Quality of life in elderly heart failure patients

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Abstract Quality of life (QOL), as a relevant area of research in the understanding of heart failure (HF) patient outcomes, has been increasingly studied during the last two decades. The purposes of this review article are to (1) describe QOL in older adults with HF, (2) identify and critique research designed to test interventions to improve QOL, (3) identify gaps in the literature, and (4) provide recommendations for future research. Seventeen studies describing QOL in older adults with HF were identified. Elderly HF patient QOL has been reported to be fair to poor and is worse as compared to a healthy control group. Furthermore, there is some evidence that suggests that QOL is better in older adults than younger adults and worse in women (both older and younger) than in men, although these findings are not consistent across studies. Predictors of QOL and its dimensions in older HF patients included demographic, clinical, and psychosocial variables. Sixteen interventional studies were identified that reported QOL as an outcome in older adults. Findings among randomized clinical trials (RCTs) to improve QOL outcomes in elderly HF patients do not allow strong conclusions about the benefits of the interventions. It must be noted, though, that while not all studies reported improvements in QOL (either significant or as a trend), no studies reported deterioration in QOL with randomization to an intervention versus control. These studies were limited by several methodological issues. While there has been some research of QOL in this elderly cohort, it is paramount that we address methodological issues and thereby improve the scientific rigor of our research, continue to explore QOL in elderly HF patients, and design intervention trials for elders at risk for poor QOL.

Key Words heart failure; elderly; quality of life

Introduction

The increasing incidence of heart failure (HF) among adults in the US is well known (approaching 10 per 1,000 population after age 65) and can be partially attributed to an "aging population" and improved treatment of other cardiovascular disorders.1,2 HF is the most common discharge diagnosis in the US Medicare population. In 2005, direct and indirect costs attributable to HF have been estimated at $27.9 billion.3

The challenges in the management of HF in older adults and the impact on subsequent outcomes are confounded by multiple co-morbidities and disabilities. Concurrent disorders (e.g., stroke, arthritis, and diabetes), depression, cognitive impairment (i.e., deficits in memory, attention, and problem solving), social isolation, and decreased functional ability (e.g., decreased self-care ability, mobility, and ambulation), commonly seen in elders can contribute to the increased complexity in care provision, decreased adherence to treatment regimens, increased symptom burden, decreased quality of life (QOL), and decreased survival.3,4

QOL, as a relevant area of research in the understanding of HF patient outcomes, has been increasingly studied during the last two decades. Initial research has focused on describing QOL in HF patients, identifying differences in QOL based on demographic and clinical variables, reporting correlations between QOL and other factors, and identifying predictors of QOL. Armed with a greater understanding of existing HF patient QOL, researchers have also sought to test interventions to improve QOL. This research has included both non-randomized studies and randomized clinical trials. Many of the intervention studies have been in the context of testing HF disease management models. Furthermore, much of the HF QOL research has included both younger and older adults (which contributes to difficulty in identifying the impact of age on our understanding of HF patient QOL). Sometimes, the oldest HF patients have been excluded from clinical trials (especially if the focus was on evaluating the safety and efficacy of treatments for HF), thus limiting our understanding of outcomes in this cohort of elders. Other trials have focused on this segment of the population.

The purposes of this review article are to (1) describe QOL in older adults with HF, (2) identify and critique research designed to test interventions to improve QOL, (3) identify gaps in the literature, and (4) provide recommendations for future research. We defined older adults as per-
sons ≥ 65 years; however our review includes studies with a mean or median age of 65 years (which we identify and acknowledge as a limitation of our review). The majority of definitions of QOL in the articles were health-related.

A literature search was conducted for the period of 1990-2006, using Medline and Cited in Nursing and Allied Health Literature (CINAHL). Keywords (used in combination with each other) were older adults, elderly, ≥ 65 years, heart failure, health-related QOL, and QOL. Titles, authors, abstracts, and reference lists were examined. Additional relevant articles that were identified were included in our review. This review was not exhaustive but was intended to highlight the current literature and provide direction for research of QOL in older adults with HF. We limited our search to research of elderly HF patients treated medically. A search of the literature regarding surgical treatment of elderly HF patients (e.g., coronary artery bypass grafting, mitral valve repair, or ventricular assist device implantation) is beyond the scope of this article.

