li>4. Re-establishing normality</li> </ol>
Webster et al. 2003 UK	Investigate the perceptions of Gujarati MI survivors and their families to develop a profile of their health seeking beliefs and needs.	19 (16 male and 3 female, mean age 65 years) Gujarati South Asian MI survivors in the first 12 weeks following hospital discharge	31 semi-structured interviews with the participants and their families (1 hour each) at two weeks and at 12 weeks. Analyses informed by grounded theory.	<ol style="list-style-type: none"> <li>1. Processing and interpretation of events</li> <li>2. Sense of resignation to events and identification of a higher being in control of their destiny</li> <li>3. Being different-perception of ethnicity and culture as factors contributing to disease aetiology and progression</li> <li>4. Desire to reconnect with family members and cultural origins</li> <li>5. Stress, worry and anxiety identifies as antecedents to MI</li> <li>6. Sense of kinship and resignation with other South Asians in terms of prognosis of MI</li> <li>7. Navigating the health care and identifying the role and function of health professionals</li> <li>8. Paid work identified as a significant source of personal affirmation and social integration</li> <li>9. Significance of family and social networks in the recovery process</li> </ol>
White et al. 2007 UK	Explore adjustment in terms of women's perception of their cardiac event, impact on relationships and coping strategies employed.	5 women (aged 41-60) suffering first time MI	Semi-structured interviews (45-90 min each, followed by a standardised debriefing). A follow-up telephone call 2 months later to obtain comments on analysis and ongoing adjustment. Interpretative Phenomenological Analysis.	<ol style="list-style-type: none"> <li>1. Perceptions of MI: making sense of the event, cognitive and emotional responses and self-beliefs</li> <li>2. Relationships: others' reactions, change in relationships and roles</li> <li>3. Coping strategies: Cognitive and behavioural strategies and support from others (including cardiac rehabilitation)</li> </ol>
White et al. 2011 UK	Explore cardiac rehabilitation (CR) patients' perspectives on making and maintaining dietary changes.	15 post-MI patients (11 male and 4 female, aged 42-65) who had completed hospital-based CR including 6 weekly sessions	In-depth interviews with 15 participants focusing on the meaning that patients may attach to dietary change. Follow-up interviews with 10 patients 9 months later exploring whether their perspectives had changed. Each interview lasted one hour. Thematic analysis.	The most dominant themes were fear of having another heart attack, particularly that it might be fatal, and the desire to 'get back to normal'. Patients tended to only make and maintain dietary changes if they perceived their diet to be a cause of their CHD. The only dietary changes patients reported involved 'cutting things out' of their diet; patients did not make dietary changes if they considered that they did not need to 'cut things out'.



Worrall-Carter et al. 2005 Australia	Explore the experiences and adjustments of women following their first MI.	6 women (age not reported) who were four months after their MI	Naturalistic inquiry Semi-structured interviews (45 min each) focusing on their experiences before and after their MI. Barnard's stage of analysis was used to guide the thematic analysis of transcripts.	<ol style="list-style-type: none"><li>1. The initial experience/event which identifies events and emotions leading up to, and during, the hospital admission (subthemes: warning signs, symptoms, loss)</li><li>2. Support: for who and how exploring the importance of support throughout the recovery process (physical, psychological, the carer).</li></ol>
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Table 3 Overall characteristics of the interventions

