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What can we learn from patients with heart failure about exercise adherence? A systematic review of qualitative papers

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Abstract

Objectives: Keeping physically active has been shown to bring positive outcomes for patients diagnosed with heart failure (HF). However, a number of individuals with this health problem do not undertake regular exercise. A review of extant qualitative research was conducted to explore what it can tell us about barriers and enablers to physical activity among people with HF.

Methods: A systematic search, involving electronic databases and endeavours to locate grey literature, was carried out to identify relevant qualitative studies published from 1980 onwards. Data from retrieved papers were combined using framework analysis. Papers read in full numbered 32 and 20 were included in the review.

Results: Synthesis of results from the 20 studies resulted in four main themes: *Changing soma, negative emotional response, adjusting to altered status, interpersonal influences.* How individuals responded to their diagnosis and their altered physical status related to their activity levels, as did the degree of encouragement to exercise coming from family, friends and professionals. These findings can be connected to the theory of behavioural change developed by Bandura, known as Social Cognitive Theory (SCT).

Conclusions: SCT may be a useful framework for developing interventions to support patients with HF in undertaking and maintaining regular exercise patterns. Specific components of SCT that practitioners may wish to consider include self-efficacy and outcome expectancies. These were issues referred to in papers read for the systematic review that appear to be particularly related to exercise adherence.

Keywords: systematic review, qualitative research, heart failure, physical activity, adherence

Introduction

Heart failure (HF) is one of the commonest cardiovascular causes of morbidity and mortality in the western world; it affects 2-4% of the general population, with prevalence rising in older age groups - between 10-20% of 70-80 year olds are estimated to have HF (Dickstein et al., 2008). Multiple cardiac conditions can lead to onset (Krum & Abraham, 2009) with improvements in the treatment of coronary artery disease and myocardial infarction serving to increase its incidence and prevalence further. Common clinical manifestations of HF include oedema, dyspnoea and fatigue (Dickstein et al., 2008). Treatment comprises of medication and lifestyle changes, including restriction of sodium and fluid intake, and regular physical activity (Rockwell & Riegel, 2001).

A number of studies, including a large multi-centre randomised controlled trial (*Heart Failure: A Controlled Trial Investigating Outcomes of Exercise Training: HF-ACTION*), have shown the benefits of exercise for patients with HF (O'Connor et al., 2009), including lower mortality and hospital rates (Caldwell & Dracup, 2001; ExTraMATAch, 2004; Smart & Marwick, 2004) and improved quality of life (Davies et al., 2010). Exercise can also reduce symptoms of breathlessness and fatigue because of its effect on the cardiovascular and musculoskeletal systems (European Heart Failure Training Group, 1998). A mixture of aerobic and resistance exercise has been recommended to bring optimal outcomes (Smart, Fang & Marwick, 2003); the former improves cardio-respiratory fitness, whereas the latter can reverse the loss of skeletal muscle mass.

Guidelines from the European Society of Cardiology recommend that exercise training is delivered to all patients with stable chronic HF (Class I recommendation level of evidence B) (Dickstein et al., 2008). Yet despite the obvious benefits, individuals with HF may not be

referred to exercise or rehabilitation programmes and, even if referred, adherence can be poor. For example, in HF-ACTION, despite a planned strategy to support adherence, less than half of patients were exercising at the desired level after three months (Keteyian et al., 2010). Adherence to exercise may be less well followed compared to other aspects of self-care (e.g. taking medications) (Schnell-Hoehn, Naimark & Tate, 2009). Strategies to improve and maintain activity levels are therefore important so patients profit from this component of HF management. Exercise needs to be ongoing to maintain its beneficial impact, otherwise advances in functional capacity are lost with de-conditioning (Pina et al., 2003; Smart, Fang & Marwick, 2003).

Interpersonal variables that appear to correlate with exercise among patients with heart problems include self-efficacy (e.g. someone's belief in their abilities to carry out an action), health status, intention, perceived benefits and past experience of physical activity (Petter et al., 2009). Identification of these variables has been based on quantitative data. Qualitative research can complement this knowledge, enabling investigators to understand in-depth the experiences and meanings individuals attach to a phenomenon (e.g. exercising with HF) (Sim & Wright, 2000). In addition, it can uncover unanticipated associations, giving a greater insight into possible cause-effect relationships, which can then be followed up in larger samples using quantitative approaches. Hence, although variables identified as predicting a behaviour through investigations measuring correlations can be incorporated into the structuring of interventions to address exercise adherence, it can also be useful to explore the perspectives of those with HF so that programmes are acceptable to and adopted by patients. Gaining such an insight could likewise help when deciding on theories of behavioural change to follow as a framework for an intervention. Choice of theory acts as a useful starting point for thinking about possible mechanisms of behavioural change and

strategies to employ to prompt a desired course of action (Abraham et al., 2008). Discovering what people have to say on the topic of exercising with HF can therefore make an important contribution to intervention development, proposing ways of supporting patients to be active, whilst at the same time identifying possible barriers to this endeavour.

Aims

The systematic review aimed to synthesise qualitative studies that included reference to patients' perspectives of exercise/physical activity. Specific objectives were to:

- Examine what qualitative research tells us about barriers and enablers to exercise/physical activity among people with HF;
- Combine knowledge from existing papers relating to the views of people with HF towards exercise/physical activity;
- Identify behaviours and beliefs that could be targeted in an intervention aimed at increasing activity levels among people with HF.

Methods

Inclusion criteria: The primary inclusion criteria were qualitative investigations examining perspectives of patients with HF (e.g. attitudes, opinions, beliefs, feelings, understanding or experiences) that contained some discussion of adherence to exercise/activity. No studies were found that centred on this topic. However, several papers were located investigating some aspect of living with HF that mentioned exercise/activity. Such references were often brief but have been integrated into the review because they add to knowledge in this area. A range of methods (e.g. interviews or focus groups) and approaches (e.g. phenomenology, grounded theory, discourse analysis, or ethnography) were eligible for inclusion. Papers

from 1980 onwards were considered, which were written in English. Studies using mixed methods were only included if qualitative findings were presented separately from the quantitative results.

