Workplace Health & Safety: Relationship to Patient Care

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NASEM: Systems Approaches to Improve Patient Care

CPH-NEW is a NIOSH Center for Excellence in Total Worker Health®

www.uml.edu/cph-new
• Total Worker Health® (TWH) = “policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being.”

• “…advocates for a holistic understanding of the factors that contribute to worker well-being. .... risk factors in the workplace can contribute to health problems previously considered unrelated to work.”
1. Examine interactions between work and non-work factors affecting health.

2. Evaluate models for improving worker health by addressing workplace conditions that cause injury and illness and contribute to unhealthy behaviors.

3. Promote participatory approaches to engage all levels of an organization in the design of effective, sustainable workplace interventions.
Patients/residents and employees occupy a common environment, with common hazards.

Patients affect employees’ health

Employees affect patients’ health

Patients and HCWs are both part of the same health care system. The environment of care and the environment of work are the same.

- Dr. Andrew Vaughn, Mayo Clinic
“HCSA [Healthcare and Social Assistance] is burdened by the historical and entrenched belief that patient care issues supersede the personal safety and health of workers and that it is acceptable for HCSA workers to have less than optimal protections against the risks of hazardous exposures or injuries.”
A (relatively) simple causal model

Working Conditions
- Organization
  - Staffing
  - Culture
- Technology
  - Hardware
  - Software

Staff Well-being
- Time pressure, conflicting demands, HSI
- Interpersonal relationships, communication, teamwork

Burnout

Patient/Client Care
A “web of causation”

(with a nod to Nancy Krieger)
A large chain of nursing homes implemented a Safe Resident Handling Program (SRHP) in 203 skilled nursing facilities, starting in 2004:

- Needs assessment for each resident
- Lifting devices purchased by central office
- Protocols for battery re-charging, sling laundering, and labeling resident charts
- Staff training on policies, equipment operation & maintenance
ProCare Goals

- Evaluate a Safe Resident Handling (SRH) program and other employee health activities in skilled nursing facilities (SNFs).

- Examine relationships btw employee health & safety and other facility characteristics.

- Identify the organizational features of a successful nursing home.

Photo credits for Total Body Lift & Sit-Stand Lift: http://www.invacare.com

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The SRH program showed benefits in:

- Workers’ use of RH equipment
- Ergonomic (biomechanical) exposures:
  - Time spent in manual handling
  - Frequency of non-neutral postures (back, shoulders)
- Rates of compensable incidents, including claims for recurrent injuries
- Assaults by residents or their visitors
- Low back pain
- Return on investment of SRH program: Claim costs, clinical staff turnover
The safe resident handling (SRH) program was not equally effective among all centers, or for all clinical staff members.

- Did resident satisfaction or clinical outcomes vary in relation to
  - SRH program effectiveness?
  - other indicators of workplace health and safety?
Physical workload of nursing staff: Direct observations in 5 centers

- Big decrease in physical workload over 3 years
- Greatest reduction for CNA’s while handling residents

- Workload variability among 5 centers:
  The center with the largest decrease in physical workload had the most positive work organizational features:
  - less time pressure
  - good staff communication
  - more access to equipment

[Kurowski et al. 2012b, 2014]
Total annualized net savings = US $4.58 M
Overall benefit-to-cost ratio ≥ 1.68

Average net savings = $143 per bed per year

[Savings Per Bed: 61 Centers] [Costs Per Bed: 49 Centers]
• Employee satisfaction: Third-party surveys of all employees (40% aides, 20% nurses)

• Resident satisfaction: Third-party surveys of residents (35%) or family members (65%)

• Rates of resident falls, pressure ulcers, and weight loss: Reported to CMS

• All variables summarized by center (n=194) for each year: 2005-09
Overall employee satisfaction and resident satisfaction, by center
In multi-level models, employee satisfaction explained 25% of variability in resident satisfaction.

This relationship was almost unchanged after adjusting for nursing payroll per resident, calendar year, and percentage reimbursed by Medicaid and Medicare.
Employee satisfaction and adverse outcomes for residents

⇒ as overall employee satisfaction increased, the rate of resident adverse outcomes decreased (falls, pressure ulcers, weight loss)

<table>
<thead>
<tr>
<th>Combined Resident Outcomes, 2005-09</th>
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<tr>
<td>Mean employee satisfaction</td>
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Poisson model controlled for: nursing payroll, %Medicare, %Medicaid
Cluster analysis: Canonical scatterplot of 184 skilled nursing facilities (SNFS), 2012

Boakye-Dankwa, et al. JOEM [2017]
Variables used to define 2 clusters of skilled nursing facilities

- EMPLOYEES
  - Staffing ratio
  - Satisfaction
  - CNA retention

- RESIDENTS
  - Satisfaction
  - CMS Survey Rating
  - Pressure ulcers
  - Falls
  - Weight loss

