

Ergonomic and Psychosocial Risk Factors for Injuries in Healthcare Work



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PHASE Study Facilities and Population



- **Healthcare workers in Merrimack Valley region (northeastern MA)**

 - 2 privately-owned hospitals

 - 2 nursing homes



- **All employees on payroll and 18+ years old. Not restricted to direct patient care jobs**

Sources of Data (1)



- OSHA logs of occupational injury/illness
- Workers' compensation claims and First Reports of Injury
- Facility workforce rosters
 - Job titles coded by U.S. Standard Occupational Classification (SOC)
- Questionnaire surveys of current employees
 - Self-administered (only 1 of 2 hospitals)
 - Occupational exposures
 - Demographics; mental and physical health; etc.

Sources of Data (2)



- **O*NET (v 4.0): Ergonomic and organizational job features, from expert or worker rating, by job title**
 - U.S. Department of Labor
 - Replaces Dictionary of Occupational Titles
 - Nationally representative, on-line database
 - Might miss local differences in working conditions?

Sources of Data (3)



- **Workplace observations of physical ergonomic exposures, safety hazards, work organization**

 - PATH (Postures, Activities, Tools and Handling)
 - Continuous visual observation on-site (1-8 hours)
 - Fixed-interval (90-second) sampling to record task and exposures

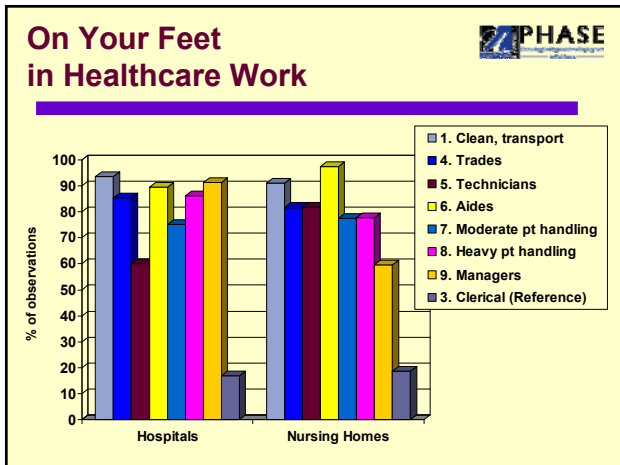


Workplace features evaluated include....



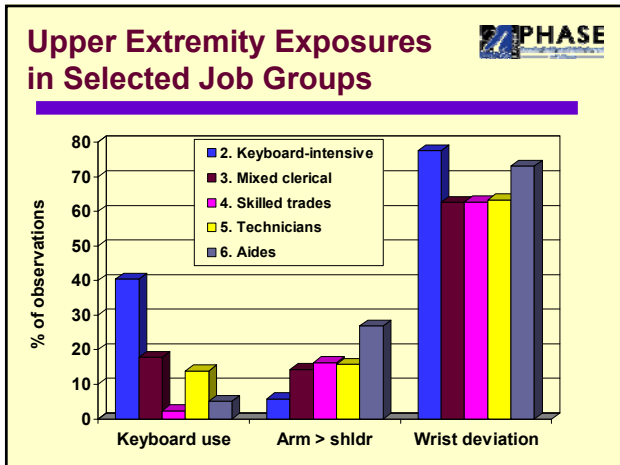
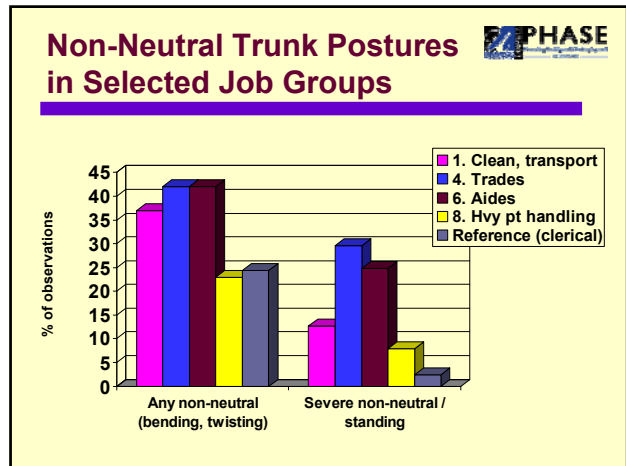
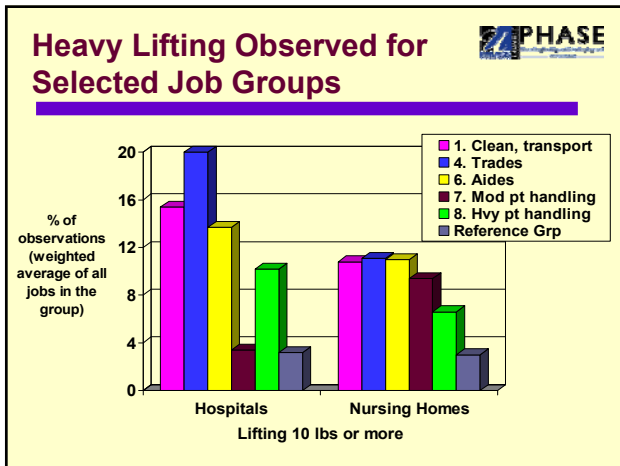
- **Physical and psychosocial exposures**
 - Job control, demands, social support
 - Ergonomic job features
 - Family-work balance
- **Organizational climate and policies**
 - Support for diversity
 - Safety climate
 - Organizational responsiveness