**Descriptive studies of QOL in HF patients**

Seventeen studies describing QOL in older adults with HF were identified.9-21 Nine of the studies were comparative, and eight were correlational (Table 1). All nine of the comparative studies except one9 included patients with a mean age of ≥ 65 years9-12 and six of these studies included patients with a mean age of ≥ 75 years.6,7,9,10,12,13 Four of the eight correlational studies analyzed data from older adults (≥ 65 years) exclusively or separately,14-17 three studies included patients who had a mean or median age of approximately 65 years or greater,18,19 and one very large study included patients from 21-80 years.21 Sample sizes ranged from 47-5,025 HF patients. Severity of illness was reported for thirteen of the seventeen studies using NYHA class as follows: NYHA I-IV,5,12,16,17,21 NYHA II-IV,7,8,13,18,19,21 and NYHA III-IV,9,11,20 Thirty-five percent to 80% of patients were male in the seventeen studies.

Patients in seven of the seventeen studies were hospitalized at the time of data collection.9,11,12,16,19,21 In the remaining studies, data were collected at the time of hospital discharge and after discharge or only following hospital discharge.5,8,10,13-15,17,18

Overall QOL and specific dimensions of QOL, such as physical function, social support, and emotional health, were measured using a variety of instruments. The most commonly used tools to measure QOL were the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36),6,9,10,13,16,19,21 (a generic health profile) and the Minnesota Living with Heart Failure Questionnaire (MLHFAQ),5,7,8,16,18,19 (a disease specific tool). Other QOL tools used were the Chronic Heart Failure Questionnaire (CHHQ),5,15 Cantril Ladder of Life,20,28 Nottingham Health Profile,12 Patients’ Global Self-Assessment (PGSA),12 and Kansas City Cardiomyopathy Questionnaire (KCCQ).17

QOL dimensions were also assessed using either objective or subjective, function or problem specific instruments. Physical function was subjectively assessed utilizing the modified Katz Index of Activities of Daily Living (ADLs),14 the Groningen Activity Restriction Scale (GARS),16 the HF Functional Status Inventory,26 or the Functional Status Questionnaire.27 Objective functional assessment measures used were the 6 minute walk test17,28 and Actiwatch 16 (a wristwatch-type actigraph to measure motor activity).19

Emotional health and social support were measured using subscales of the Profile of Mood States (POMS),21 Psychosocial Adjustment to Illness Scale (PAIS)29 (which measures psychological and social adaptation to physical illness), and Social Support Survey.15 The Center for Epidemiological Studies – Depression Scale (CES-D) short form,6 Zung Self-rating Depression Scale (SDS),13 or Hospital Anxiety and Depression Scale (HADS)10 were used to measure depression. Lastly, the Dyspnea-Fatigue Index (DFI)19 and Brief Symptom Inventory (BSI)19 were used to measure symptom burden and distress, respectively.

Findings from descriptive, comparative, and correlational studies of QOL in older adults provide us with insights into QOL in these older, chronically ill patients. In a large retrospective analysis of older Medicare patients with HF (n=872, mean age=79.2 years), Chin et al.14 found that 58% of older adults with HF rated their general health perceptions as “fair” or “poor”. Similarly, Bennett et al.15 reported that, overall, HF patients (n=227, mean age=64 years, 48% ≥ 65 years) reported low to moderate HRQOL.

In a longitudinal, prospective cohort study, Van Jaarsveld et al.10 examined QOL in elders (mean age = 75 years) and reported worse health-related QOL as compared to a healthy reference group in the domains of physical, psychological, and social functioning from diagnosis through 1 year after diagnosis. Regarding the HF patient cohort, physical functioning worsened significantly from immediately after HF diagnosis through 1 year later. Although declines in psychological and social functioning were less pronounced than physical functioning, significantly higher levels of anxiety and decreased social functioning were reported by HF patients at 6 weeks, 6 months, and 12 months after diagnosis, and depression was reported at 6 months and 12 months after diagnosis.10 Ekman et al.8 and Cline et al.12 also reported worse QOL in HF patients > 65 years as compared to healthy control groups.

