System-level trends in working conditions, and interventions to reduce socioeconomic health inequities

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NIMHD workshop on Work and Health Inequities,
Bethesda, MD, September 29, 2020
Outline

I. Trends (primarily U.S.) in:
   A. Employment conditions, systems of work organization
   B. Work characteristics
   C. Health & health inequalities

II. Interventions to reduce socioeconomic health inequalities

III. (Handout) Research recommendations
As union membership declines, income inequality increases

Union membership and share of income going to the top 10%, 1917–2017

Source: Reproduced from Figure A in Heidi Shierholz, *Working People Have Been Thwarted in Their Efforts to Bargain for Better Wages by Attacks on Unions*, Economic Policy Institute, August 2019.
Declining social mobility in US
(% of children earning > parents)

Lean production (Toyota Production System) → stress, musculoskeletal disorders

- 1999 review of studies of auto plants in U.S. & Canada, lean production →
  - Increased musculoskeletal Sx
  - Intensified work pace & demands, overtime
  - Modest, temporary increases in job control, skill

- 2013 update (16 studies, 9 countries, most: manufacturing)
  - Increased stress, psychological distress

- Now, moved into:
  - Public sector (new public management)
  - Lean health care

budget cuts, layoffs, New Public Management especially since 2008

Figure 1: The relationship between policy, working conditions, workplace exposures, service quality and health for social services workers

(J. Zelnick)
ERI, New Public Management associated with ill health

NYC social workers (risk due to 1 s.d., age & race adjusted, n=1,819-2,016, p<.001)

ERI and NPM: r=0.54
Lean Sigma—Will It Work for Healthcare?

Journal of Healthcare Information Management — Vol. 19, No. 1  James A. Babensky, MS, Janet Roe, and Romy Bolton

Lean Health Care: What Can Hospitals Learn from a World-Class Automaker?

Christopher S. Kim, MD, MBA^1,2 David A. Sphahlinger, MD^1 Jeanne M. Kin, JD, MBA^3 John E. Billi, MD^1

BACKGROUND: With health care costs continuing to rise, a variety of process improvement methodologies have been proposed to address the reported inefficiencies in health care delivery. Lean production is one such method. The management philosophy and tools of lean production come from the manufacturing

Going Lean in Health Care
Institute for Healthcare Improvement Cambridge, Massachusetts

Lean thinking for the NHS
Daniel Jones and Alan Mitchell, Lean Enterprise Academy UK
How Occupational Health Inequities Occur

1. Disproportionate Employment in Hazardous or Precarious Jobs

2. Workplace Injustice

3. Globalization and Workplace Restructuring

4. Barriers to OSHA Protection

5. Barriers to Health Care, Legal and Social Programs

Diverse Workforce
- Race/ethnicity
- Immigrant status
- Socioeconomic status/class
- Gender
- Age

Work Injury and Illness Disparities

https://losh.ucla.edu/resources-2/work-health-equity-module/
Social stratification & health inequalities

Government support for worker rights, health

Differential exposure

More stressful, hazardous working conditions

Differential vulnerability

Injury, illness, mortality

Socioeconomic position
Gender
Race/ethnicity
Immigration

<table>
<thead>
<tr>
<th></th>
<th>Low socioeconomic position</th>
<th>Gender</th>
<th>Workers of color, immigrants</th>
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<tbody>
<tr>
<td>Differential exposure</td>
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<tr>
<td>Job insecurity</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Work organization</td>
<td>+</td>
<td>-</td>
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<tr>
<td>Differential vulnerability</td>
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<tr>
<td>Job insecurity</td>
<td>+</td>
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Consistent (+) or inconsistent (-) findings
Shaded areas: limited research inquiry (<5 studies)

Differential exposure:
Workers of color & low income workers more likely to be in temporary jobs

Source: NHIS Occupation Health Supplement (OHS) 2010
Differential exposure:
Lower SEP workers face more work stressors

- Mandatory overtime
- Assembly lines
- Monotonous work
- Low job control
- Threat-avoidant vigilant work
- Low income
- Precarious work
- Non-standard employment
- Job insecurity
- Shiftwork
- Low supervisor support
Tesla failed to tell regulators about dozens of factory injuries.

Research shows that economic pressure pushes drivers to work extremely long hours, contributing significantly to truck crashes.