Exclusion criteria: Papers that centred on people with heart complaints not identified as HF (e.g. myocardial infarction or coronary artery bypass graft patients) were excluded, as were those that focused exclusively on patients in the end stage of HF (e.g. receiving palliative care) because these individuals would not be expected to exercise. Only papers involving adults (18 years and older) were considered.

Search strategy: To identify relevant papers, the following databases were searched for literature referenced on them between January 1980 - May 2010:

- British Nursing Index
- CINAHL
- Cochrane Library
- Embase
- Medline
- PsycINFO

Two databases were also searched for theses/dissertations related to the review's aims: a) the British Library's theses online service and b) Index to theses. Further attempts were made to identify grey literature by combining the term "heart failure" with "physical activity" or exercis* on a) Google (the first 100 hits were examined) and b) the following websites: the National Library for Health (UK), National Institute for Health Research

Portfolio database (UK), National Institutes of Health Research Portfolio Online Reporting Tools (USA), British Heart Foundation, American Heart Association. References of identified papers were also examined for relevant investigations. Further details of the search can be obtained from the first author.

Selection of included studies: Initially, titles and abstracts from papers located via electronic databases and search engines were sifted for their potential relevancy by the first author and 10% were checked by another of the reviewers (CD). Measure of agreement, using a kappa statistic, was 0.87. Following this initial stage, references that seemed relevant to the review or lacked adequate information from the title and abstract to make a decision were retrieved in full and read by two reviewers to check they met the inclusion criteria. Agreement at this point, using a kappa statistic, was 0.63. A third person (DS) considered papers on which there was a lack of agreement and a final decision about their inclusion was resolved through discussion among the authors (details of the search and its results can be found in figure 1).

Assessment of quality: There has been much debate about assessing qualitative studies (e.g. Elliott, Fischer & Rennie, 1999; Long & Johnson, 2000), with multiple checklists developed for this purpose (Pope, Mays & Popay, 2007). To ensure that included research was adequately robust, the authors employed a proforma developed by the Joanna Briggs Institute (JBI, 2008), which has been extensively used to combine qualitative studies. This proforma assesses issues such as clarity of objectives, data collection, analysis, ethical issues and conclusions drawn (for further details go to <http://www.joannabriggs.edu.au/services/sumari.php>). Papers meeting the inclusion criteria were assessed by two reviewers for methodological quality, using the aforementioned

proforma. Any disagreement on assessments was resolved through discussion with a third person. Papers with a quality assessment score of 5 or less out of 10 were excluded.

Data extraction and management: Following quality assessment, papers to be included in the review were re-read for data extraction. A proforma, again developed by the JBI, was used for this part of the review, on which information such as method, setting, participants, data analysis and quotes from papers were logged. The first author completed extracted data sheets for each paper using this tool, which were then checked by another of the reviewers for accuracy and omissions. Data were stored and synthesised using the computer package QARI, developed by the JBI (<http://www.joannabriggs.edu.au>).

Analysis: The authors applied framework analysis (Ritchie, Spencer & O'Connor, 2003) to the extracted data. This approach was selected because it is systematic and allows for the sharing of analysis between researchers via charts produced during the five stages associated with this method: 1) Familiarisation with data (becoming immersed in this material); 2) Development of a thematic framework (identifying key issues in data); 3) Indexing data (labelling key issues); 4) Devising a series of thematic charts (allowing the full pattern across papers to be explored and reviewed); 5) Mapping and interpreting of data (providing explanations, highlighting key characteristics and ideas). It has been used successfully by others synthesising qualitative studies (Lloyd Jones, 2004).

Results

The quest to find relevant qualitative papers was part of a wider search, which also looked for interventional studies involving patients with HF to address their exercise/physical activity levels. With this in mind, 3933 references (including duplicates) were located that

met the wider review's inclusion criteria. All qualitative studies that appeared relevant from their title and abstract were accessed in full (n=32), from which 20 were accepted for inclusion. Further details of the search results can be found in figure 1.

FIGURE 1 HERE

Key features of the 20 included papers are presented in table 1. Quality scores (marked out of 10) ranged from 6-9, with most papers rated 7 or 8. Common reasons for losing marks on the assessment criteria included failing to include a section on reflexivity (i.e. the influence of the researcher on the study) and failing to be clear about the investigation's philosophical perspective. Studies were conducted in the UK, USA, Sweden and Canada. Most included patients only, but 5 also involved carers/relatives (Aldred, Gott & Gariballa, 2005; Bennett et al., 2000; Costello & Boblin, 2004; Pattenden, Roberts & Lewin, 2007; Stull et al., 1999). The majority of participants were male. Most studies (n=13) failed to provide information relating to individuals' ethnicity; of those that did, 102 patients were depicted as 'White', 8 as 'African American', 7 as 'Afro-Caribbean', 6 as 'Asian/South Asian' and 5 as 'Black'. As table 1 shows, the papers represented all levels of HF severity, based on the New York Heart Association (NHYA) classification.

TABLE 1 HERE

Data extracted and charted for the review were synthesised into the following main themes (see also table 2), which incorporate factors that had a bearing on patients' activity levels.

TABLE 2 HERE

Changing soma refers to a decline in physical and mental abilities, which many participants thought was related to ageing. An altered body was perceived to be a natural part of getting older by some of those participating in reviewed studies, who mentioned feeling too old to amend their behaviours. But the body could also be experienced as failing. For example, unpredictability of symptoms made it hard to plan activities, with a lack of energy sometimes interfering with scheduled events:

“One cannot plan so much...But, of course, one hopes for...things to be the way they used to be, that one will...feel good...But...no, I don't plan much...Well, sometimes one gets carried away...but then one realizes, it won't work...Then one realizes one is limited” (Nordgren, Asp & Fagerberg, 2007: 8-9).

Findings reported by Nordgren and colleagues (2007) implied that a sense of disconnection from the body transpired because of physical limitations. Likewise, research by Rhodes and Bowles (2002: 445) noted that HF symptoms (e.g. breathlessness, fatigue) made people feel they lacked control over their body, as the following extract suggests:

“The dizziness terrifies me. Once it starts to go, once the room starts going around, I...you don't have any control. That's a horrible feeling. HF has changed my sense of control. I'm not as secure as I was.”