Comparative studies based on demographc variables (i.e., age and gender), and clinical variables (i.e., systolic versus diastolic dysfunction) have also contributed to our understanding of QOL in older HF patients. Masoudi et al.17 reported that older adults with HF (n=218, age ≥ 65 years) had better health-related QOL than younger adults (n=328, age < 65 years), adjusted for functional limitations. However, as NYHA class deteriorated, older patients experienced significantly greater declines in health-related QOL than did younger patients.17

Differences in QOL were also examined by gender. Friedman et al.4 reported that older (≥ 65 years) adult men (n=69) and women (n=69) had similar frequencies and types
of HF-related symptoms and similar frequencies of depression. Both older men and women with HF had impaired physical functioning, although older women were more physically impaired than older men. Furthermore, the physical functioning of women was significantly worse at 4-6 weeks after hospitalization as compared to men. Chle et al. also reported differences in older adult HF patient QOL by gender, favoring men. Hou et al. evaluated the interaction between age (<65 years and ≥65 years) and gender for health-related QOL in 165 HF patients over time. Overall, patients reported moderate levels of health-related QOL. When age and gender were controlled, women <65 years had the poorest QOL as compared to women ≥65 years, and men <65 years and ≥65 years at baseline. However, Hou et al. used two different disease-specific QOL instruments and found inconsistencies in QOL by study instrument at 26 weeks after baseline.

Pihl et al. examined differences in QOL between HF patients and their spouses. Patients generally experienced lower health-related QOL as compared to their spouses (n=47 couples). Patients and their spouses differed significantly in physical functioning and social functioning (favoring spouses), but mental health (including depressive symptoms) did not differ significantly between the two groups.

Badano et al. and Jaarsma et al. examined differences in QOL in older adult HF patients by systolic versus diastolic dysfunction. Badano et al. reported no differences in overall QOL, physical health, and mental health at hospital discharge and 6 months later for HF patients (median age=75 years) with systolic (n=102) versus diastolic (n=29) dysfunction. Jaarsma et al. reported an increased prevalence of ankle edema in HF patients (mean age=73 years) with diastolic dysfunction (n=36) as compared to patients with systolic dysfunction (n=150). In addition, Jaarsma et al. noted better adaptation to HF in patients with systolic versus diastolic dysfunction.

Researchers have also used correlational designs to examine predictors of QOL and/or its dimensions (i.e., physical, psychological, and social functioning) as well as relationships between QOL and mortality in older HF patients. Demographic variables (age, gender, and socioeconomic status), symptoms of HF, NYHA class, and psychological variables (anxiety and depression) have been reported as predictors of QOL. Significant predictors of physical functioning have included gender, age, marital status, NYHA class, and depression. Depression and mental health of the spouse have accounted for variance in physical functioning.

Relationships between QOL and mortality were examined by Konstant et al., who determined that HRQOL independently predicted mortality in HF patients (n=3,375, age range =21-80 years). These findings were supported by a more recent study which showed that worse HRQOL in an older adult population with HF (n=394, mean age =77 years) was associated with hospital readmission and death.

Some inferences can be drawn from these studies regarding QOL in older HF patients. QOL has been reported to be fair to poor and is worse as compared to a healthy control group. Furthermore, there is some evidence that suggests that QOL is better in older adults than younger adults and worse in women (both older and younger) than in men, although these findings are not consistent across studies. Also, it is not surprising that few or no differences were detected in QOL when comparing patients with systolic versus diastolic dysfunction. Predictors of QOL and its dimensions in older HF patients included demographic, clinical, and psychosocial variables, although the significance of these relationships and the strength of relationships varied among studies. Finally, QOL was found to be a predictor of mortality and resource utilization in two large studies.

It is important to note that these studies are limited by several methodological issues. First, samples in many of the studies were from single sites, racially homogeneous, and included patients <65 years which reduced generalizability of results, especially in the elderly. Convenience sampling was used by some researchers which can further bias study results if study patients are not representative of the entire pool of patients. Only one study examined the QOL of caregivers. Also, the settings (i.e., during hospitalization and post-hospitalization) and length of time post hospitalization differed among studies. Furthermore, only some studies evaluated QOL longitudinally (often short-term), while others took a "snapshot" of QOL at a point in time. In addition, instruments used to measure QOL in these studies differed (although most instruments were standardized with adequate psychometric support), which may have influenced results. Of note, the studies that used only generic health profiles may not have been as responsive as those studies that included disease-specific instruments. Furthermore, while one study used two disease-specific instruments, its findings were limited by conflicting findings from each tool. The issue of missing data was often simply addressed as a study limitation. Furthermore, meta-analyses could not be conducted, given the dissimilarity of study instruments used by all studies.

