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TWH™ Initiatives in Healthcare, Construction, and Manufacturing

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Jack Dennerlein (Chair),
Erika Sabbath, Lorraine Wallace,
Silje Reme, Deborah McLellan
http://centerforworkhealth.sph.harvard.edu/

Session SA.5.2: **Saturday, May 18, 9:45am – 11:00am**

The Center is supported by a grant from the National Institute for Occupational Safety and Health (U19 OH008861).

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PI: Glorian Sorensen
Co PI Jack Dennerlein
Manager: Lorraine Wallace
2007 -

Project A

Be Well, Work Well

Integrated approaches for health care workers

2007-

Project B

All the Right Moves

Integrated approaches for construction workers

2011-

Project C

SafeWell

Dissemination of integrated programs to SMB

2011 -

Symposium

	Project	
Erika Sabbath	A	Non-physical workplace violence: Association with occupational injury in a health care setting
Lorraine Wallace	A	"Be-Well, Work Well" Development of an integrated occupational safety and health (OSH) and health promotion (HP) intervention for patient care staff
Silje Reme	B	Epidemiologic pilot investigating mental health among New England construction workers
Deborah McLellan	C	Knowledge, attitudes, and practices toward integrated approaches to worker health among small- to medium-sized businesses

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Non-physical workplace violence: Association with occupational injury in a health care setting

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Erika L. Sabbath, David Hurtado,
Cassandra Okechukwu, Sara Tamers, Candace Nelson,
Seung-Sup Kim, Gregory Wagner,
and Glorian Sorensen

Be Well Work Well

May 18, 2013
Work, Stress, and Health conference
Los Angeles

Injury at work

- 2007: 934,049 nonfatal occupational injuries in U.S. requiring ≥1 day away from work
  - Total cost: $870 million

- Injury rate among health care workers: 5.5 /100 FTE
  - Higher than construction (3.9) or manufacturing (4.4)

Non-physical violence in health care

- **Non-physical violence:** activities that are part of the work environment and involve verbal abuse against an employee with the intention of threatening the worker or inflicting emotional harm or other consequences

- Incidence rate in health care: up to 38.8/100 FTE
- What is known about health effects?

Aim and hypotheses

- **Aim:** Investigate association between non-physical violence and injury risk among health care workers

  - *Hypothesis 1:* Exposure to non-physical violence is associated with injury risk

  - *Hypothesis 2:* Certain features of injuries, perpetrators, and clustering of exposures will help us understand the associations observed in H1

Sample:
"Be Well, Work Well" (Project A)

- 2009 cross-sectional survey of 1,497 nurses, nursing assistants, and direct patient care workers in two large Boston hospitals
- 79% response rate
- Individuals nested within units
  - n units=104, mean workers per unit=22

Measures

- ***Outcome:*** Injury during past year (extracted from occupational health database)
  - All-cause and by type, cause, body part

- ***Exposure:*** Non-physical violence during past year
  - Being yelled/screamed at; sworn at; having hostile/offensive gestures made at you; being treated as inferior; being treated as incompetent
    - For each: never, once, more than once
    - For each: “Who did this to you?” (coworker, supervisor, physician, patient/family, other; as many as applied)

Analytic strategy

- Log-binomial regression with units specified as random effects (clustering)

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- Main effects and sub-analyses to understand pathways/mechanisms

Prevalence of non-physical violence

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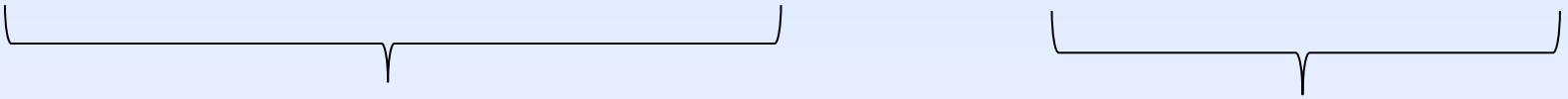

Abuse

Unfair treatment

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Be Well Work Well

Adjusted association (RR, 95% CI) between individual violence exposures and injury risk