However, certain individuals tried not to be disturbed by the somatic changes they experienced as a result of HF symptoms:

“I'm breathless and tired, that's what I am, but I never think about that, I'm quite well” (Ekman, Ehnfors & Norberg, 2000: 133).

Aside from HF, it was common for participants in studies reviewed to experience co-morbidities, such as arthritis, which further restricted their physical capabilities, as did poor balance. Bodily freedom was said to be important for everyday activities (e.g. housework) and for more specific, valued behaviours. For example, those from a South Asian background wished to maintain mobility so they could perform daily prayers (Pattenden, Roberts & Lewin, 2007). Some individuals used equipment like a walking stick in response to their altered soma, which could be perceived as facilitative, allowing them to be more independent, although others fear this would stop them from being active:

“But I said no (to getting a wheelchair to use indoors) because then I would just sit there, rolling back and forth, when what I need to do is walk” (Hagglund, Boman & Lundman, 2008: 293).

Negative emotional response (e.g. low mood, frustration) to changed physical status was described within several papers. Pessimistic reactions to physical changes could have a deleterious impact on willingness to exercise as a consequence. Not knowing when they would experience deterioration in health made certain patients feel helpless:

“...we don't go anywhere, we've got a wedding invitation and hope to God that things are a wee bit better so that we can go, just to get us out somewhere, you know” (Pattenden, Roberts & Lewin, 2007: 276).

This contributed to the low mood and frustration commonly referred to within papers, which was heightened by environmental forces. For example, some individuals felt restricted from outdoor pursuits by inclement weather (e.g. rain or fear of falling on ice), which could also have an impact on emotional well-being, according to interviewees in the study by Fontana (1996):

“Weather puts you in a mood where you don’t feel vigorous.”

“I need sunlight. I’m a SAD (Seasonal Affective Disorder) person. I really suffer when it’s cloudy day after day, I get cranky.”

Certain individuals appeared to dwell on what they could no longer do because of their changed physical status and were anxious about how much exercise they could perform safely. The following quotation from the article by Riegel and Carlson (2002: 291) reflects the confusion that could transpire on this topic:

“I didn’t know if I should (exercise). They used to say rest, rest, rest. Now they say exercise, exercise, exercise.”

A lack of clear advice caused some patients to reduce their activity levels for fear of increasing symptoms and risking hospitalisation. This contributed to a sense of isolation, a key concept reported in a number of papers, engendered because people felt HF prevented them from engaging in previously enjoyed past-times (e.g. dancing, sports):

“I used to be with my grandchildren and pick mushrooms and I could pick lingon berries...I used to be able to walk all day long in the woods and...used to be able to climb to the top of a mountain...now I can't do anything” (Martensson et al., 1997: 582).

Adjusting to altered status relates to patients accommodating HF but not being ruled by it. Certain participants in reviewed papers talked about modifying their life because of HF, whilst appreciating what they could still do, taking up less energetic hobbies (e.g. bowling) that provided social contact. Likewise, people bought aids, such as a lightweight vacuum, so they could continue being active around the house. Adjusting in this way involved doing things at a slower pace, accepting that tasks may take longer and prioritising activities:

“If it doesn't get done today, well, the world doesn't fall apart. I don't drive myself any more. So it doesn't get done. The world doesn't come to an end” (Rhodes and Bowles, 2002: 445).

Some individuals re-evaluated life following diagnosis and became more active because they thought this was good for their heart. Keeping active could be an effort but there were participants who forced themselves to do so because being sedentary was seen as detrimental to health, as suggested in the following quotation:

“You just have to struggle and get up...you have to practice that...because I know how things go if you get too dependent on your bed; people have to come in and help you more often” (Hagglund, Boman & Lundman, 2008: 293).

As well as wishing to remain physically functional, another reason for exercising was to feel more energetic, which enabled people to undertake pursuits they valued and to achieve personal goals (e.g. returning to golf, enjoying family life). Certain people talked about making the most of when they felt well. As stated by one person in the paper by Martensson et al. (1997: 582):

“...some days are a little better than others...and I have to use them then...when I have the energy for a little more.”

Interpersonal influences of family and others shaped activity levels. Physical limitations called for patients to accept help from others. This was difficult, seeing family members doing housework and not being able to assist as they wished. Individuals could be left feeling dependent, which contributed to the frustration and low mood referred to earlier:

“I just sit back and watch the old girl do it. That hits me here, thinking I should be doing that. I know up here that I can't and you get very depressed” (Pattenden, Roberts & Lewin, 2007: 276).

It appeared common for people to feel limited in their activities by concerns of others, who could be overprotective in what they allowed patients to do:

“Oh they [family] tend to pamper me a bit now and I get rather annoyed...you know it's 'sit down' and they'll, they'll do jobs that I would normally put my hand to, they tend to dive in first...and I say 'I'm not an invalid, you know, I can still work, I can do things” (Thornhill et al., 2008: 166).

However, family members and friends were sometimes facilitative. For example, in the paper by Scotto (2005: 161) certain participants noted it was easier to self-care with support from those around them:

“I have a friend, and we kind of team up and help each other stay on the straight and narrow. It's a lot easier when you have someone to share it with.”

Fontana's (1996) research suggested social contact was bidirectional; people had to have sufficient vigour to engage in activities, yet being with others made patients feel more energetic. Similarly, having a pet was a motivator, as the following extract implies:

“Besides my husband, my dog is my best friend and companion. We exercise together every day by walking. After bypass surgery, I believe they should pass out dogs instead of the mended heart pillows. A dog will give you back so much more”
(Rhodes & Bowles, 2002: 446).