Gaps in the study of QOL in older HF patients point to the need for more multi-site, longitudinal studies of QOL with large sample sizes that allow for subgroup analyses that are powered to detect differences between groups. QOL instruments need to be rigorously tested in elderly HF patients to determine their responsiveness and sensitivity to change over time. Missing data also needs to be addressed primarily (using study protocols to reduce the potential for missing data) and secondarily (using statistical analyses that adjust for missing data).

Interventional HF studies with QOL as an outcome

Sixteen interventional studies were identified that reported QOL as an outcome in older adults with a mean age ≥65 years (Table 2). Reported sample sizes ranged from 33-282 HF patients. While samples in all studies reviewed reported mean ages ≥65 years, nine of the studies included HF patients with a mean age ≥75 years.
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<th>Author</th>
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<tr>
<td>Chin, 2003</td>
<td>N=872 Age ≥ 65 yrs Mean age 79 years /Correlational study</td>
<td>58% of the patients rated their general health perception as “fair” or “poor”. Worse health perceptions and more deficiencies in activities of daily living were strongly correlated with mortality.</td>
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<td>Bennett, 2001</td>
<td>N=227 Age ≥ 65 years=108 Mean age 64 years /Correlational study</td>
<td>Overall, patients reported low to moderate HRQOL. Men &lt; 65 years perceived significantly less social support than men ≥ 65 years and women in either age group. Baseline social support was not a significant predictor of 12 month HRQOL when other factors were controlled. Changes in social support predicted changes in QOL.</td>
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<tr>
<td>Rodriguez-Artejlo, 2005</td>
<td>N= 394 Age ≥ 65 years (mean 77 ± 7 years) /Correlational study</td>
<td>Worse HRQOL was associated with hospital readmission and death in pts with HF, independent of biomedical, psychosocial, and health care variables.</td>
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<td>Masoud, 2004</td>
<td>N=546 Age &lt;65 years n= 328 (mean 52 ± 8 years) Age ≥65 years n=218 (mean 74 ± 6 years) /Correlational study</td>
<td>Older age was independently correlated with better HRQOL, after adjusting for baseline NYHA class. At baseline, older patients had significantly worse functional status, including higher mean NYHA classification. Older patients had better HRQL than younger pts for a given level of functional limitation. Older patients experiencing a decline in NYHA functional classification between baseline and follow-up had statistically and clinically significant declines in HRQOL.</td>
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<tr>
<td>Rector, 2006</td>
<td>N= 2144 Age: 46% ≥ 65 years /Correlational study</td>
<td>Symptoms of HF and NYHA class predicted HRQOL, accounting for 41% of variance in HRQOL. Controlling for symptoms, age ≥ 65 years explained an additional 4.5% of the variation in HRQOL.</td>
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<td>De Jong, 2005</td>
<td>N=87 Mean age 72 ± 11 years /Correlational study</td>
<td>Worse NYHA class, higher anxiety, and higher depression predicted worse HRQOL. Better NYHA class and higher anxiety predicted greater levels of physical activity. Worse NYHA class and higher depression predicted greater symptom burden. Emotional variables were not routinely assessed but noted to have a major impact on health status.</td>
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<td>Luttik, 2006</td>
<td>N=179 Mean age 73 ± 9 years /Correlational study</td>
<td>In a multivariable model, QOL was primarily associated with socioeconomic status, age, and gender. Differences in QOL between married patients and those living alone were most pronounced with regard to future expectations of QOL. Pts with HF who were living alone were mostly elderly women with a low socioeconomic status, and were at risk for recurrent events and a worse QOL.</td>
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<td>Konstam, 1996</td>
<td>N=5,025 Age range 21-80 years /Correlational study</td>
<td>Baseline assessment of HRQOL predicted mortality and HF-related hospitalizations in symptomatic and asymptomatic patients randomized to enalapril and placebo treatment. HRQOL independently predicted mortality and HF-related hospitalizations after adjustment for ejection fraction, age, treatment, and NYHA classification in pts with an ejection fraction &lt; 35%.</td>
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<td>Hou, 2004</td>
<td>N=165 Age Men &gt;65 =16% Women &gt;65 = 38% Mean age 58 years /Comparative study</td>
<td>At baseline, patients &lt; 65 years had poorer HRQOL scores than did patients ≥ 65 years. Women &lt; 65 years had relatively poorer baseline HRQOL than women ≥ 65 years and men &lt; 65 years and ≥ 65 years.</td>
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<td>Friedman, 2003&lt;sup&gt;8&lt;/sup&gt;</td>
<td>N=138 Age: 65-93 years Mean age 77 years /Comparative study</td>
<td>Older adult men and women had similar number and types of HF-related symptoms, and 27% of subjects could be classified as depressed. Both older men and older women with HF had impairments in their physical functioning with older women more physically impaired than older men. The physical functioning of women was significantly worse at the post-hospitalization 4-6 week time period than at baseline.</td>
