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Article in *British Journal of Community Nursing* · March 2009

DOI: 10.12968/bjcn.2009.14.2.38760 · Source: PubMed

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# Chronic heart failure: promoting quality of life

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**H**eat failure (HF) is a chronic, disabling condition and is the end stage of most diseases of the heart. It is a major cause of morbidity and mortality (Stewart and Blue, 2004). Patients experience high levels of physical, functional and emotional distress and describe their quality of life as poor (English et al, 1995). Latest projections estimate that there will be about 350 000 men in the UK aged 45 years and over living with definite HF and about 300 000 women; a total of around 650 000. Some estimates also include a further category of 'probable heart failure' which brings the prevalence in the UK to a total of 878 000 people aged over 45 years who have heart failure (Stewart et al, 2002). This accounts for approximately 3% of this age group, with an additional 65 000 new cases diagnosed each year (British Heart Foundation (BHF) 2003; Department of Health (DH), 2003). This article sets out the research evidence of how nurses can promote improved quality of life for those in chronic heart failure.

## Heart failure

Heart failure can be defined as a clinical syndrome that impairs the pumping ability of the myocardium. It may result from any structural or functional cardiac disorder such as coronary heart disease, cardiac valve disease, cardiomyopathies, diabetes mellitus, renal disease, hypertension and arrhythmias (Hatchett and Thompson, 2002). There are two distinct types of HF; systolic (SHF) and diastolic (DHF). SHF is considered a myocardial contractile defect which essentially causes pump failure by means of a reduced

left ventricular ejection fraction (LVEF) of 45% or less. In healthy adults LVEF percentage is usually 60–65%.

DHF is characterized by an abnormality in the ability for the left ventricle to relax and fill adequately and unlike SHF the LVEF is normal (Gary and Rosenberg, 2002). Heart failure is a progressive disease that is characterized by a pattern of haemodynamic, renal, neural, and hormonal changes (Hatchett and Thompson, 2002; Nieminen et al, 2005).

## Symptoms of heart failure

### Left sided

Physical symptoms of decompensated heart failure include: dyspnoea on exertion, orthopnoea, fatigue and paroxysmal nocturnal dyspnoea, nocturnal cough, confusion and memory impairment in advanced stages, diaphoresis and cool extremities at rest.

### Right sided

Symptoms include: peripheral oedema, ascites, nocturia, jugular venous distention, epistaxis, hepatomegaly, hepatojugular reflux, and right ventricular heave (Hatchett and Thompson, 2002).

## Symptom classification

The New York Heart Association (NYHA) functional class is a commonly used way to assess the progression of chronic heart failure in a particular patient (Hatchett and Thompson, 2002). This classification is used to determine how much chronic heart failure limits their lifestyle, and does not apply to a particular decompensated episode. Depending on symptoms, patients may move in either direction on the NYHA scale.

- ♦ Class I: No symptoms at any level of exertion
- ♦ Class II: Symptoms with heavy exertion
- ♦ Class III: Symptoms with light exertion
- ♦ Class IV: Symptoms with no exertion

The initially determined functional class tends to deteriorate unevenly over time with the severity of symptoms not necessarily equating with the severity of the underlying heart problem (Remme and Swedberg, 2001).

## Factors affecting the increased incidence of chronic heart failure

### Medical and pharmacological aspects

Ongoing advances in treatment have resulted in a higher

## ABSTRACT

There are growing numbers of people with heart failure, which is disabling for the individuals and costly for the health services. Heart failure is often associated with anxiety and depression. Nurses can improve patients' well-being by promoting regular exercise and self-care. Palliative care, which includes specialist heart failure services improves end-of-life experiences. This article reports the findings of a literature review derived from a search of 5 electronic databases to identify studies relating to the promotion of quality of life in chronic heart failure.

## KEY WORDS

Chronic heart failure ♦ Quality of life ♦ Nurse-led care ♦ Exercise

survival rate post-myocardial infarction (MI) than previously, accounting for a higher incidence of subsequent heart failure (Woods et al, 2000). These advances have enabled a quicker treatment at time of presentation with a myocardial infarction for thrombolysis than previously, and a continual increase in the availability for primary angioplasty has reduced mortality associated with acute myocardial infarction (MI) (Stewart et al, 2002). The damage caused to the myocardium through MI is often permanent and can result in heart failure. Such patients will be predisposed to further cardiac events which are liable to result in further damage to the myocardium and thus worsening of the condition (Hatchett and Thompson, 2003).

The pharmacological aspects of treatment for coronary heart disease and heart failure stipulated by the National Service Framework (NSF) for coronary heart disease (DH, 2000) have reduced the disease progression (Hatchett and Thompson, 2002). As a consequence premature mortality rates have declined but morbidity has increased (Stewart and Blue, 2004).