Ruthless Quotas at Amazon Are Maiming Employees

This holiday season, Amazon will move millions of packages at dizzying speed. Internal injury reports suggest all that convenience is coming at the expense of worker safety.
Differential vulnerability:
Stronger assoc. of job strain & work ambulatory systolic BP in blue-collar workers (n=283 men, NYC)

<table>
<thead>
<tr>
<th>Job Strain</th>
<th>No Job Strain</th>
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</thead>
<tbody>
<tr>
<td>White collar</td>
<td>Clerical</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
</tr>
</tbody>
</table>

-0.9 8.6 11.8

mm Hg

controlling for age, body mass index, race, smoking, alcohol use and work site

*p<.05 (vs Ref group)

INTERACTION TERM: p=.13

Health Effects of Work Stressors

- JOB STRAIN
- EFFORT-REWARD IMBALANCE
- LONG WORK HOURS
- ORGANIZATIONAL INJUSTICE
- DOWNSIZING
- SHIFT WORK

**CARDIOVASCULAR DISEASE**

- JOB STRAIN
- EFFORT-REWARD IMBALANCE
- WORK-FAMILY CONFLICT
- THREAT-AVOIDANT VIGILANCE

**HIGH BLOOD PRESSURE**

- JOB STRAIN
- EFFORT-REWARD IMBALANCE
- WORK-FAMILY CONFLICT
- LONG WORK HOURS
- LOW SOCIAL SUPPORT
- ORGANIZATIONAL INJUSTICE
- BULLYING/HARASSMENT

**BURNOUT/DEPRESSION**

Also: acute injuries, musculoskeletal disorders, suicide risk, substance use, COVID-19
Socioeconomic inequalities in COVID-19 risk: Employment conditions, job/life stressors

Government support for worker rights, health

Low wage work, living conditions

SARS-CoV-2 exposure

Physiological impacts:
Inflammation
Weakened immune system

“Pre-existing conditions”:
Hypertension
Diabetes/metabolic syndrome
Obesity

COVID-19 illness, severity, sequelae

Differential exposure

Differential vulnerability
Figure 2. Occupation groups with opioid-related overdose death rates significantly higher than the average rate for all workers, Massachusetts workers, 2011-2015, n=4,302

Massachusetts Department of Public Health, Occupational Health Surveillance Program (2018); 15 Opioid-related Overdose Deaths in Massachusetts by Industry and Occupation, 2011-2015.
Differential exposure:
Lower SES → Job strain (high demand-low control work),
physical job demands → opioid use disorder (3.8%)

Model 1: Adj age, race, household income;
Model 2: + other working conditions, backache, mental disorders

Socioeconomic inequalities in **opioid use disorder**: Employment conditions, job stressors & injuries

- Economic devastations
- Communities coping through alcohol, drug use
- Over prescription of opioids
- No access to alternative pain Tx
- Punitive workplace drug policies & stigma
- Pharma promoting opioid use

Stressful & hazardous working conditions contribute to ill health

- Are those working conditions increasing (in the U.S.)?
I. B. Work stressors are increasing

Adjusted for age, sex, race/ethnicity, education, hours worked per week, and unemployment rate

FIGURE 1  Trend in job strain, 2002-2014: NIOSH QWL surveys

Adjusted for age, sex, race/ethnicity, education, hours worked per week, and unemployment rate

Increase in annual hours worked, U.S., 1975-2016

No Increase in Standard Definition: Contingent ("temporary jobs") and Alternative Work Arrangements

% of total employed workers

Contingent Workers
Independent Contractors
On-Call
Temp Agency
Contract Firm

1995 2001 2005 2017
Contingent Workers: 4.9, 4, 4.4, 3.8
Independent Contractors: 6.4, 7.4, 6.9, 6.9
On-Call: 1.6, 1.8, 1.7, 0.9
Temp Agency: 0.9, 0.9, 0.9, 0.9
Contract Firm: 0.5, 0.6, 0.6, 0.6
Broader definition of “precarious work”: appears to be increasing

- Flexibilization of labor markets away from standard employment relationships

- Includes:
  - Chronic job insecurity
  - Contract/temp work
  - Lower wages
  - Less social protection & labor rights
  - Stressful working conditions (less job autonomy, control over schedules)

A number of work stressors are increasing, but….

