Ergonomic Intervention for Injury Prevention in Healthcare Personnel: A Systematic Review

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Faculty Mentor: Teal Benevides PhD, OTR/L

Presented in partial fulfillment of the Master of Science in Occupational Therapy degree at Thomas Jefferson University

Objectives:
1. Recognize the magnitude of work-related injury in healthcare and the need for intervention in this area
2. Discuss 2 ergonomic interventions within the scope of OT practice that can improve work-related injury
3. Recall 2 common themes that have emerged based on current literature for ergonomic intervention

Clinical Research Question:
Does ergonomic intervention prevent work-related injuries and associated outcomes for healthcare personnel engaged in patient-handling?

Methods:

Databases: PubMed, CINAHL, and Cochrane Library
Search Terms: Developed keywords based on individual components of research question*
Critique Method: Dual-rater system was used to ensure minimization of rater bias
- Determined quality using Law & MacDermid’s Evaluation of Study Design Form
Search Results: Initial search with removal of duplicates yielded 184
- Articles were screened, first through title and abstract, next through full text**
- Final number of eligible articles included: N=16

Results:

<table>
<thead>
<tr>
<th>Article Characteristics: Level of Evidence</th>
<th>Description</th>
<th>N=16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Randomized control trials</td>
<td>5</td>
</tr>
<tr>
<td>II</td>
<td>Two groups, nonrandomized</td>
<td>1</td>
</tr>
<tr>
<td>III</td>
<td>Pre-post design</td>
<td>9</td>
</tr>
<tr>
<td>IV</td>
<td>Focus group/interview/survey</td>
<td>1</td>
</tr>
<tr>
<td>V</td>
<td>Case reports/expert opinions</td>
<td>0</td>
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</table>

<table>
<thead>
<tr>
<th>Article Characteristics: Population</th>
<th>Healthcare Personnel (Participants)</th>
<th>N=16</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Nurse (Student, CNA, LPN, RN, NP)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Healthcare workers (not specified)</td>
<td>3</td>
</tr>
<tr>
<td>Mixed populations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Healthcare workers, nurses, nurses aides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Nurses, OT, PT, RT, operating room technicians, paramedic, unit supporter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Healthcare technicians, nursing students, nurse managers, LPNs</td>
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Themes:
1. Education, in combination with hands-on training, is effective in preventing work-related injury and associated outcomes
   - There is strong evidence to support education in conjunction with hands-on training, to reduce:
     - (1) Occurrence of work-related injury, (2) pain levels, (3) associated costs
   - Training should be provided along with educational materials to ensure effectiveness
     - Education: principles of anatomy, biomechanics, transfer techniques, classroom, handouts
     - Training: workstation redesign, lift technique practice, role playing, postural practice training

2. Patient-handling equipment is often utilized to prevent work-related injury and associated outcomes
   - There is moderate evidence to support the use of patient-handling equipment to reduce:
     - (1) Occurrence of work-related injury, (2) pain levels, (3) associated costs
   - Patient-handling equipment appears to be more effective when multiple approaches are used:
     - Administrative buy-in and policy implementation
     - Proper maintenance and availability of equipment
     - Staff training and peer coaching on proper equipment use
3. Physical exercise, combined with transfer training, is effective in reducing work-related injury and associated outcomes
   - There is strong evidence to support the use of physical fitness, in combination with transfer training, to reduce:
     - (1) Pain levels
   - Physical fitness alone is not effective
     - Should be used in combination with specific transfer technique training to be effective in reducing pain levels

*Full search term list is available upon request
**Full inclusion/exclusion criteria list available upon request

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References