Discussion

This synthesis of qualitative research has highlighted that patients' perceived ability to exert control over their body and more generally over life influenced their response to HF and willingness to exercise. Some study participants seemed overpowered by factors they felt unable to regulate (e.g. symptoms, weather). Obsessing about what they could no longer achieve or being fatalistic about their situation (e.g. associating a sedentary lifestyle with ageing) could have contributed to the low mood reported in several papers, although the reverse may have also been true, whereby low mood led to a perceived inability to exert

control over their functioning. Such negative affect may have been strengthened if individuals felt isolated, which transpired in certain cases because people gave up previously enjoyed activities, fearful of making their condition worse through overexertion. Conversely, other patients tried to help themselves, capitalising on times when they had energy, engaging in pastimes at a moderate pace and valuing what they could still do. They seemed able to overcome somatic changes via several strategies, including modifying their physical activities and employing equipment and aids to maintain their independence.

The summary above outlines a range of barriers and enablers to physical activity alluded to in reviewed papers, some of which were illness specific (e.g. HF symptoms) or related to underlying beliefs, whilst others were external to participants. This interaction between individual and sociostructural forces is consistent with the components of Social Cognitive Theory (SCT) (Bandura, 1997), which posits that behaviour is reciprocally influenced by intrapersonal and extrinsic factors. The following components of the theory (Bandura, 2004) were reflected in reviewed studies, often as lacking among participants, which limited their physical activity:

- *Knowledge* – of risks and benefits of specific behaviours (e.g. HF patients being aware of the advantages of exercise in relation to mortality, morbidity and quality of life; some participants in reviewed studies reported being unclear about what was safe in terms of physical activity, reducing what they did as a consequence for fear of causing further harm to their heart);
- *Self-efficacy* – that one is able to perform and control a behaviour (e.g. feeling able to walk a distance prescribed by a practitioner; certain participants in reviewed

studies said a changed body due to age and/or co-morbidities made exercise impossible for them and they dwelt upon what they could no longer do);

- *Outcome expectancies* – anticipated costs and benefits of performing a behaviour and the idea that an action will result in a specific outcome (e.g. believing that exercise will be good for HF, despite having to make time in the day to perform it; participants in reviewed studies who exercised wanted to keep active to maintain their independence and to feel more energetic);
- *Perceived facilitators and impediments* – sociostructural factors that can help or hinder individuals in carrying out a behaviour (e.g. going dancing with a partner as part of HF self-management; participants in reviewed studies described having a friend to exercise with or a pet that needed walking as helpful, but some felt limited by inclement weather).

Research has suggested that people with HF often know they should exercise but many fail to do so (van der Wal et al., 2006). Hence, although knowledge is a precondition for behavioural change, on its own it is insufficient (Bandura, 1998). A more pivotal influence, within SCT, is self-efficacy (Bandura, 2004) because it influences which activities people choose to engage in, the energy they put into these and persistence they demonstrate in the face of obstacles (Bandura, 1997). The role of self-efficacy has been considered in several investigations exploring exercise among people with heart complaints. For example, a review by Petter et al. (2009) reported that self-efficacy was an important predictor of physical activity within this population. Likewise, belief in one's ability to carry out an exercise-task has been related to cardiac rehabilitation attendance (Woodgate & Brewley, 2008). Interventions have started to be developed for people with HF that address self-efficacy, which appear to have a positive impact on physical function and quality of life

(Barnason et al., 2003; Gary, 2006). More research, involving larger samples and longer follow-up, focused on self-efficacy and its impact on exercise adherence, is required. However, it is a promising interpersonal variable to target among patients with HF given the findings of preliminary interventional studies.

The following strategies, proposed to augment self-efficacy (Bandura, 1998), provide a useful base for creating future interventions. Firstly, *mastery experiences*, whereby individuals achieve success in changing behaviour. Secondly, *vicarious experiences*; this entails watching peers undertake an action to increase observers' beliefs that they can do likewise. Thirdly, *social persuasion*, namely encouragement from others that one has the capacity to accomplish goals. Finally, Bandura (1998: 626) talked about reducing individuals' *stress responses* as a means of increasing self-efficacy, modifying "negative emotional proclivities" and amending "misinterpretations of their physical states." Specific techniques to improve self-efficacy include experiential reinforcement (repetition of an activity), counselling (verbal persuasion) and modelling (Barnason et al., 2003).

Addressing self-efficacy may help with low mood, which was commonly alluded to within reviewed papers. Higher rates of depression have been reported among those with HF compared to the general population and others with long-term complaints (Katon, Lin & Kroenke, 2007). Depression has been negatively associated with adherence, physical functioning, disease severity and it may curtail physical activity for fear of worsening a condition (DiMatteo, Lepper & Croghan, 2000). Bandura (1991) suggested that negative affect influences self-efficacy, with those prone to depression said to judge their performance unfavourably. Given that exercise can lift someone's mood and reverse the

physical deterioration associated with HF (peripheral and musculoskeletal) this is another reason for practitioners to raise exercise self-efficacy among people with HF and low mood.

Alongside self-efficacy, SCT suggests behaviour change interventions should consider anticipated outcomes (Fishbein & Yzer, 2003) because positive expectancies can prompt people to act (Bandura, 1998). For example, physical sensations associated with a behaviour can be an incentive or a disincentive to continue, depending on whether they are pleasant or disagreeable (e.g. pain, discomfort). In the case of physical activity for participants in reviewed papers, worsening symptomatology (e.g. breathlessness, fatigue) dissuaded people from pursuing an activity. Likewise, feeling better or fitter following exercise may prompt individuals to remain on a programme (Penn, Moffatt & White, 2008). Social reactions can also induce or deter persistence with an action, such as whether loved ones are approving or disapproving. Bandura (2004) noted that social support only assists with behavioural change if it raises perceived self-efficacy. If it fosters dependency, it can have the opposite effect, which can arise if relatives are overprotective. This was an issue reported in reviewed papers; participants became despondent when relying on family members to do housework, feeling helpless because they were unable to do more.