- Are they increasing illness rates?
- Are there greater increases in lower SEP groups – increases in socioeconomic health disparities?
I. C. U.S. all-cause mortality increasing in **working-age** groups

U.S. all-cause mortality increasing in working-age populations

Increase driven by stress-related diseases

Suicide rates increasing in *working-age populations*

Figure 3. Suicide rates for males, by age group: United States, 1999 and 2017

similar pattern for women

U.S. cardiovascular disease mortality

Decline ended in retired age group

*Increasing* in older working age group

https://wonder.cdc.gov/ucd-icd10.html
Increasing socioeconomic inequities: recently for **hypertension** prevalence

Hypertension, age 20+, by income, NHANES (BP $\geq$ 140/90 or meds%, Health, U.S., 2016)

https://wonder.cdc.gov/ucd-icd10.html
Increasing socioeconomic inequities: County-level CVD Mortality, U.S. females, 1969-2011 (similar trend for men)

Interventions to reduce socioeconomic health inequities

- Targeted to lower income workers
- Thus, also reach workers of color, immigrants
- Common types:
  - Safety & health training
  - Workplace participatory action research
  - Collective bargaining
  - Laws & regulations
High-risk post-disaster workplace: Immigrant day laborers often hired

- OSH training in NYC for 500 partnering with trusted CBO:

- Positive evaluation: post-training telephone evaluation survey
- Reached 10,000 workers throughout U.S.
Immigrant Worker Disaster Resiliency Workgroup
(linking immigrant communities with agencies, resources)

Current study: Domestic cleaners: Immigrant low SES women

- Preliminary survey (n=400)
  - 50% - no health insurance, no pd sick time, pd < min wage
  - 20% - verbal abuse
- Measure chemical exposures: hazardous vs safer practices
- Train-the-trainer w/ National Domestic Workers Alliance
- Prevention campaign
- Thanks to Dr. Sherry Baron
Participatory action research: Quebec hospital

- Risk assessment using employee surveys to measure
  - work stressors (JCQ & ERI surveys)
  - psychological distress

- Qualitative assessment
  - interviews with key informants

- Development of an intervention team
  - 2 researchers, 1 RA, 3 head nurses, 3 RNs, 1 nurses’ aide, 1 reception clerk, 1 rep from HR & 1 from nursing, 2 local union reps

- Feedback to management, employees & unions
  - comparison of work stressors & psych distress to provincial averages

- Team recommendations
  - 56 adverse work conditions & proposed solutions

Participatory action research: Quebec hospital (cont.)

Examples:
- Consultation with nurses on staffing, training plan & schedule
- Ergonomic improvements
- Improve team communication, support
- Task rotation between nurses & aides
- Job enrichment, training for nurses’ aides
- Reduce delays in filling open staff positions (nurses, clerks)
- Better guidance, training of new staff
- Discuss with doctors that nurses’ work is taken for granted

<table>
<thead>
<tr>
<th>Intervention hospital</th>
<th>Control hospital</th>
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<tbody>
<tr>
<td>Reduction of several work stressors (demands, low rewards)</td>
<td>NS reduction of work stressors</td>
</tr>
<tr>
<td>NS change in supervisor support</td>
<td>Decline in supervisor support</td>
</tr>
<tr>
<td>NS change in sleeping problems, psych distress</td>
<td>NS change in sleeping problems, psych distress</td>
</tr>
<tr>
<td>Reduction in work related &amp; personal burnout</td>
<td>NS change in burnout</td>
</tr>
</tbody>
</table>

2004 California nurse-to-patient ratio law & RN injury rates

(Lost workday non-fatal injury & illness rates/100 RNs/year, BLS)

2000-03 | 2005-08
---|---
California | 1.757 | 0.986
USA without California | 1.239 | 1.024

Similar difference for LPNs, or if 3 or 5 year intervals included.
Leigh JP, Markis CA, Iosif A-M, Romano PS. Int Arch Occup Environ Health 2015;88:477-484.
Many more organizational interventions need evaluation research

- Other laws & regulations
  - pd sick days, pd family leave
- Collective bargaining language
- Rarely studied for impact on working conditions, health, health inequities
  - even though contracts, laws are legally binding
  - potential for > effectiveness
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Laws</th>
<th>Industries covered</th>
<th>Number of workers covered</th>
</tr>
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<tbody>
<tr>
<td>San Francisco</td>
<td>Formula Retail Employee Rights Ordinances (March 2016)</td>
<td>Retail trade</td>
<td>23,000</td>
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<tr>
<td>San José</td>
<td>Opportunity to Work Ordinance (March 2017)</td>
<td>Private sector</td>
<td>175,000</td>
</tr>
<tr>
<td>Emeryville, Calif.</td>
<td>Fair Workweek Ordinance (July 2017)</td>
<td>Retail trade and fast food</td>
<td>2,500</td>
</tr>
<tr>
<td>Seattle</td>
<td>Secure Scheduling Ordinance (July 2017)</td>
<td>Retail trade and fast food</td>
<td>40,000</td>
</tr>
<tr>
<td>Oregon</td>
<td>Fair Work Week Act (August 2017)</td>
<td>Retail trade and accommodation &amp; food services</td>
<td>172,000</td>
</tr>
<tr>
<td>New York City</td>
<td>Fair Workweek Law (November 2017)</td>
<td>Retail trade and fast food</td>
<td>327,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>739,500</strong></td>
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Collective bargaining: LA teachers’ contract to reduce job stress & to help low income students (7/1/19-6/30/22)