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<td>Badano, 2004&lt;sup&gt;7&lt;/sup&gt;</td>
<td>N= 131 Median age 75 years /Comparative study</td>
<td>QOL was similar between HF patients with systolic versus diastolic dysfunction at both discharge and 6 months later.</td>
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<td>Riegel, 2003&lt;sup&gt;6&lt;/sup&gt;</td>
<td>N=80 Mean age 70 ± 12 years /Comparative study</td>
<td>QOL improved over time in Hispanic versus non-Hispanic HF patients, but significantly more so in the Hispanics when compared to the non-Hispanics. Hispanic HF patients sample could be characterized as poorly educated, newly diagnosed women with diastolic dysfunction.</td>
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<td>Ekman, 2002&lt;sup&gt;9&lt;/sup&gt;</td>
<td>N= 94 Mean age 81 years /Comparative study</td>
<td>HF patients had lower levels of HRQOL but high and similar scores of sense of coherence when compared with healthy controls. Old age and severe chronic HF were associated with limited functional abilities and impaired HRQOL but also with internal resources such as sense of coherence.</td>
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<td>van Jaarsveld, 2001&lt;sup&gt;10&lt;/sup&gt;</td>
<td>N= 119 Mean age 74,5 years /Comparative study</td>
<td>At the pre-morbid assessment, HF patients were on average older and had worse HRQOL compared to a reference group of older patients. Although HF had not yet been diagnosed at the pre-morbid time, symptoms were already present and resulted in decreased levels of functioning. At 6 weeks, all HRQOL measures showed worse functioning compared to pre-morbid data, except for depressive symptoms which presented at 6 months.</td>
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<td>Jaarsma, 1999&lt;sup&gt;11&lt;/sup&gt;</td>
<td>N= 186 Mean age 73 years /Comparative study</td>
<td>More HF patients with diastolic dysfunction reported ankle edema than HF patients with systolic dysfunction. Patients with systolic dysfunction reported better adaptation than patients with diastolic dysfunction.</td>
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<td>Cline, 1999&lt;sup&gt;12&lt;/sup&gt;</td>
<td>N= 191 Mean age 75 years /Comparative study</td>
<td>HRQOL was impaired with HF, as compared to an age and sex-matched healthy population. HRQOL was also poorer in women as compared to men, and gender was the only significant predictor of QOL outcomes.</td>
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<td>Pihl, 2005&lt;sup&gt;13&lt;/sup&gt;</td>
<td>N= 47 couples Age &gt; 60 years Mean age 78 years Spouse mean age 75 years /Comparative study</td>
<td>Patients experienced worse HRQOL than their spouses. Patients had significantly worse physical functioning and social functioning. There was no significant difference between patients and spouses regarding mental health, particularly depressive symptoms.</td>
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HF= heart failure; QOL= quality of life; HRQOL=health-related quality of life; NYHA=New York Heart Association
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| Stewart, 1999<sup>22</sup> | N = 200  
Mean age = 75 years  
Randomized, controlled trial | Home visit by a cardiac nurse with optimization of therapy and counseling within 2 weeks of discharge and additional assessment/home visits thru 6 months post discharge | Improved health-related QOL over time (at 3 months post discharge) in intervention versus usual care patients. |
| Naylor, 2004<sup>23</sup> | N = 239  
Mean age = 76 years  
All pts = 65 years  
Randomized, controlled trial | Visit by a trained, advanced practice nurse within 24 hours of hospitalization with additional visits through 3 months after discharge to address comprehensive patient and caregiver needs based on national HF guidelines | For intervention patients, short-term improvements in QOL (overall QOL at 12 weeks and physical dimension at 2 weeks) versus control. |
| Pugh, 2001<sup>24</sup> | N = 58  
Mean age = 77 years  
All pts = 65 years  
Randomized, controlled trial | Enhanced discharge planning, post discharge HF education and follow-up (telephone contacts and follow-up visits in the home over 6 months), and intensive post-hospital collaboration with the providers by case managers | No significant differences between the intervention group and usual care group were found 6 months later. |
| Sidorov, 2003<sup>25</sup> | N = 268  
Mean age = 75 years  
Longitudinal, baseline and 1 year later | Nurse-based case management through a disease management program (including patient/family self-management, education, importance of adherence, ongoing follow-up, use of HF guidelines) at clinic, by telephone, or at patient's home for 1 year. | Significant improvement from baseline to 1 year in mental health, general health perception, and role physical and role emotional in disease management participants versus usual care. |
| Ojeda, 2005<sup>26</sup> | N = 153  
Mean age = 65 ± 10 years  
Randomized, controlled trial | Pre-discharge formal education about HF and follow-up clinic visits every 3 months for 16 ±8 months after discharge | During the treatment period, patients in the treatment group had significantly improved QOL as compared to the control group. One year after stopping the program, there was no difference in QOL between groups. |
| Hershberger, 2005<sup>27</sup> | N = 93  
Mean age = 73 ± 12 years 80% = 65 years  