Due to a poorly contracting myocardium, this patient group may also be at risk of sudden cardiac death and, if this risk is established, internal cardioverter defibrillators (ICDs) are now implanted as recommended by the National Institute of Clinical Excellence (NICE, 2003). These devices are lifesaving but as a consequence will increase the incidence of heart failure and perpetuate the progression of the disease due to the myocardial damage that is caused when the device attempts to cardiovert (Woods et al, 2000).

The incidence of heart failure increases considerably with age, doubling between 65–74 year and 75–84 year age bands (Cowie, 1999; Hatchett and Thompson, 2002; Stewart and Blue, 2004). Medicine has improved the average life expectancy to 76.6 years for males in 2003–2005 and 81.0 years in females (National Statistics Office, 2007).

Socioeconomic circumstance also has a profound impact on the incidence of heart failure in the UK (Marmot and Elliot, 2005). The prevalence of cardiovascular disease particularly hypertension is higher among the Caribbean, Asian and African ethnic groups in contrast to caucasians suggesting that these groups are more susceptible to the disease (Haglund et al, 1996).

### Cost of HF to UK healthcare

The overall increasing burden imposed by heart failure has impacted upon both primary and secondary care. In 2000, heart failure accounted for approximately 5% of all emergency medical admissions in the UK and had an estimated re-admission rate of 50% over a six month period (DH, 2003). This was due to primarily poorly managed exacerbations or non-compliance with medications (National Collaboration Centre for Chronic Conditions, 2003). In addition Stewart et al (2002) in a 'snap-shot' study undertaken in 2000 found that chronic heart failure (CHF) was solely accountable for over 2.4 million visits to GPs and for a further 2 million prescriptions. The expenditure for this patient group is thought to be £625 million per annum

(DH, 2003). *Developing Services for Heart Failure* (DH, 2003) estimated that CHF consumed approximately 2.1% of all health care cost per annum and when associated with the cost of hospitalization this figure rises markedly to 4% (Stewart et al, 2002).

**'The prevalence of cardiovascular disease particularly hypertension is higher among Caribbean, Asian and African ethnic groups'**

### Government policy for CHF

The NSF for coronary heart disease (DH, 2000b) introduced standardization of diagnostic and therapeutic measures used in assessment and treatment of heart failure. Since its implementation there has been a decline in patients admitted to hospital due to an exacerbation of heart failure (Boyle, 2004). *Developing Services for Heart Failure* (DH, 2003) was published, in part, as an update of the original NSF and encapsulates a more person-centred approach, with inclusion of a number of care-models that have been set up for palliative patients across various NHS trusts via the NHS Beacon Programme for CHF. This programme identified services that had been particularly innovative in addressing specific healthcare needs (DH, 2003).

The NSF for long-term conditions (DH, 2005), although heavily focused upon neurological conditions provides 'an umbrella' guidance for all chronic diseases including HF built upon the earlier *Supporting People with Long Term Conditions – An NHS and Social Care Model* (DH, 2005b) which heralded new management arrangements including community matrons to support people living with chronic conditions.

### Cochrane collaboration reviews in relation to quality of life and CHF

There are three Cochrane Collaboration reviews: *Clinical Service Organization for Heart Failure* (Taylor et al, 2005); *Exercise Based Rehabilitation for Heart Failure* (Rees et al 2004); and *Psychological Interventions for Depression in Heart Failure* (Lane et al, 2004). Important findings included the effectiveness of exercise training had on significantly increasing  $\dot{V}O_2$  exercise duration, work capacity, and distance covered by the patient on a 6 minute walk. In relation to quality of life (QoL), seven of the nine trials that measured this outcome all concluded that QoL improved with the introduction of exercise. The review of psychological interventions suggested that a reduction in symptoms of depression and improvements in exercise capacity can result from psychological interventions.

### Literature search

The search was conducted to identify health promotion strategies that would impact positively on the QoL of patients who have CHF. The search was undertaken using electronic databases and included: The Cumulative Index to Nursing and Allied Health Literature (CINAHL);

Psychology Information (PsycINFO) 1985–2004/2007; British Nursing Index (BNI) 1994–03/2004; EMBASE 1996–04/2007 and Medline 1996–2007. This yielded 348 papers. Eleven papers were selected for review because they contained primary data and focused upon quality of life and exercise, education, self-efficacy/mastery or community palliative-care. A thematic analysis was employed to identify themes and factors that promote quality of life (Bowling and Ebrahim, 2005).