Promoting exercise self-efficacy may be difficult if individuals believe they have a failing body, which no longer performs as it did in the past, a mindset reflected in a number of reviewed papers. It has been argued that the self is embodied (Nettleton & Watson, 1998) and that we experience the world through our body (Annadale, 1998). Presence of a heart problem can undermine trust in one's body and its abilities (Clark et al., 2005), although this can be re-established over time. Based on reviewed papers, respecting the body but not being limited by its perceived weakness (including symptoms) seems important for those

with HF for keeping active. Having a personal incentive to persist with exercising was also raised as helpful in terms of motivation, which again fits with concepts forming SCT (Bandura, 1998). Experiencing success in achieving goals is said to validate one's personal efficacy and ability to control one's environment (Bandura, 1991), something that was a problem for a number of participants included in reviewed studies. Higher self-efficacy may therefore influence people's persistence in realising set goals.

Based on the review's findings, exercise programmes aimed at individuals with HF may have failed in the past because they have not examined psychosocial barriers to engaging individuals in this component of their condition's management. With this in mind, as alluded to above, addressing self-efficacy as part of an intervention to promote activity among this population may prove a fruitful endeavour. Educating individuals on how to manage HF symptoms and helping them to feel able to influence their body's functional abilities may be important. Overcoming negative emotions associated with having a chronic illness should also be considered. In addition, drawing support from those around them in surmounting difficulties associated with physical activity could prove beneficial. This might include mentoring from peers with HF, as well as receiving reinforcement of health prompting behaviour like exercise (rather than calls for restraint) from relatives and healthcare professionals.

Limitations

The synthesis was limited to English language studies; follow-up reviews focused on non-English studies would complement the one presented in this paper. Attempts were made to find all relevant English language qualitative research, but studies may have been overlooked if not listed on searched databases. No investigations were located focusing

exclusively on the topic of patients' views and experiences of keeping active with HF. However, included studies did provide an insight into potential areas to consider when trying to assist patients with this condition to increase their activity levels and much of the data extracted related to the theory developed by Bandura, a recognised framework for thinking about behavioural change.

Conclusion

Findings suggest it is not enough for practitioners to simply tell patients to exercise; adopting positive health behaviours is a complex process, influenced by factors internal and external to an individual. The synthesis has underlined the importance of considering someone's perception of her/his body, which appears to impact on self-confidence and motivation to exercise. Support from others in accepting and accommodating somatic limitations could increase patients' willingness to be active, enabling them to build up their strength and physical capacity. Professional assistance in this respect may prove successful if it reflects psychological theories. Bandura's SCT provides a framework that clinicians can use to develop interventions that help patients with HF in being more active. By incorporating components of the theory into the design and implementation of an intervention, practitioners may see increasing numbers of patients heeding their recommendations. In particular, self-efficacy forms a central part of SCT, said to shape the outcomes people expect and the goals they set themselves, as well as how far individuals attempt to overcome barriers to a behaviour. Those with poor self-efficacy for increasing their activity levels will set lower goals, will expect their efforts to bring inadequate outcomes and be less willing to persist when they encounter external obstacles, whilst the reverse is posited to be true for someone with high self-efficacy. Therefore, it appears

worthwhile for practitioners working with patients that have HF to consider self-efficacy when trying to encourage such individuals to be more active.

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References

- Abraham, C., Conner, M., Jones, F., O'Connor, D. (2008). *Health psychology*. London: Hodder Education.
- Aldred, H., Gott, M., Gariballa S. (2005). Advanced heart failure: impact on older patients and informal carers. *Journal of Advanced Nursing*, 49, 116–124.
- Annadale, E. (1998). *The sociology of health and medicine*. Cambridge: Polity Press.
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50, 248-287.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, 13, 623-649.
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behavior*, 31, 143-164.
- Barnason, S., Zimmerman, L., Nieveen, J., Schmaderer, M., Carranza, B., Reilly, S. (2003). Impact of a home communication intervention for coronary artery bypass graft patients with ischemic heart failure on self-efficacy, coronary disease risk factor modification, and functioning. *Heart and Lung*, 32, 147-158.
- Bennett, S.J., Cordes, D.K., Westmoreland, G., Castro, R., Donnelly, E. (2000). Self-Care Strategies for Symptom Management in Patients With Chronic Heart Failure. *Nursing Research*, 49, 139-145.
- Caldwell, M.A., & Dracup, K. (2001). Team management of heart failure: the emerging role of exercise, and implications for cardiac rehabilitation centers. *Journal of Cardiopulmonary Rehabilitation*, 21, 273-279.
- Clark, A.M., Whelan, H.K., Barbour, R., MacIntyre, P.D. (2005). A realist study of the mechanisms of cardiac rehabilitation. *Journal of Advanced Nursing*, 54, 362-371.
- Costello, J.A., & Boblin, S. (2004). What is the experience of men and women with congestive heart failure? *Canadian Journal of Cardiovascular Nursing*, 14, 9-20.
- Davies, E.J., Moxham, T., Rees, K., Singh, S., Coats, A.J.S., Ebrahim, S., Lough, F., Taylor, R.S. (2010). Exercise based rehabilitation for heart failure. *Cochrane Database of Systematic Reviews*, Issue 4.
- Dickstein, K., Cohen-Solal, A., Filippatos, G., McMurray, J.J.V., Ponikowski, P., Poole-Wilson, P.A., Stromberg, A., van Veldhuisen, D.J., Atar, D., Hoes, A.W., Keren, A., Mebazaa, A., Nieminen, M., Priori, S.G., Swedberg, K. (2008). ESC guidelines for the diagnosis and treatment of acute and chronic heart failure 2008. *European Heart Journal*, 29, 2388–2442.
- Di Matteo, M.R., Lepper, H.S., Croghan, T.W. (2000). Depression is a risk factor for non-compliance with medical treatments: Meta-analysis of the effects of anxiety and depression on patient adherence. *Archives of Internal Medicine*, 160, 2101-2107.
- Ekman, I., Ehnfors, M., Norberg, A. (2000). The meaning of living with severe chronic heart failure as narrated by elderly people. *Scandinavian Journal of Caring Sciences*, 14, 130-136.
- Elliott, R., Fischer, C.T., Rennie, D.L. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British Journal of Clinical Psychology*, 38, 215-229.