Longitudinal, 12 months pre / 12 months post enrollment | Outpatient HF disease management program (including assessment, intervention, education, and follow-up using national guidelines) in a primary care setting for at least 6 months | Improved QOL from 12 months before to 12 months after enrollment. |
| Jaarsma, 2000<sup>28</sup> | N = 179  
Mean age = 73 ± 9 years  
Randomized, controlled trial | Systematic education and support by a nurse in the hospital and at home (average of 4 visits in-hospital, 1 telephone call and 1 home visit) followed for 9 months | No differences between the intervention group and control group in functional capabilities, symptom frequency and distress, psychosocial adjustment to illness, and well-being over time thru 9 months follow-up. |
| LaFramboise, 2003<sup>29</sup> | N = 90  
Age = 67 years  
Randomized, controlled trial | Assessment and education through a telehealth communication device versus assessment and education through a telehealth communication device + 5 home visits versus telephone case mgmt versus 5 home visits (for 2 months) | Improvement in QOL overtime with no group differences 2 months later. |
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<tr>
<td>Rich, 1995</td>
<td>N = 282</td>
<td>Multi-disciplinary nurse-directed intervention consisting of education, diet planning, social service consultation, discharge planning and follow-up (using home care and telephone contact) for 90 days.</td>
<td>Significantly more improvement in QOL in the treatment group versus control group from baseline to 90 days later.</td>
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<tr>
<td>Harrison, 2002</td>
<td>N = 192</td>
<td>Nurse led intervention on education-counseling protocol focused on transition from hospital to-home and supportive care for self-management 2 weeks after hospital discharge.</td>
<td>At 6 weeks and 12 weeks after hospital discharge, overall QOL as well as physical and emotional QOL (at 12 weeks) had improved more in the intervention group versus the usual care group.</td>
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<td>Doughty, 2002</td>
<td>N = 197</td>
<td>Clinical review early after discharge, evidence-based treatment, education (individual and group), personal diary and regular follow-up alternating between the general practitioner and heart failure clinic for 12 months.</td>
<td>Greater improvement in the physical function dimension of QOL from baseline to 12 months in the intervention group versus control group.</td>
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<td>Scott, 2004</td>
<td>N = 88</td>
<td>Supportive/education intervention through home visits (patients learned about self-care management while receiving additional support) versus a mutual goal setting intervention (developed mutually set goals with patients and explored strategies for goal attainment) versus usual care (for 8 weeks); assessment through 6 months.</td>
<td>The mutual goal setting group had significantly higher QOL scores than the supportive/education group and usual care group at 6 months.</td>
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<td>Todero, 2002</td>
<td>N = 102</td>
<td>Two months of education regarding HF management via telephone calls or home visits by nurses versus a telephone communication device that collects data and delivers advice versus a combination of home visits and the telephone communication device.</td>
<td>All groups were combined into one group; compared to baseline, health-related QOL improved for the entire group at 2 months after study enrollment.</td>
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<td>Luskin, 2002</td>
<td>N = 33</td>
<td>Stress management (8 training sessions during a 10 week period). Sessions were 75 minutes each and delivered by a psychotherapist.</td>
<td>Health-related QOL improved from baseline to completion of training (10 weeks later).</td>
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<tr>
<td>Cline, 1998</td>
<td>N = 190</td>
<td>Discharge planning regarding HF education and self-management with follow-up at a nurse-directed HF clinic for 1 year after discharge.</td>
<td>No significant differences in QOL between the intervention group and control group at baseline and at 1 year follow-up.</td>
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<tr>
<td>Mejhart, 2004</td>
<td>N = 208</td>
<td>Nurse managed heart failure clinic (including assessment, treatment, education and regular follow-up) for up to 18 months.</td>
<td>No difference in QOL between the intervention group and usual care group from baseline to follow-up at 18 months.</td>
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HF = heart failure; QOL = quality of life
Between 37-58% of the HF patients were male in 14 studies that provided data regarding overall gender. Ten studies reported New York Heart Association (NYHA) classification. Five of the ten studies included ≥ NYHA class I patients, while three studies included patients ≥ NYHA class II, and two studies only included patients who were NYHA class III-IV. QOL data were collected using instruments that were generic, disease-specific, or a combination of both types of instruments. QOL instruments were typically self-administered or administered via interview to the HF patients at baseline and at ≥ 1 additional time period. Researchers most commonly used the Medical Outcomes Study 36-item Short Form Health Survey (SF-36) and/or the Minnesota Living with Heart Failure Questionnaire (MLHFQ) as follows: only the SF-36 (n=2 studies), only the MLHFQ (n=3 studies), or a combination of the SF-36 and MLHFQ (n=2 studies). Other researchers used either the SF-36 or MLHFQ in combination with other QOL instruments (n=5 studies).