- Reduction in class size
- Special Ed: access to caseload reports, caseload caps
- >say on: budgets, substitutes, at school district meetings
- Meet students’ needs:
  - Less standardized testing, random police searches of students
  - >nurses, counselors, librarians, mental health professionals
  - immigrant defense fund
  - >green space
- Broad economic, racial & social justice agenda, including saving public education, which helped to build community support for the strike

Hotel housekeepers’ efforts to reduce health inequities

- Many immigrants, women, workers of color
- Participatory action research (1998+)
  - Inequities in injury rates
  - Workplace hazards
- Collective bargaining
  - Room quotas
  - Staffing, fair assignment of work
- Legislation
  - Panic buttons to prevent sexual harassment (NJ, Chicago)
- Regulation
  - Cal/OSHA Housekeepers Ergonomics Standard (7/1/18)

Many countries have work stress prevention policies, guidelines, standards, laws

- EU-OSHA Guidelines/Directives
- UK Management Standards for work-related stress
- National Standard of Canada for Psychological Health & Safety in the Workplace
- Japanese National Policy: Stress Check Program
- +Australia, South Korea, Colombia, Mexico, Chile…
- U.S. - no guidelines regarding work stress prevention or healthy work!
“Psychosocial safety climate”
(data from European wide surveys)

OSH managers were asked 5 questions that represented best procedures to deal with psychosocial risks & consultation & participation in the resolution of workplace psychosocial risks:

“Does your establishment have a procedure to deal with”:

(1) work-related stress
(2) bullying or harassment
(3) work-related violence?”
(4) “What about the role of employees: Have they been consulted regarding measures to deal with psychosocial risks?”
(5) “Are employees encouraged to participate actively in the implementation and evaluation of the measures?”

Dollard MF, Neser D. Worker health is good for the economy: Union density and psychosocial safety climate as determinants of country differences in worker health and productivity in 31 European countries. Social Science & Medicine. 2013;92:114-123.
Dollard MF, Neser D. Worker health is good for the economy: Union density and psychosocial safety climate as determinants of country differences in worker health and productivity in 31 European countries. Social Science & Medicine. 2013;92:114-123.
Healthy Work Strategies

Healthy Work Strategies include workplace policies, programs, contract language, regulations and laws designed to reduce sources of stress at work (work stressors), and to make work and workers healthier. Each report below is a summary about how to improve the organization of work to reduce work stressors, such as:

- Long work hours
- Bullying
- Sexual harassment
- Discrimination
- Threats of violence
- Understaffing
- Job insecurity
- Lack of supervisor or coworker support
- Work-family conflict
- Job demands
- Lack of job control
- Job strain
- "Effort-reward imbalance."

The types of Healthy Work Strategies below include:

- Workplace research studies and programs to reduce work stressors
- Labor-Management Contracts
- Laws and Regulations

If you have any questions or comments about these reports, or have updates or new programs, policies, or laws that you would like us to include, please feel free to contact us.

+Acknowledgments

https://healthywork.org/resources/healthy-work-strategies/
Research recommendations:
Need >funding for work & health inequities research

- **Surveillance**
  - NIH prospective chronic disease studies: MESA, REGARDS, ARIC
  - NIOSH QWL & NHIS-OHS
  - NCHS, NHANES, NHIS: report data by SES

- **Etiological research**
  - Intersectional approaches -- additive or synergistic effects of social identity, social position & systems of privilege, including gender, race/ethnicity, social class, disability status, sexual orientation
  - “Upstream” risk factors → working conditions & health inequities (income inequality, union density, public funding, labor flexibility, social mobility, immigration, precarious employment conditions)

- **Intervention evaluation research**
  - Ecological studies to evaluate impact of laws/regulations at municipal, state or national levels
  - Impact of programs, policies, laws, regulations, contract language & education targeted to lower income workers & workers of color.