- Europe, E., & Tyni-Lenne, R. (2004). Qualitative analysis of the male experience of heart failure. *Heart and Lung*, 33, 227-234.
- European Heart Failure Training Group. (1998). Experience from controlled trials of physical training in chronic heart failure: Protocol and patient factors in effectiveness in the improvement in exercise tolerance. *European Heart Journal*, 19, 466-475.
- ExTraMATCH Collaborative. (2004). Exercise training meta-analysis of trials in patients with chronic heart failure (ExTraMATCH). *British Medical Journal*, 328, 189-192.
- Falk, S., Wahn, A.K., Lidell, E. (2007). Keeping the maintenance of daily life in spite of chronic heart failure. A qualitative study. *European Journal of Cardiovascular Nursing*, 6, 192-199.
- Fishbein, M., & Yzer, M.C. (2003). Using theory to design effective health behavior interventions. *Communication Theory*, 13, 164-183.
- Fontana, J.A. (1996). The emergence of the person-environment interaction in a descriptive study of vigor in heart failure. *Advances in Nursing Science*, 18, 70-82.
- Gary, R. (2006). Exercise self-efficacy in older women with diastolic heart failure: Results of a walking program and education intervention. *Journal of Gerontological Nursing*, 32, 31-39.
- Hagglund, L., Boman, K., Lundman, B. (2008). The experience of fatigue among elderly women with chronic heart failure. *European Journal of Cardiovascular Nursing*, 7, 290-295.
- Joanna Briggs Institute (JBI). (2008). Reviewers' manual. Adelaide: Joanna Briggs Institute.
- Katon, W., Lin, E.H., Kroenke, K. (2007). The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. *General Hospital Psychiatry*, 29, 147-155.
- Keteyian, S.J., Pina, I.L., Hibner, B.A., Fleg, J.L. (2010). Clinical role of exercise training in the management of patients with chronic heart failure. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 30, 67-76.
- Krum, H., & Abraham, W.T. (2009). Heart failure. *Lancet*, 373, 941-955.
- Lloyd Jones, M. (2004). Application of systematic review methods to qualitative research: Practical issues. *Journal of Advanced Nursing*, 48, 271-278.
- Long, T., & Johnson, M. (2000). Rigour, reliability and validity in qualitative research. *Clinical Effectiveness in Nursing*, 4, 30-37.
- Martensson, J., Karlsson, J.E., Fridlund, B. (1997). Male patients with congestive heart failure and their conception of the life situation. *Journal of Advanced Nursing*, 25, 579-586.
- Martensson, J., Karlsson, J.E., Fridlund, B. (1998). Female patients with congestive heart failure: How they conceive their life situation. *Journal of Advanced Nursing*, 28, 1216-1224.
- Nettleton, S., & Watson, J. (1998). The body in everyday life: An introduction. In S. Nettleton & J. Watson (Eds.), *The Body in Everyday Life*. London; New York: Routledge.
- Nordgren, L., Asp, M., Fagerberg, I. (2007). Living With Moderate-Severe Chronic Heart Failure as a Middle-Aged Person. *Qualitative Health Research*, 17, 4-13.
- O'Connor, C.M., Whellan, D.J., Lee, K.L., Keteyian, S.J., Cooper, L.S., Ellis, S.J., Leifer, E.S., Kraus, W.E., Kitzman, D.W., Blumenthal, J.A., Rendall, D.S., Miller, N.H., Fleg, J.L., Schulman, K.A., McKelvie, R.S., Zannad, F., Pina, I.L. for the HF-

- ACTION investigators. (2009). Efficacy and safety of exercise training in patients with chronic heart failure: HF-ACTION randomized controlled trial. *Journal of the American Medical Association*, 301, 1439-1450.
- Paton, B., Backlund, J., Barnes, M., Thirsk, L. (2007). Recalibrating time and space: Women's challenges of living with heart failure. *Canadian Journal of Cardiovascular Nursing*, 17, 7-14.
 - Pattenden, J.F., Roberts, H., Lewin, R.J.P. (2007). Living with heart failure: Patient and carer perspectives. *European Journal of Cardiovascular Nursing*, 6, 273-279.
 - Penn, L., Moffatt, S.M., White, M. (2008). Participants' perspective on maintaining behaviour change: A qualitative study within the European Diabetes Prevention Study. *BMC: Public Health*, 8, 235.
 - Petter, M., Blanchard, C., Kemp, K.A.R., Mazoff, A.S., Ferrier, S.N. (2009). Correlates of exercise among coronary heart disease patients: Review, implications and future directions. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 16, 515-526.
 - Pina, I.L., Apstein, C.S., Balady, G.J., Belardinelli, R., Chaitman, B.R., Duscha, B.D., Fletcher, B.J., Fleg, J.L., Myers, J.N., Sullivan, M.J. (2003). Exercise and heart failure: A statement from the American Heart Association Committee on exercise, rehabilitation and prevention. *Circulation*, 107, 1210-1225.
 - Pope, C., Mays, N., Popay, J. (2007). *Synthesizing qualitative and quantitative health evidence: A guide to methods*. Berkshire: McGraw-Hill.
 - Rhodes, D.L., & Bowles, C.L. (2002). Heart failure and its impact on older women's lives. *Journal of Advanced Nursing*, 39, 441-449.
 - Riegel, B., & Carlson, B. (2002). Factors and barriers to heart failure self-care. *Patient Education and Counseling*, 46, 287-295.
 - Ritchie, J., Spencer, L., O'Connor, W. (2003). Carrying out qualitative analysis. In: J. Ritchie, & J. Lewis (Eds.), *Qualitative research practice: A guide for social science students and researchers*. London; Thousand oaks; New Delhi: Sage.
 - Rockwell, J.M., & Riegel, B. (2001). Predictors of self-care in persons with heart failure. *Heart and Lung*, 30, 18-25.
 - Schnell-Hoehn, K.N., Naimark, B.J., Tate, R.B. (2009). Determinants of self-care behaviors in community-dwelling patients with heart failure. *Journal of Cardiovascular Nursing*, 24, 40-47.
 - Scotto, C.J. (2005). The lived experience of adherence for patients with heart failure. *Journal of Cardiopulmonary Rehabilitation*, 25, 158-163.
 - Sim, J., & Wright, C. (2000). *Research in healthcare: Concepts, designs and methods*. Cheltenham: Stanley Thomas.
 - Smart, N., Fang, Z.Y., Marwick, T.H. (2003). A practical guide to exercise training for heart failure patients. *Journal of Cardiac Failure*, 9, 49-58.
 - Smart, N., & Marwick, T.H. (2004). Exercise training for patients with heart failure: a systematic review of factors that improve mortality and morbidity. *American Journal of Medicine*, 116, 693-706.
 - Stull, D.E., Starling, R., Haas, G., Young, J.B. (1999). Becoming a patient with heart failure. *Heart and Lung*, 28, 284-292.
 - Thornhill, K., Lyons, A.C., Nouwen, A., Lip, G.Y.H. (2008). Experiences of living with congestive heart failure: A qualitative study. *British Journal of Health Psychology*, 13, 155-175.