Fourteen of the studies were randomized controlled trials (RCTs) and two of the studies used longitudinal, repeated measures designs. Studies criticized in this review included those studies with interventions that had one or more of the following components: multidisciplinary team approach, enhanced discharge planning, clinic visits and/or community outreach (via telehealth communication devices and/or home visits), education and self-management component, support/counseling, and use of published HF management guidelines. Exercise interventions aimed at influencing HF patient QOL were not critiqued as part of this review.

Six of the interventions for the trials had an in-hospital component. Post-hospitalization follow-up for these six trials included clinic visits for two of the trials, and home visits for four of the trials. Eight of the trials included interventions that began after hospital discharge either via clinic visits or home visits and/or use of telehealth communication devices.

Findings on QOL outcomes in the 14 RCTs were equivocal. Regarding the interventions for the six trials that included an in-hospital component, two of the trials included only support and education, while the other four trials also included follow-up (i.e., assessment and management of HF) as part of the intervention (either at home or in a clinic setting). Three of these trials demonstrated significant improvement in QOL over time in the intervention group as compared to the usual care group, while the other four trials reported no statistically significant differences. Interestingly, while Ojeda et al. reported significant improvement in QOL in the intervention group versus usual care group from baseline to follow-up during the study period (16±8 months), further analyses at 1 year post intervention revealed no significant differences between groups.

Regarding the eight RCTs wherein the intervention was initiated after discharge, again the results were mixed. Of the three clinic based trials, two demonstrated significant differences in QOL between the intervention and usual care groups over time, while one trial did not reveal significant differences in QOL outcomes between the two groups over time. In a subanalysis of the intervention group, Mejhrat et al. divided patients by median age (76 years), compared QOL outcomes in the elderly (mean=81 years) with younger (mean=70 years) cohort, and reported that QOL was similar between the two groups at baseline, but was significantly worse in the elderly cohort at follow-up as compared to the younger cohort.

The home-based intervention RCTs demonstrated significance in QOL outcomes favoring the home-based intervention groups in four of the five trials. It must be noted that in the study by Todero et al., which included use of an in-home telehealth communication device as well as home visits and/or telephone follow-up, results were reported by comparing baseline to follow-up after combining data for all groups into one group. Another report from this same research team (using a telecommunication device) reported no statistically significant differences when QOL was analyzed by group over time. Interestingly, most of the trials which demonstrated significant differences in QOL outcomes favoring the intervention group, assessed short-term QOL (typically between 2-6 months post randomization), whereas the RCTs which did not achieve significance assessed QOL at 6-18 months post randomization or after cessation of the intervention.