Cluster 1 vs Cluster 2
Summary: Relationship of Worker Protection to Resident Well-being

• The same group of centers had:
  – Higher staffing ratios
  – Higher employee satisfaction & staff retention
  – More effective SRH program
  – Higher resident satisfaction
  – Fewer resident medical outcomes
  – Higher CMS ratings
A “web of causation”
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Selected Publications


Center CMS Survey Ratings by Cluster
### Other characteristics of 203 SNFs, in two clusters (post-hoc comparisons)

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<thead>
<tr>
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<th>Cluster 1 (n=118) Mean (SD)</th>
<th>Cluster 2 (n=85) Mean (SD)</th>
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<tbody>
<tr>
<td><strong>LPN retention rate</strong> *</td>
<td>0.82 (0.17)</td>
<td>0.74 (0.16)</td>
</tr>
<tr>
<td><strong>RN retention rate</strong> *</td>
<td>0.69 (0.15)</td>
<td>0.57 (0.16)</td>
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<tr>
<td><strong>SRHP: Relative change in comp. claim rate</strong></td>
<td>0.85 (0.43)</td>
<td>1.13 (1.45)</td>
</tr>
<tr>
<td><strong>SRHP: Return on Investment</strong> *</td>
<td>0.81 (1.24)</td>
<td>0.06 (0.72)</td>
</tr>
<tr>
<td><strong>CMS Quality Rating</strong> *</td>
<td>4.00 (0.90)</td>
<td>3.52 (0.97)</td>
</tr>
<tr>
<td><strong>Discharge rate</strong> *</td>
<td>0.38 (0.18)</td>
<td>0.32 (0.17)</td>
</tr>
<tr>
<td><strong>Unionization (Y/N)</strong></td>
<td>23.7% (27)</td>
<td>13.4% (11)</td>
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* p < 0.05
Although minimal evidence of WHP health benefits (similar prevalences of smoking, obesity, etc.)

Those centers had other positive organizational features, which perhaps led to WHP activities and more effective SRHP?

- Better social support
- Lower intention to leave job
Health behaviors:
- Leisure-time exercise
- Overweight, obesity
- Cigarette smoking

Poor sleep quality, short sleep duration

Mental health symptoms

Intention to leave current job

[ProCare findings: Miranda et al.; Zhang et al.]
Observed Device Use in Resident Handling (change over time) vs. Perceived Time Pressure

- Slope of Equipment Use While Resident Handling
- Percent Change in Never Feeling Time Pressure

Legend:
- Slope of Equipment Use While Resident Handling Over Two Years
- Percent Change in Never Feeling Time Pressure
Physical Workload Index (change over time) vs. Adequacy of Supplies and Equipment

Slope of Physical Workload Index Over Two Years
- Percent Change in Rating of Adequacy of Supplies Over Two Years
Physical Workload Index (change over time) vs. Perceived Staff-to-Staff Communication
Survey data: Use of handling equipment; Low back pain

- Series of surveys:
  - Self-administered questionnaires distributed and collected at the workplace
  - Only clinical workers (about 88% RN’s, LPN’s, Nursing & Medical Aides) until 5 yrs post-SRHP.
Reasons for not using resident handling equipment (CNAs, 4 surveys)

Barriers to consistent equipment use should be addressed:
- Device availability and maintenance
- Education of residents & family members
- Staff empowerment & decision-making opportunities

Kurowski et al. 2016
GLM regression model of equipment usage (categorical): Aides in 4 surveys

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<th>Covariate</th>
<th>Odds ratio</th>
<th>95% CI</th>
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<tr>
<td>Prior expectations of SRHP benefit</td>
<td>1.55</td>
<td></td>
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<tr>
<td>Perceived commitment of management to SRHP</td>
<td>2.13</td>
<td></td>
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<tr>
<td>Supervisor support</td>
<td>0.87</td>
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<tr>
<td>Assault past 3 mo. (any vs none)</td>
<td>0.76</td>
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<tr>
<td>Health self-efficacy</td>
<td>1.03</td>
<td></td>
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<tr>
<td>Age (≥ 40 yr vs &lt; 40 yr)</td>
<td>1.54</td>
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Worker Perceptions of SRH Pgm (1)

• **Program Commitment:**
  – Workers support each other to use devices
  – Employee suggestions are supported by management
  – I alert other employees when they place themselves at risk during a patient lift
  – Supervisor ensures that employees have what they need to be safe

**Scale range = 1-4**
Ratio of compensation claim rates before/after SRHP implementation: RR=0.68 (All claims, all employees)
The SRH program reduced the rate of Workers’ Compensation (WC) claims for back injuries, handling-related incidents, and resident aggression incidents.

Resident assault remained frequent (>50% had at least 1 physical attack in past 3 months).

Resident assault led to more MSD pain, especially pain interfering with work or sleep, and depression.

Nursing staff with recent resident assault were less likely to use handling equipment.