- van der Wal, M.H.L., Jaarsma, T., Moser, D.K., Veeger, N.J.G.M, van Gilst, W.H., van Veldhuisen, DJ. (2006). Compliance in heart failure patients: The importance of knowledge and beliefs. *European Heart Journal*, 27, 434-440.
- Winters, C.A. (1999). Heart failure: Living with uncertainty. *Progress in Cardiovascular Nursing*, 14, 85-91.
- Woodgate, J., & Brawley, L.R. (2008). Self-efficacy for exercise in cardiac rehabilitation: Review and recommendations. *Journal of Health Psychology*, 13, 366-387.
- Zambroski, C.H. (2003). Qualitative analysis of living with heart failure. *Heart and Lung*, 32, 32-40.

Figure 1: Results of search

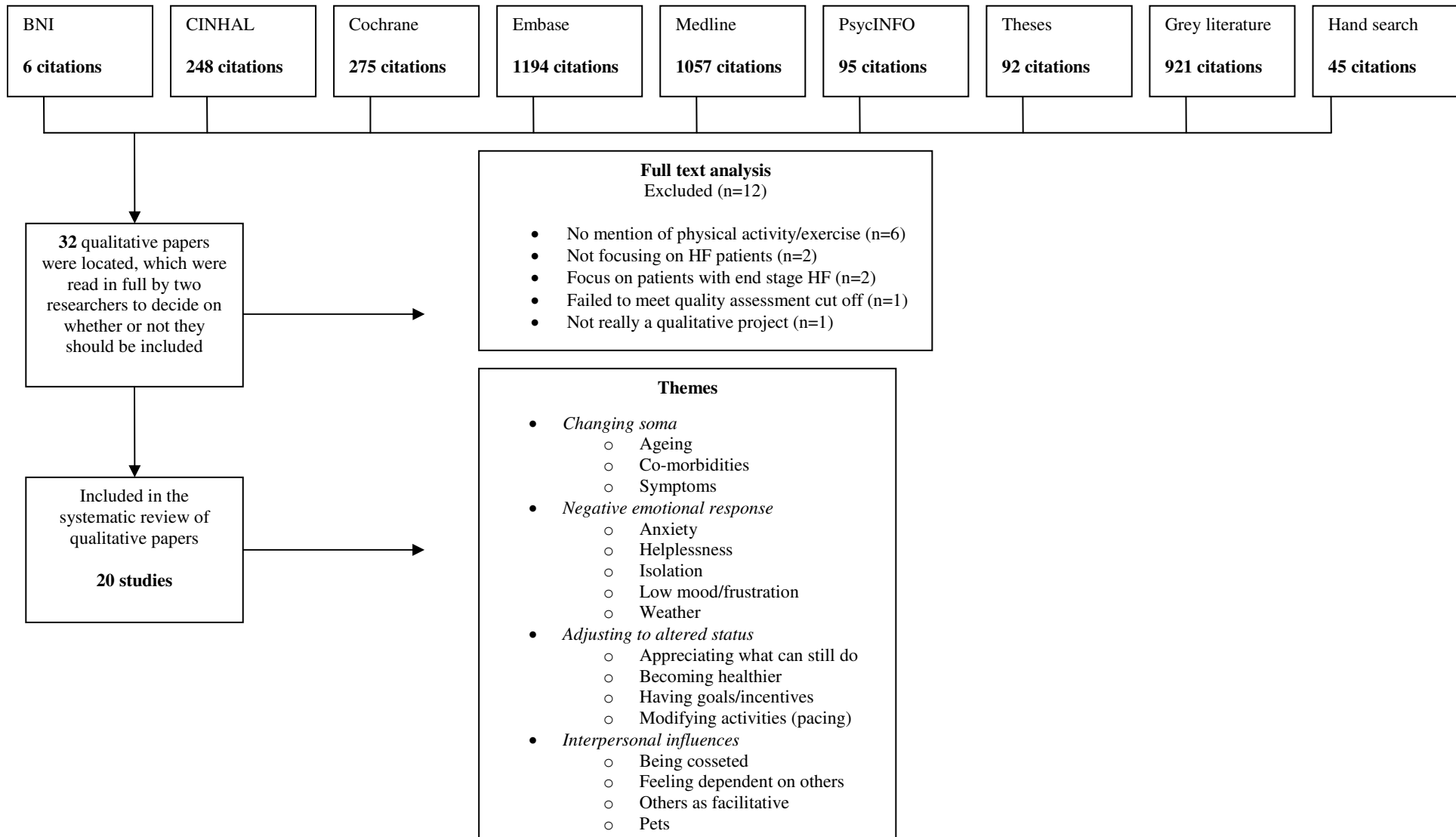


Table 1: Summary of reviewed papers

Paper	Aims	Patients involved (N=number)	Data collection	Analysis type
Aldred, Gott & Gariballa (2005)	To explore the impact of advanced HF on the lives of older patients and their carers	N=10 (7 men) Mean age=72.1 NYHA=II-IV	Focused interviews	Thematic analysis
Bennett et al. (2000)	To describe symptoms experienced by HF patients and self-mgt strategies used by them to manage these	N=23 (16 men) Mean age=60 NYHA=not stated	Focus groups	Thematic analysis
Costello & Boblin (2004)	To explore the experiences of men and women with CHF	N=6 (3 men) Age range=37-82 NYHA=III-IV	Semi-structured interviews	Thematic analysis
Ekman, Ehnfors & Norberg (2000)	To shed light on the meaning of living with severe CHF	N=10 (6 men) Age range=75-94 NYHA=III-IV	Narrative interviews	Thematic analysis
Europe & Tyni-Lenne (2004)	To gain an insight from the patient's perspective about how it is to live with moderate CHF	N=20 (men=20) Mean age=59 NYHA =II-III	Semi-structured interviews	Content analysis
Falk, Wahn & Lidell (2007)	To describe how persons, living with CHF, perceived the maintenance of their daily life	N=17 (12 men) Mean age=72 NYHA=III-IV	Semi-structured interviews	Thematic analysis
Fontana (1996)	To understand the meaning of vigour for people with HF	N=12 (6 men) Age range=45-75 NYHA=not stated	Semi-structured interviews	Content analysis
Hagglund, Boman & Lundman (2008)	To illuminate the lived experience of fatigue among elderly women with chronic HF	N=10 (men=0) Mean age=83 NYHA=III-IV	Narrative interviews	Content analysis
Martensson, Karlsson & Fridlund (1997)	To find out how males with CHF conceive their life situation	N=12 (12=men) Age range=48-80 NYHA=II-IV	Semi-structured interviews	Thematic analysis
Martensson, Karlsson & Fridlund (1998)	To find out how females with CHF conceive their life situation	N=12 (0=men) Age range=65-83 NYHA=II-IV	Semi-structured interviews	Thematic analysis
Nordgren, Asp & Fagerberg (2007)	To explore and describe what it means to live with moderate-to- severe CHF as a middle aged person	N=7 (4=men) Age range=38-66 NYHA=III-IV	Semi-structured interviews	Phenomenological analysis

Paton et al. (2007)	To explore the day to day challenges encountered by women living in the community, medically diagnosed with HF	N=7 (0=men) Age range=47-75 NYHA=not stated	Unstructured interviews	Thematic analysis
