571 - Reduction of Upper Extremity Injuries in Perinatal Sonographers: A Team Based Approach

Michael M. Sidhom, MD, MSPH  Rosemary Szollas, MD, MSPH  Timothy Schwalm, BA  Chris Due, MSPT  Frances S. Shofer, PhD  Judith Green-McKenzie MD MPH

Introduction
- Perinatal ultrasonography is a safe and effective tool to evaluate a pregnant uterus and growing fetus
- The repetitive nature and duration of sonograms may lead to overuse injuries in this worker population
- Minimal literature on injury prevention in this group exists
- Increased abdominal girth and overall patient weight and overall weight moderate injury incidence
- Common musculoskeletal (MSK) injury facts in perinatal sonographers include: 1,2,3,4
  - 80% of the sonographer workforce is impacted by an MSK injury
  - 20% by a career ending injury
  - Most injuries are not reported as many believe nothing can be done
  - Sonographers begin to experience pain after 5 years of work – on average

Objectives
- To evaluate the effect of an intervention designed to reduce repetitive/overuse MSK injuries in perinatal sonographers
- To assess Workers’ compensation claims pre/post intervention

Methods

Study Design
- Quasi Experimental, Nonrandomized Pre/Post design

Participants - University hospital employed perinatal sonographers in employ from Aug 2013 to Aug 2016

Exclusion Criteria :
- Non perinatal sonographers
- Perinatal sonographers not employed during this period
- Injuries NOT due to overuse or repetition

Procedures
- All worker’s compensation claims filed by perinatal sonographers were reviewed
- Root analysis for cause of injuries conducted by multi-disciplinary team
  - Team consisted of Occupational Medicine Physicians, nurse case mangers, ergonomists, worker’s compensation administrators, department managers with input from sonographers
- Intervention consisted of workstation customization, structured breaks, training, staggering Level I / level II studies, review cases daily in AM with sonographers and address concerns
- Post intervention monitoring for re/new injuries in the cohort
- Statistical/Data Analysis
  - Wilcoxon Signed-Rank Test

Results
- 13 perinatal sonographers met the inclusion criteria
- Age range: 35 - 60 years
- Gender: All female
- Length of employment: 7 - 27 years (median = 9 )

Number of Worker’s Compensation Claims

<table>
<thead>
<tr>
<th>Injured Body Part</th>
<th>Pre – Intervention</th>
<th>Post – Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Wrist</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Forearm</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Elbow</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Upper Arm</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Shoulder</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Trapezius</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Neck</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total # Claims</td>
<td>19</td>
<td>0</td>
</tr>
</tbody>
</table>

- Median number of injuries
  - Pre-intervention = 2.5
  - Post-intervention = 0.0, (p ≤ 0.05)
- 19 pre-intervention claims involved upper extremity
  - Wrist, forearm, elbow, shoulder
- Injuries secondary to overuse/repetitive trauma
- Three employees required surgery
  - 2 of 3 returned to work as perinatal sonographers
  - 1 retired
- Total number of days lost was 553
- Total workers compensation costs = $231,000
- Medical and indemnity benefits paid out

Limitations
- Small sample size of employees from one location
- All female staff
- No adjustment for confounders
  - Personal - age, conditioning status, hand dominance & overall health of the sonographer, transducer technique
  - Other - acuity of health of the patients being studied e.g. (i.e. co-morbidities, body habitus and / or BMI
- Patients not evaluated in standardized manner by occupational medicine provider(s) on initial visit
- No standardized criteria applied for modified duty time per injury

Conclusions
- This study supports the effectiveness of a multidisciplinary occupational based team based approach to develop and implement relevant controls for injury prevention and risk mitigation in perinatal sonographers.


This research was supported in part by training grants from the National Institute of Occupational Safety and Health – grant number: 5-T01-CH508628 and the Health Resources and Services Administration – grant number: D33HP25770-01-00. The information and views set out in this study are those of the authors and do not reflect the official opinion of the funding agencies.