### Quality of life in chronic heart failure

Bosworth et al's (2004) focus group study (n=12) identified five domains of concern: symptoms, role loss, affective response, coping and social support. The loss of function was frequently related to physical symptoms, medication side-effects, co-morbidities, cognitive abilities and the loss of role domain captured social, family and sexual functions. Feelings of depression, hopelessness and guilt were reported in relation to loss of role. Bosworth et al (2004) noted that coping strategies such as knowledge, medication compliance and supporting others all contributed positively to QoL. Carels (2003) monitored subjects (n=58) for 2 weeks and using multiple regression found that functional status, depressive symptoms and left ventricular ejection fraction were significantly associated with physical and emotional QoL. Diminished physical and emotional quality of life was extensively associated with greater depression, as with negative moods, social conflict and support. Carels (2003) also found that greater acceptance and coping patterns were directly attributed to lower levels of depression. He also found that CHF patients with greater depression tended to report more CHF-related physical symptoms and had more variability in their physical symptom pattern, suggesting a clear link between physical and psychological symptoms.

### Exercise and chronic heart failure

Research has repeatedly supported the utility of exercise interventions among adults with heart failure; with exercise improving maximal exercise capacity, decreasing symptoms, improving QoL and reducing hospital admissions (Belardinelli et al, 2007; Oka et al, 2005; Smart et al, 2007). Moreover, exercise training has a direct effect on pathophysiological mechanisms of CHF, including improvements in endothelial function and autonomic activity by reducing sympathetic activation and norepinephrine levels, and improving heart rate variability (Belardinelli et al, 2007; Smart et al, 2007).

Smart et al's (2007) exercise training study (n=43) compared two groups (diastolic heart failure patients n=18; systolic heart failure patients n=24). Peak  $\dot{V}O_2$ , three QoL scales and an echocardiogram were performed at baseline and after sixteen weeks of training. Both patient groups appeared to benefit from this trial, both in a functional and psychological sense. Smart et al concluded that exercise training improved both the functional capacity and peak  $\dot{V}O_2$  of patients with diastolic and systolic HF and that QoL factors were improved with exercise training,

predominantly due to an increased functional capacity.

Longitudinal studies such as Belardinelli et al's (1999) provide knowledge surrounding the long-term outcomes of exercise and CHF. This research examined exercise training (ET) in CHF patients over a one year period. The ET group (n=50) exercised three times a week for eight weeks, and then twice weekly for the rest of the year, the control group (n=49) did not exercise. This study's findings reinforced Smart et al's (2007) conclusions that exercise training improves functional capacity in CHF patients. In addition, this trial also reported positive long-term effects of ET with the ET group having a higher oxygen saturation which remained elevated over a longer period of time compared to the control group, suggesting that even a low amount of exercise per week can be sufficient to maintain a higher functional capacity. Further to this, cardiac events including MI, cardiac death and unstable angina were markedly less frequent in the ET group. Belardinelli et al (1999) concluded that a long-term, supervised exercise programme improved the QoL by means of increased clinical care providing enhanced psychological support for the subjects.

In relation to QoL, Oka et al (2007) studied the relationship between self-efficacy and exercise capacity and found that a single exercise test and usual care did not improve self-efficacy in patients with stable, mild to moderate heart failure while participation in a regular programme of exercise increased self-efficacy in walking thus enhancing QoL factors in other domains.

### Self-efficacy/ mastery and CHF

There has been increasing evidence that self-management programmes for CHF patients have a positive effect on quality of life and self-care behaviour. Kutzleb and Reiner (2005) conducted a longitudinal study measuring the effects that a nurse-directed patient education programme had on QoL, and found that patient education had positively affected QoL resulting from patient empowerment to self-manage particular facets of the condition such as diet and medication therapy. The team provided patient education sessions over twelve months, they reported improved exercise tolerance and ability to maintain independence, reinforcing the correlation between QoL and functional capacity. Wright et al (2003) randomized 197 HF patients into 2 groups with the intervention group (n=100) receiving a diary and education surrounding heart failure self-management and monitoring of daily weight and 97 control subjects received normal care. The intervention group had a lower mortality rate over the course of the 12 month study together with fewer hospital admissions, suggesting that self-management strategies such as weight monitoring were effective. Additionally the intervention group exhibited higher levels of knowledge at 12 months follow up. The intervention participants who did not use the diary or perform daily weighing were also those with a poorer attendance at the heart failure clinic and education sessions. This group declined markedly in their health status over the 12 months in comparison to the intervention group.

