The Effect of Telemonitoring on Quality of Life and Self-Care Behaviors of Patients with Heart Failure

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Background

- Heart failure (HF) has been deemed the most important public health care problem in cardiovascular medicine
- Approximately 5.7 million people in the U.S. have heart failure
- HF accounts for 6.5 million hospital days per year
- HF costs the U.S. $34.4 billion dollars per year
- Approximately 23% of patients admitted to home health have a diagnosis of HF
Background

- The large economic burden from HF is associated with frequent hospital readmissions due to exacerbations of symptoms
- Readmission rates in 2010
  - 16% in 30 days
  - 29% in 60 days
  - 45% in 90 days
  - 60% in 9 months

(Agency for Healthcare Research & Quality, 2010)

PURPOSE OF THE STUDY

The purpose of this research study was to determine if there is a difference in hospital readmission rates, the perception of quality of life and self care behaviors in heart failure patients who were telemonitored and those who were not.
Research Questions

1. Is there a difference in the perception of quality of life of HF patients who receive telemonitoring vs. the usual home care program for HF patients?

2. Is there a difference in the level of self-care behaviors of HF patients who receive telemonitoring vs. the usual home care program for HF patients?

Telemonitoring

Installation of equipment in a patient’s home to measure:
- daily weight
- blood pressure
- pulse rate
- pulse oximetry

This information is transmitted using cellular technology to a secured web site
Large not-for-profit home health care agency
Serves 5 counties in the Philadelphia area
Receives approximately 2200 referrals monthly
Greater than 20% of patients have a primary diagnosis of heart failure

Population and Sample

A random sample of 80 patients were recruited (40 monitored and 40 non-monitored)
- Primary diagnosis of HF
- Consented to study

The home healthcare services were the usual services provided for all patients, with the only addition being the monitor for those in the telemonitoring group.
Exclusions

Exclusions from sample were patients with Diagnosis of Class IV Heart Failure (according to the New York association Classification for Heart Failure)

Severe cognitive impairment and no willing or able caregiver

Home or situation not appropriate to place monitoring equipment

Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total Sample (n=80)</th>
<th>Intervention (n=40)</th>
<th>Control (n=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>78.4</td>
<td>76.1</td>
<td>80.6</td>
</tr>
<tr>
<td>Female</td>
<td>63.75%</td>
<td>60%</td>
<td>67.5%</td>
</tr>
<tr>
<td>Male</td>
<td>36.38%</td>
<td>40%</td>
<td>32.75%</td>
</tr>
<tr>
<td>White</td>
<td>60%</td>
<td>50%</td>
<td>30%</td>
</tr>
<tr>
<td>African American</td>
<td>40%</td>
<td>50%</td>
<td>70%</td>
</tr>
<tr>
<td>Religious Affiliation</td>
<td>93.75%</td>
<td>92.5%</td>
<td>95%</td>
</tr>
<tr>
<td>College Education</td>
<td>31.25%</td>
<td>25%</td>
<td>37.5%</td>
</tr>
<tr>
<td>High School Education</td>
<td>48.75%</td>
<td>52.5%</td>
<td>45%</td>
</tr>
<tr>
<td>Grade School Education</td>
<td>20%</td>
<td>22.5%</td>
<td>17.5%</td>
</tr>
<tr>
<td>Medication doses (daily)</td>
<td>14.625</td>
<td>15.45</td>
<td>13.8</td>
</tr>
<tr>
<td>Caregivers</td>
<td>67</td>
<td>37</td>
<td>30</td>
</tr>
<tr>
<td>Live In Caregivers</td>
<td>50</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>No Caregiver</td>
<td>20</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>
### Study Design

- A randomized prospective design
- Data collection at:
  - Baseline
  - 30 days
  - 60 days
  - 90 days

### Instruments

- Minnesota Living With Heart Failure (MLHF) Questionnaire
  - Measures quality of life in patients with HF
  - 21 Items related to: Appetite, Sleep, Physical Activity, Stress, Well-Being
**Instruments**

Self Care of Heart Failure Index (SCHFI)
Measures self-care behaviors and ability to recognize and manage symptoms

4 point self report measure with 22 items
3 Subscales: Self-care maintenance
Self-confidence
Self-care management

**RESULTS**

Significant P-Values at 60 and 90 Days for MLHF Questionnaire Between Telemonitored and Non-Monitored Patients

<table>
<thead>
<tr>
<th>Question</th>
<th>P-value 60 days (p-value 90 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult to participate in recreational past times</td>
<td>0.0147 (0.0162)</td>
</tr>
<tr>
<td>Low Energy</td>
<td>0.0331 (0.0117)</td>
</tr>
<tr>
<td>Cost of Medical Care</td>
<td>0.0330 (0.0218)</td>
</tr>
<tr>
<td>Feeling Like Burden to Family or Friends</td>
<td>0.0109 (0.0105)</td>
</tr>
<tr>
<td>Loss of Self-control</td>
<td>0.0089 (0.0035)</td>
</tr>
<tr>
<td>Worrying</td>
<td>0.0077 (0.0246)</td>
</tr>
<tr>
<td>Difficulty Concentrating</td>
<td>0.0409 (0.0225)</td>
</tr>
<tr>
<td>Feeling Depressed</td>
<td>0.0054 (0.0027)</td>
</tr>
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</table>
Limitations of the Study

- Small sample size
- Availability of candidates willing to participate
- Equipment malfunctions
- Acuity of home healthcare patients
- Comorbid conditions
- Geographic territory (one system in one state)

Results and Conclusions

- Rehospitalizations did not differ statistically between monitored and non-monitored patients.
- Patients in the monitored group appeared to have an improved quality of life.
- Patients in the monitored group had statistically significant differences in self-care behaviors.
- Telemonitoring may have a positive effect on patient’s perception of their quality of life.
- Telemonitoring can be an important tool, in conjunction with other resources to improve the care of the heart failure population.
Implications for Practice

- Patient teaching is a priority
- Increased Visit patterns
- Individualized Plan of Care
- Telehealth
- Telemonitoring
- Educational needs of nursing staff
- Palliative care and hospice referrals

References