Variable	Component	Intervention count
Content	Health-related lifestyle focused	Fernandes et al. 2009, Hawkes et al. 2013 (Turkstra et al. 2013, O'Neil et al. 2014), Muniz et al. 2010, Holmes-Rovner et al. 2008
	Nutrition	Aish & Isenberg 1996
	Mixed: stress management, medication, physical activity, nutrition, communication and social support, lifestyle and goal setting	Wang et al. 2012, Lewin et al. 2002, Barlow et al. 2009, Lacey et al. 2004, Furze et al. 2012, Dalal et al. 2007 (Taylor et al. 2007), O'Rourke & Hampson 1999, Ocampo-Balabagno 1999, Zetta et al. 2011, Petrie et al. 2002, Linden 1995
Format	Face-to-face one-to-one instruction	Petrie et al. 2002
	2 or more combined (Face-to-face one-to-one instruction, telephone, manual, audiotape, home visits)	Muniz et al. 2010, Ocampo-Balabagno 1999, Hawkes et al. 2013 (Turkstra et al. 2013, O'Neil et al. 2014), Holmes-Rovner et al. 2008, Fernandes et al. 2009, Wang et al. 2012, Lewin et al. 2002, Zetta et al. 2011, Linden 1995, Aish & Isenberg 1996, Lacey et al. 2004, Furze et al. 2012, Dalal et al. 2007 (Taylor et al. 2007), O'Rourke & Hampson 1999
	Face-to-face group instruction	Barlow et al. 2009
Mode of delivery	Nurses or cardiac rehabilitation nurses	Lewin et al. 2002, Dalal et al. 2007 (Taylor et al. 2007), Aish & Isenberg 1996, Ocampo-Balabagno 1999, Zetta et al. 2011, Linden 1995
	Medical team	Muniz et al. 2010
	Psychologists	Petrie et al. 2002
	Researcher or research assistant or project-trained health professionals	Wang et al. 2012, Fernandes et al. 2009, Hawkes et al. 2013 (Turkstra et al. 2013, O'Neil et al. 2014), Lacey et al. 2004, O'Rourke & Hampson 1999, Holmes-Rovner et al. 2008
	Lay tutors or lay facilitators	Barlow et al. 2009, Furze et al. 2012
Duration	6-week or 8-week or 12-week	Wang et al. 2012, Hawkes et al. 2013, Lacey et al. 2004, Dalal et al. 2007 (Taylor et al. 2007), Aish & Isenberg 1996, O'Rourke & Hampson 1999, Ocampo-Balabagno 1999, Linden 1995, Holmes-Rovner et al. 2008, Fernandes et al. 2009, Muniz et al. 2010, Lewin et al. 2002, Furze et al. 2012, Zetta et al. 2011
	6-month	Hawkes et al. 2013 (Turkstra et al. 2013, O'Neil et al. 2014)
	Short hospital-based	Petrie et al. 2002
Conceptual frameworks	Social cognitive theory or cognitive-behavioural therapy	Hawkes et al. 2013 (Turkstra et al. 2013, O'Neil et al. 2014), Lewin et al. 2002, Zetta et al. 2011
	Model of behaviour change	Fernandes et al. 2009
	Orem's self-care deficit theory of nursing and psychological theory of self-efficacy	Aish & Isenberg 1996
	Social learning theory and self-regulation model	O'Rourke & Hampson 1999, Petrie et al. 2002
	Self-care, interaction, goal setting and information support	Ocampo-Balabagno 1999
	Not mentioned	Wang et al. 2012, Barlow et al. 2009, Muniz et al. 2010, Lacey et al. 2004, Furze et al. 2012, Dalal et al. 2007 (Taylor et al. 2007), Linden 1995, Holmes-Rovner et al. 2008

Table 4 Research designs and outcomes in quantitative studies

Variable	Description	Intervention count
Study design	Randomised controlled trial (n=14)	Wang et al. 2012, Lewin et al. 2002, Barlow et al. 2009, Hawkes et al. 2013 (Turkstra et al. 2013, O'Neil et al. 2014), Muniz et al. 2010, Furze et al. 2012, Holmes-Rovner et al. 2008, Dalal et al. 2007 (Taylor et al. 2007), Aish & Isenberg 1996, Zetta et al. 2011, Petrie et al. 2002
	Pilot RCT (n=1)	Fernandes et al. 2009
	Nonrandomised controlled design (n=2)	Lacey et al. 2004, O'Rourke & Hampson 1999
	Pre- and post-test design, without a control group (n=1)	Ocampo-Balabagno 1999
	Descriptive comparative design (n=1)	Linden 1995
Outcomes	Quality of life (n=9)	SF-36: Wang et al. 2012, Barlow et al. 2009, Hawkes et al. 2013, Zetta et al. 2011
		MIDAS: Wang et al. 2012, Barlow et al. 2009
		SAQ: Lewin et al. 2002, Furze et al. 2012, Zetta et al. 2011
		EuroQol: Lacey et al. 2004
		MacNew: Dalal et al. 2007
		CLASP: Zetta et al. 2011
	EQ-5D: Holmes-Rovner et al. 2008	
	Anxiety and Depression (n=10)	HADS: Wang et al. 2012, Lewin et al. 2002, Barlow et al. 2009, Lacey et al. 2004, Furze et al. 2012, Dalal et al. 2007, O'Rourke & Hampson 1999, Zetta et al. 2011, O'Neil et al. 2014, Linden 1995
	Self-efficacy (n=3)	Two subscales: Barlow et al. 2009
		EHCS: Aish & Isenberg 1996
		GSES: O'Rourke & Hampson 1999
	Frequency and severity of angina pain (n=3)	Lewin et al. 2002, Furze et al. 2012, Petrie et al. 2002
	Clinical, lifestyle and health behavioural outcomes (n=8)	Fernandes et al. 2009, Barlow et al. 2009, Hawkes et al. 2013, Muniz et al. 2010, Furze et al. 2012, Dalal et al. 2007, Zetta et al. 2011, Holmes-Rovner et al. 2008
	Social support and recovery locus of control (n=1)	O'Rourke & Hampson 1999
	Illness perception (n=2)	O'Rourke & Hampson 1999, Petrie et al. 2002
	Functional health performance and compliance (n=1)	Ocampo-Balabagno 1999
	Knowledge and misconceptions (n=2)	YABQ: Furze et al. 2012, Zetta et al. 2011
	Confidence of recovery (n=1)	Linden 1995
	Patient satisfaction (n=2)	O'Neil et al. 2014, Petrie et al. 2002
	Rehabilitation attendance, return to work (n=1)	Petrie et al. 2002
Nutritional self-care, self-care agency (n=1)	Aish & Isenberg 1996	
Healthcare utilisation and/or cost-effectiveness (n=5)	Turkstra et al. 2013, Furze et al. 2012, O'Rourke & Hampson 1999, Zetta et al. 2011, Linden 1995	