Meta-analyses of RCTs examining HF patient outcomes, including QOL, were generally unable to pool QOL data; rather, brief comments were made regarding QOL findings. Roccaforte et al. described QOL findings in his meta analyses of 33 RCTs and found that eight trials reported statistically significant improvement in QOL in the intervention groups versus control groups over time; four trials reported short-term improvement in QOL, but not long-term QOL improvement and/or improvement in all dimensions of QOL; and four trials reported no significant QOL differences between groups over time. Gwadry-Sridhar et al. reported significant improvement in QOL for intervention patients as compared to control patients in two of three trials analyzed from baseline to follow-up. Phillips et al. and McAlister et al. reported non-significant trends toward better QOL over time in the intervention arms versus control arms of the trials included in their analyses (n=5 trials and n=9 trials, respectively). Some of the HF trials included in these meta-analyses had subjects with a mean age < 65 years.

Findings among RCTs to improve QOL outcomes in elderly HF patients do not allow one to draw strong conclusions about the benefits of the interventions. This may be attributed to several factors. Sample sizes differed among trials, and small sample sizes may have accounted for lack of significance in some of the trials. Clinical characteristics of HF patients may also influence findings in that severity of HF differed among trials. We also acknowledge our own limitation of this review in that our review includes studies
of older adults with a mean age of 65 years; although equivocal findings were also found when examining studies that included patients with a mean age ≥ 75 years.

There were also important methodological differences among trials. Instruments to measure QOL differed among trials, which may have influenced findings, especially when only generic instruments were used, versus using diseasespecific instruments or generic instruments in combination with disease-specific instruments. The mode of delivery of the intervention was different among studies and included discharge planning and/or post hospital follow-up via clinical visit or community outreach. Unfortunately, training of individuals delivering the intervention was frequently not reported. Also, for those studies that initiated the intervention after discharge, the timing of the post hospitalization intervention was not always clear. The length of the intervention varied among trials as well as the time from baseline to follow-up; both of these factors may have influenced results. In addition, the components of each intervention were variable, and one can therefore, only determine the impact of a “program” on QOL, versus any specific components of the program. Lastly, two of the studies were not RCTs, but used longitudinal designs. Although both studies demonstrated improved QOL from baseline to follow-up 1 year later, the lack of a control group seriously limited their findings.25, 27 It must be noted, though, that while not all studies reported improvements in QOL (either significant or as a trend), no studies reported deterioration in QOL with randomization to an intervention versus control.

There are gaps in the literature regarding the impact of interventions on QOL outcomes in elderly HF patients. Sample sizes were often not large enough to perform subgroup analyses (e.g., by gender, race, morbidity, and severity of illness indicators). There is also a paucity of research regarding the sustainability of the intervention on long-term QOL outcomes. Attrition and missing data issues need to be addressed in trial designs. In addition, not all trials analyzed whether interventions that improved QOL were also associated with improvement of other outcomes (i.e., morbidity, mortality, and resource utilization). Regarding resource utilization, cost effective analyses continue to be of paramount interest in the design and testing of interventions to improve QOL. Thus, while we have gained some understanding of interventions that improve QOL of elderly HF patients, we must continue to design and test interventions in RCTs so that we can further our knowledge and ultimately improve HF patient QOL.

Summary

The importance of understanding outcomes beyond morbidity and mortality is evident in the decades of QOL research, especially in chronic illness populations. The study of QOL in elderly patients, including patients with HF, is of great importance to our understanding of QOL and our ability to develop effective interventions to assist these patients to maximize their QOL. The observational literature suggests that QOL is at best “fair” and at worst “poor” in elderly HF patients, with QOL that is worse than a normative, age-matched population and that differs by subgroups. Furthermore, QOL is complex and related to biopsychosocial variables. The interventional literature suggests that there is an opportunity to improve QOL in this challenging cohort of patients. Thus, the inclusion of QOL as an endpoint in future HF trials is highly recommended.

There are clinical implications which can be derived from the existing literature. The treatment of HF in elderly patients should not only include medical management and life-style change, but also include an assessment of QOL and its potential for change over time. Overall QOL, perception of health status, and physical, psychological and social functioning are worthy targets for assessment and intervention in the elderly with HF. The potential for poor outcomes in any of these areas is high also due to the issues that older adults often deal with that are outside the scope of HF (i.e., cognitive limitations, decreased family/caregiver support, depression, and decreased mobility), but which can impact HF outcomes. Furthermore, elderly patients may attach greater importance to QOL outcomes than they do to duration of life. Thus, while we continue our study of QOL in elderly HF patients and strive to increase the scientific rigor of our research, we have gained some understanding of QOL in this challenging elderly patient cohort, and we can choose to act on that knowledge and intervene on behalf of at-risk elders.

References