González et al (2005) evaluated a nurse-led education intervention to promote self-management strategies. The subjects (n= 298) had a nurse assessment performed at first visit and at one year follow-up to a heart failure clinic. Subjects were questioned and then educated in:

- ♦ Heart and underlying disease
- ♦ Symptom awareness
- ♦ Medication knowledge
- ♦ Weight monitoring.

The study found that nurse-led education changed health behaviour in all areas studied and that subjects exercised more frequently after the intervention—medication compliance remained the same. This suggests that nurse-led education had a positive impact on subject knowledge and hence improved self-efficacy.

### Patient education and CHF

As self-efficacy has had much emphasis in the management of long-term conditions so has nurse-directed patient education. Kutzlev and Reiner (2006) evaluated the impact of a nurse-directed approach to patient education focusing on lifestyle modification, diet, medication compliance and daily management to improve the QoL and functional capacity in heart failure patients. The study involved 23 subjects divided into 2 groups and was conducted over a 12 month period. The intervention group of subjects (n=13) received nurse-directed care involving disease management information and weekly telephone follow up and the routine care [Control] group (n=10) received protocol driven disease medical management. The study found that there was a significant improvement in QoL in the intervention group. Health, function, social, economic, psychological and spiritual factors were all positively impacted by nurse-directed patient education. However, nurse education had no impact on functional capacity. Kutzlev and Reiner (2006) concluded that nurse-directed patient education was effective in improving QoL together with the patients' role in symptom control and disease self-management.

González et al's (2005) intervention study also found that knowledge had increased at one year together with improved self-care expressed through regular weighing, blood pressure checks and exercise. In contrast to this, Mártensson et al's (2004) longitudinal 12 month study (intervention n= 78 vs control n=75) of a nurse-lead intervention found that at the end point the nurse educated group had only just retained better physical and mental status than the control group. Mártensson et al (2004) found health-related QoL in the intervention group was improved at three months but had declined back to the original scores at 12 months (n= 78 in the intervention group vs n=75 control group). In comparison, the control group had deteriorated significantly in several domains such as physical limitations and vitality by the three month follow-up and continued to decline resulting in lower QoL scores.

### Monitoring and tele-management

Good post-discharge follow-up care reduces heart failure readmissions and one aspect of this is monitoring. This role

is undertaken by a nurse with heart failure training and will predominantly include components that assess education, fluid status, symptom recognition and medication compliance (Benatar et al, 2003, Wright et al, 2003).

Nurse tele-management has been linked to a reduction in hospital readmissions by Benatar et al (2003). This trial compared the effectiveness of two different methods of delivering follow-up care. Patients (n=108) were allocated to tele-management by an advanced practice nurse who collaborated with a cardiologist, the second group consisted of patients (n=108) receiving a home visit. After three months, fewer readmissions were evident in the tele-managed group (13 vs 24,  $P \leq 0.001$ ) and shorter length of stay (49.5 vs 105.0 d,  $P \leq 0.0001$ ). At six months this group was still associated with fewer hospital readmissions (38 vs 63,  $P \leq 0.05$ ), but not at 12 months (75 vs 103,  $P \leq 0.12$ ). The earlier results suggest that tele-management is the more effective method of the two. Coupled by the obvious association of the lower costs of this intervention this appears to be a good way for the ongoing assessment of CHF sufferers in the community. However, tele-management provides a less personalized service and may reduce rapport between the patient and nurse.

### Palliative care and CHF

Daley et al (2006) reported on a three year study using a grounded theory approach assessing the collaborative work between community-based heart failure nurses and existing palliative-care services. A total of 491 subjects were recruited and received specialist interventions such as support groups, day therapy, psychology, both HF and palliative-care nurse home-visits and hospice care. The findings suggested that both palliative and HF nurses were key workers in providing support and continuity of care with this community-based patient group. Although only a small percentage (1–3%) utilized the palliative-care services, a noticeable decline was observed in the uptake of hospice beds for HF patients during this time. Additionally, the number of home deaths for both palliative care (mostly cancer patients) and HF were similar, however, hospital death was substantially higher in HF patients. It could be argued that hospital death is higher in this patient group because of daily symptom variation and the sudden onset of symptoms frequently experienced by such patients. This creates a 'yo-yo' effect with health status and does not portray a slow decline in health as with many other chronic conditions, and consequently it is a challenging disease to predict outcome and life expectancy. Additionally, the model of care suggested by this study provided high quality care which was cost effective service, although a single study needs to be treated with caution as a basis for recommendations for future practice.

### Discussion

The relationship between a diminished QoL and CHF is well recognized at both Governmental and healthcare level. Two Cochrane reviews (Lane et al, 2004; Taylor et al, 2005) have recommended social and psychological sup-



port for CHF patients reflecting the importance of QoL to patient well-being despite *Developing Services for Heart Failure* (DH, 2003) only recognizing QoL as a palliative care need and not as an element of ongoing assessment. This contrasts with the NICE (2005) recommendation that anxiety and depression should be considered in all patients with CHF.