Pattenden, Roberts & Lewin (2007)	To explore patients' and carers' experiences of being treated for HF (LVSD)	N=36 (23=men) Age range=36-89 NYHA=I-IV	Semi-structured interviews	Constant comparative analysis
Rhodes & Bowles (2002)	To explore older women with stage II HF perceive their own lives	N=5 (0=men) Age range=60-90 NYHA=II	Semi-structured interviews	Thematic analysis
Riegel & Carlson (2002)	To explore how HF influences patients' lives, to assess how they perform self-care and to determine how their life situation facilitates or impedes HF self-care	N=26 (17=men) Mean age=74.4 NYHA=I-IV	Individual and small group interviews	Content analysis
Scotto (2005)	To capture the phenomenon of non-adherence among HF patients from the perspective of these individuals	N=14 (9=men) Mean age=63 NYHA=not stated	Semi-structured interviews	Thematic analysis
Stull et al. (1999)	To understand what having HF meant to patients and how they adjust to this condition.	N=21 (17=men) Mean age=61 NYHA=II-IV	Semi-structured interviews	Constant comparative analysis
Thornhill et al. (2008)	To investigate the lived experiences of heart failure with patients in the UK	N=25 (21=men) Age range=35-83 NYHA=not stated	Semi-structured interviews	Interpretative phenomenological analysis
Winters (1999)	To explore the experience of uncertainty for men and women with heart failure	N=22 (15 men) Mean age=70 NYHA=I-IV	Interviews	Thematic analysis
Zambroski (2003)	To explore the experience of living with heart failure	N=11 (5=men) Mean age=67 NYHA=not stated	Semi-structured interviews	Constant comparative analysis

Table 2: Themes/sub-themes and papers in which they were found

Theme	Sub-themes	Papers that refer to sub-themes
Changing soma	<i>Ageing</i>	3, 9, 13, 16, 17, 19
	<i>Co-morbidities</i>	8, 13, 15, 16
	<i>Symptoms</i>	2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 20
Negative emotional response	<i>Anxiety</i>	2, 13, 15
	<i>Helplessness</i>	1, 6, 8, 11, 13, 14, 18
	<i>Isolation</i>	1, 9, 18, 20
	<i>Low mood/frustration</i>	3, 5, 7, 11, 12, 13, 18, 19
	<i>Weather</i>	2, 3, 7
Adjusting to altered status	<i>Appreciating what can still do</i>	8, 9, 12, 14, 16, 17
	<i>Becoming healthier</i>	2, 8, 9, 12, 13, 17, 18
	<i>Having goals/incentives</i>	3, 5, 7, 16, 19
	<i>Modifying activities (pacing)</i>	2, 3, 5, 6, 7, 8, 10, 11, 12, 14, 16, 17, 18, 19, 20
Interpersonal influences	<i>Being cosseted</i>	11, 18
	<i>Feeling dependent on others</i>	1, 4, 8, 13, 16, 18
	<i>Others as facilitative</i>	2, 7, 14, 16
	<i>Pets</i>	5, 14

Key to table 2: **1.** Aldred, Gott & Gariballa (2005); **2.** Bennett et al. (2000); **3.** Costello & Boblin (2004); **4.** Ekman, Ehnfors & Norberg (2000); **5.** Europe & Tyni-Lenne (2004); **6.** Falk, Wahn & Lidell (2007); **7.** Fontana (1996); **8.** Hagglund, Boman & Lundman (2008); **9.** Martensson, Karlsson & Fridlund (1997); **10.** Martensson, Karlsson & Fridlund (1998); **11.** Nordgren, Asp & Fagerberg (2007); **12.** Paton et al. (2007); **13.** Pattenden, Roberts & Lewin (2007); **14.** Rhodes & Bowles (2002); **15.** Riegel & Carlson (2002); **16.** Scotto (2005); **17.** Stull et al. (1999); **18.** Thornhill et al. (2008); **19.** Winters (1999); **20.** Zambroski (2003)