Key Exposure Variables for Risk of Back Problems

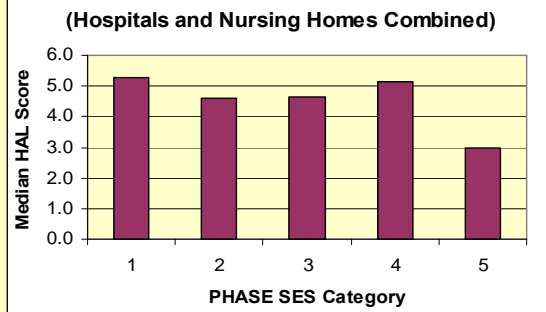
Trunk Posture Category	Trunk Angle (Degrees)	Manual Handling Category	Weight
Severe flexion	$\geq 45^\circ$	Moderate to heavy	10-50 lbs
Bend/twist and flex	$\geq 20^\circ$ and $\geq 45^\circ$	All	≥ 10 lbs
Severe flexion	Bend/twist/flex	Handle 10-50 lb	Handle ≥ 10 lb



PHASE Categories of Socio-Economic Status (SES)

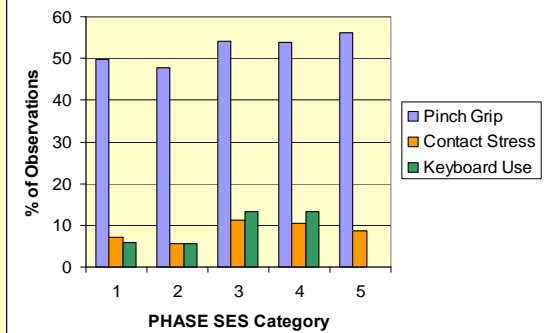
Category	Label (Sample Job/s)
5	Administrator (H.R. Director)
4	Professional (Registered Nurse)
3	Semi-professional (Lab technician)
2	Skilled (Patient care assistant, clerk)
1	Semi-skilled (Patient/dietary aide, receptionist)

Hand Activity Level (HAL) and Socioeconomic Status (SES)



Hand Activity Level Scale: Latko et al., 1997

Upper Extremity Exposures by SES (II)

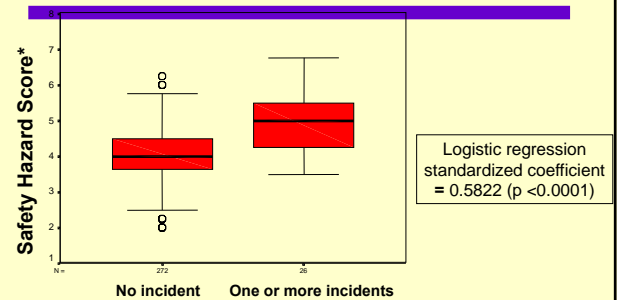


Who participated in the questionnaire survey?



- 370 people responded; 83% women
- Average age = 44 years (± 12)
- Average work week in the primary job = 32 hours (± 14)
- About 30% held a second job
- Slightly better self-rated health than U.S. general population
- About 20% had high "job strain" (high job demands and low decision-making at work)

Injury (incident) at work in past year and safety hazard score



* Sum of 8 items from questionnaire: safety hazards, lack of training, understaffing, etc.

Psychosocial Exposures: Job Control and Job Demands



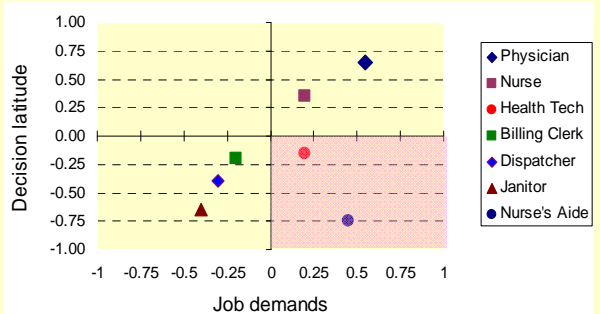
"Job Control" (Decision Latitude)

