A Systematic Review of Non-Pharmaceutical Interventions to Reduce Fatigue in Adults Receiving Hemodialysis

Kim Schafer Astroth, PhD, RN
Mennonite College of Nursing, Illinois State University, Normal, IL

Cynthia L Russell, PhD, RN
School of Nursing, University of Missouri-Kansas City, Kansas City, MO

Janet L. Welch, PhD, RN
Department of Adult Health, Indiana University, Indianapolis, IN
Learner objectives

• Discuss two types of interventions shown to significantly reduce fatigue in adults receiving hemodialysis.

• Describe two barriers to implementation of fatigue interventions.
Background

• Hemodialysis is the most common mode of treatment for adults with chronic kidney disease (CKD) stage five.

• Fatigue is a common complaint in 65 to 91% of those receiving hemodialysis.

• Fatigue can lead to decreased physical function and ability to perform activities of daily living, poorer quality of life, and reduced survival.
Purpose

• Nurses must discover effective ways to assist with management of this bothersome symptom.

• The purpose of this systematic review was to examine the effectiveness of non-pharmacologic interventions used to minimize fatigue in these individuals.
Methods

• Searched databases through 2011
  – Academic Search Complete, Cumulative Index to Nursing and Allied Health Literature, Cochrane Library, PsycINFO, PubMed, and Web of Science
  – Search terms: fatigue, quality of life, chronic kidney failure, hemodialysis, intervention

• Retrieved 1,388 citations
Methods

• Sample
  – 25 articles met inclusion criteria
  – Published from 1999 through 2011

• Inclusion criteria
  – Articles: complete information; found in English
  – Sample: Adults ≥ 18 years, receiving in-center hemodialysis
  – Intervention: non-pharmacologic
Results

• Of the 25 studies that met the inclusion criteria, 11 were RCTs and 14 were quasi-experimental studies.

• Fourteen (56%) contained statistically significant improvements in fatigue levels in the study participants (9 of those were RCTs).
## Results: Intervention

<table>
<thead>
<tr>
<th>Intervention data</th>
<th>Range</th>
<th>Mode (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of intervention session (minutes)</td>
<td>15-90</td>
<td>30 (44%)</td>
</tr>
<tr>
<td>Study duration (months)</td>
<td>1-12</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Timing of intervention</td>
<td>-</td>
<td>Dialysis day - before or during (44%)</td>
</tr>
<tr>
<td>Setting</td>
<td>-</td>
<td>Dialysis clinic (72%)</td>
</tr>
</tbody>
</table>
Results

- Interventions with significant reductions in fatigue included Eastern-medicine based therapies, such as far infrared rays and acupressure.

- Exercise interventions with significant fatigue reductions most often included cycling.
# Results: Study Samples

<table>
<thead>
<tr>
<th>Study sample data</th>
<th>Range</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of study participants</td>
<td>8-256</td>
<td>20, 24</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>37-65</td>
<td>65</td>
</tr>
<tr>
<td>Gender (% male)</td>
<td>29-84.5</td>
<td>63.6, 70</td>
</tr>
<tr>
<td>Time on dialysis (months)</td>
<td>20.2-84.5</td>
<td>50</td>
</tr>
</tbody>
</table>
Results: Measures

- 12 different self-report measures of fatigue used
  - Medical Outcomes Study Short Form 36 (SF-36) scale most used (52%)
  - Piper fatigue Scale (16%)
  - Visual analog scale (16%)
  - KDQOL (12%)

- Few (12%) reported reliability and validity in current study.
Discussion

• Eastern-Medicine based interventions
  – Similar positive findings in small scale studies with acupressure in a review of individuals with cancer related fatigue
  – Mixed results for acupuncture in patients with cancer related fatigue and CHF as compared to CKD stage 5
Discussion

• Exercise based interventions
  – Similar positive findings in studies with individuals with cancer related fatigue, CHF, and COPD
  – ESRD studies with non-significant results were mainly non RCTs (28%) and varied in intervention timing (dialysis vs. non-dialysis days) and contained smaller sample sizes
Conclusions

• Possible limited feasibility of implementing Eastern-medicine based therapies in some areas due to lack of experienced providers and the potential time and cost involved.

• Need replication with fully powered RCT designs to determine the value of interventions with no significant effects.
Conclusions

• Suggest the use of valid and reliable fatigue measures tested in the hemodialysis population

• Suggest use of objective measures of physical fatigue and function as well as self report of perceptions of fatigue to further demonstrate intervention effectiveness in fatigue reduction.
Selected References


Selected References