The consensus that exercise improves maximal exercise capacity in CHF patients due to the physiological changes including improvements in endothelial function, autonomic activity and a reduction in sympathetic activation (Oka et al, 2005; Belardinelli et al, 2007; Smart et al, 2007) makes this an important area for health promotion by nurses. Yet HF services in the UK appear to have adopted varying approaches to the delivery of exercise promotion with some offering exercise initiation programmes, others only offering it in conjunction with MI rehabilitation, while the majority of HF services do not offer any form of exercise rehabilitation (Grange, 2005). Exercise programmes for CHF patients would be economical to implement and have a positive long-term effect not only for the patient, but on reducing hospital readmissions and consequently financial burden. Additionally, providing group exercise programmes would allow CHF patients to meet others who are experiencing the same life challenges and thus offer an additional network of support.

Self-management is a pivotal part of the effective management of any long-term condition. Studies consistently conclude that nurse education is a key facet to self-efficacy (Kutzleb and Reiner, 2005; Wright et al, 2003; González et al, 2005) with one study (Wright et al, 2003) finding that those not enrolled in education and self-management sessions had markedly deteriorated in health and QoL over a year and experienced a higher number of hospital readmissions and increased length of stay.

Nurse-led education needs to focus upon knowledge and understanding of HF including medication knowledge and self-care behaviour such as regular monitoring of weight and blood pressure checks, lifestyle and medication compliance (González et al, 2005). Patients also need to be educated in the early recognition of symptom exacerbation and warning signs of fluid overload which enables patients to titrate diuretics accordingly. Such prompt treatment has proved to prevent acute exacerbations and thus avoid admission into a hospital setting (Kutzleb, 2005).

But patients need to be receptive and proactive about their health to gain a maximum outcome from education sessions. Additionally educational needs and abilities will vary and it is therefore important to be adaptable in the methods of information delivery to ensure the utmost effectiveness.

Daley et al (2006) demonstrated the importance of providing appropriate palliative care to CHF patients within a community setting. Although hospital death was still higher in CHF than other palliative conditions an important finding was a noticeable decline in the readmission rate for CHF during this trial. CHF is associated with sudden episodes of rapid deterioration and it is reported that up to 50% of people can die suddenly during this exacerbation

of symptoms (Hobbs, 1999). Indeed, these sudden variations make prognosis challenging and thus referral to palliative care services very subjective. However, HF services are clearly not experts in palliative care as much emphasis in practice centres on diagnosis and treatment of the condition (DH, 2000a, 2003).

## Conclusion

Chronic heart failure accounts for a growing number of people requiring supportive care in their homes. The evidence is consistent in indicating that chronic heart failure is associated with high levels of physical, functional and emotional distress with consequent poor quality of life especially for those with advanced disease. Further, it is not only those with chronic heart failure who experience a diminished quality of life but also family members who provide increasing levels of care as their loved one's dependency increases with advancing disease.

There is now increasingly evidence to inform community nursing practice with CHF patients especially regarding nurse-led education to improve QoL and self-care. **BJCN**

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## KEY POINTS

- CHF is a prevalent condition which impacts negatively upon QoL.
- Regular exercise in CHF is associated with a reduction in cardiac events, hospital readmission and improved QoL.
- Nurse-led education can provide the foundation for improved self-care.
- Tele-care can be time and cost-effective for 'expert' patients.
- Palliative-care services with specialist HF support provides cost-effective, high-quality care resulting in reduced hospital readmissions and improved end-of-life experience.

### ERRATA: BJCN 13 (8) Caring for a patient with a urostomy. By Linda Nazarko

*In column 2, line 6 of page 354 it was stated, regarding traditional urostomies, 'The other end of the ileal segment is sutured closed to make a pocket or reservoir that holds urine inside the body'. A traditional urostomy has no reservoir and drains directly into an external urostomy bag.*

*In column 2, line 32 page 354 under the heading 'Further surgical procedures', the sentence should have read 'There are two other procedures that are used to form urinary diversions.'*

*In column 1, line 10 under the heading 'Complications of urostomy', the sentence should have read 'This is a rare complication that can occur some years after formation of the continent urostomy.'*

*Throughout the article the term 'continent urostomies' was used. While this term is widely used in the American medical press it may have been more accurate to refer to these procedures as urinary diversions for a UK readership.*

*The editorial team would like to apologise for these errors and to apologise to Linda Nazarko*