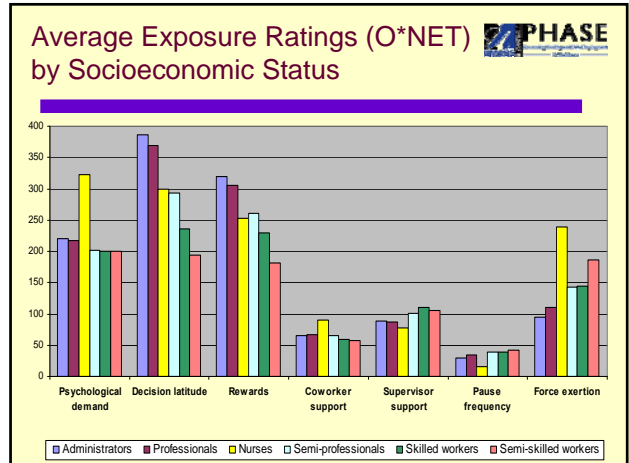
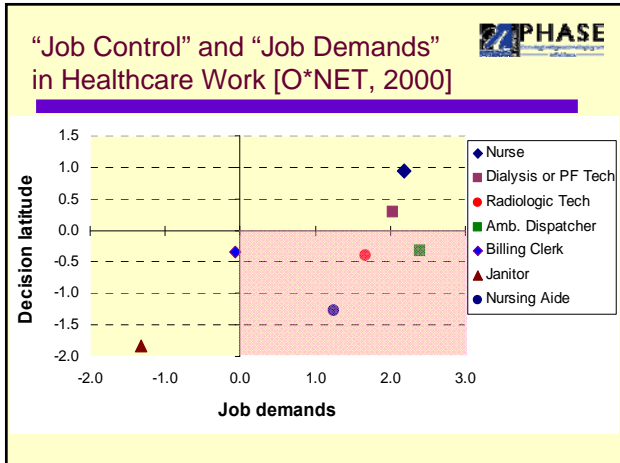
- Ability to use skills & knowledge on job
- Flexibility in how to meet job demands
- Opportunities for decision-making

"Psychological Job Demands"

- Mental work load
- Time pressure
- Conflicting demands (tasks or supervisors)

"Job Control" and "Job Demands" in Healthcare Work [US QES, 1977]

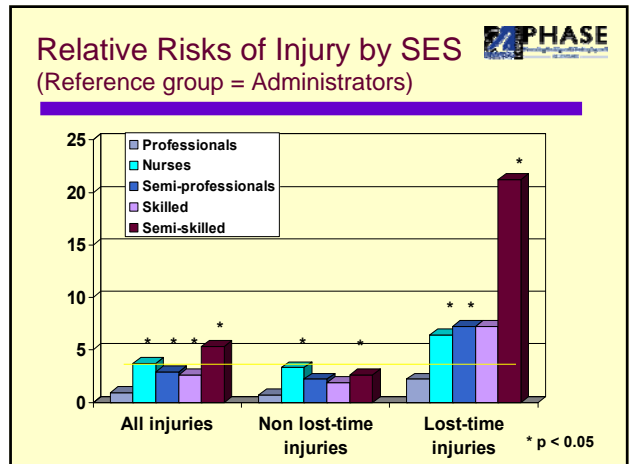




High-risk jobs (OSHA logs for two hospitals, 1997-2002)

- Among jobs with at least 5 injuries (in 5 yrs), all those with annual rates $\geq 10 / 100$ FTE were in the two lowest SES categories:

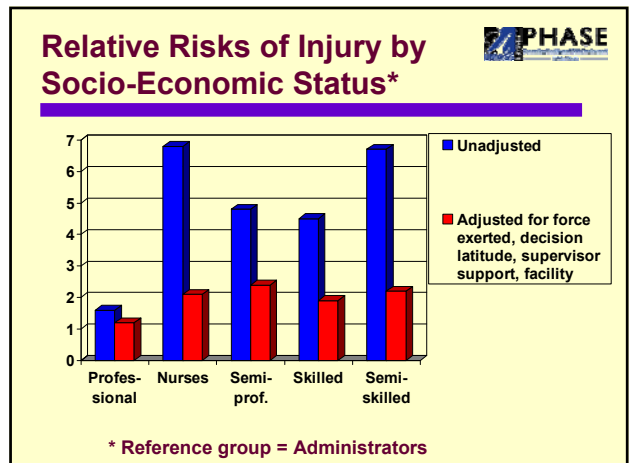
Standard Occupational Classification	Injury rate (/ 100 FTE)
Janitors and building cleaners	21.3
Electrical and electronics repairers	20.1
Cooks	17.5
Cafeteria attendants	13.4
Maids and housekeeping cleaners	11.6
Nursing and psychiatric aides	10.1



Occupational Injuries by SES: Lost work days*

Socioeconomic Status	(n)	Average # lost days*
Administrators	(49)	0.7
Professionals	(171)	43.1
Nurses	(336)	59.6
Semi-professionals	(300)	69.8
Skilled	(396)	28.6
Semi-skilled	(102)	148.4

* per 100 FTEs (1998-2002)



Conclusions

- **Jobs with lower socio-economic status had higher physical demands, lower decision latitude, and higher risk of injury**
- **Some of the jobs with highest physical exposures in this study were cleaning and maintenance (risk of back problem) and keyboard-intensive clerical work (risk of hand, arm, shoulder problem)**
- **Nurses have disproportionately high exposures for their socioeconomic status**