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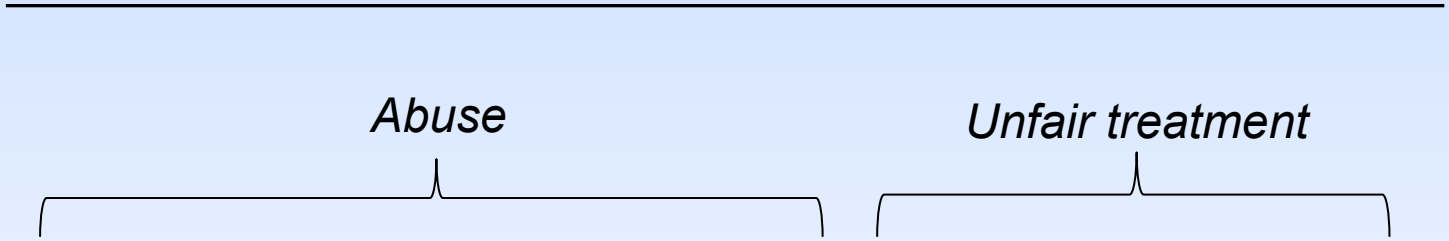

Adjusted for age, race, sex, job type, weekly hours worked; units specified as random intercepts

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Adjusted association (RR, 95% CI) between sum of abuse exposures and injury risk

P for linear trend <0.0001

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Adjusted for age, race, sex, job type, weekly hours worked; units specified as random intercepts

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Be Well Work Well

Exposure to being yelled/screamed at and type/cause-specific injury risk

Type/cause of injury	N workers with injury type	RR	95% CI
Back	48	1.82	0.97,3.40
Lifting/exertion	89	1.72	1.11,2.67
Pain/inflammation	55	1.86	1.03,3.36
Sprain/strain	38	1.45	0.75,2.82
Arm/hand	76	1.28	0.79,2.06
Struck by	56	1.50	0.84,2.66
Contusion	68	1.78	1.07,2.95

Adjusted for age, race, sex, job type, weekly hours worked; units specified as random intercepts. Reference group for all analyses is those who were not injured during follow-up. For space reasons, only "yelled/screamed at" is shown here.

Multilevel analysis: Unit- and individual-level effects

	Yelled at		Gestures		Sworn at	
	RR	95% CI	RR	95% CI	RR	95% CI
Model A						
Unit-level effect	2.37	1.09,5.15	2.18	1.04,4.57	1.60	0.77,3.33
Model B						
Unit-level effect	2.34	1.08,5.07	2.15	1.03,4.49	1.61	0.78,3.33
Worker-level effect	1.45	1.12,1.87	1.35	1.04,1.75	1.38	1.06,1.81

Adjusted for age, race, sex, job type, weekly hours worked

Possible physiological pathways

- Stronger association with musculoskeletal injuries than with acute injuries
  - "Dual-activation" hypothesis; sustained effects of combined exposure
  - Cortisol/sympathetic nervous system activation and pain perception

Intervention implications

- Multi-level analyses and interpretation
  - Organizational, interpersonal, individual elements
- What can be done?
  - Challenge of addressing patient-initiated violence and aggression

Limitations and strengths

- Limitations
  - Cross-sectional design
    - Long retrospective period
    - Temporal ordering
    - Data limitations
- Strength
  - Separate reporting of exposure and outcome reduces rating-behavior bias

Conclusions

- Abuse may be a risk factor for injury among health care workers
- Individual and group-level effects
- Potential benefits of reducing abuse or its effects

For more information

Contact Erika Sabbath (esabbath@hsph.harvard.edu)

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Be Well Work Well

Symposium

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"Be-Well, Work Well"

Development of an integrated occupational safety and health (OSH) and health promotion (HP) intervention for patient care staff

Sara Tamers, PhD, MPH

Be Well
Work Well

Objectives

- Health risks for health care workers
- Be Well Work Well Program
- Integrated Implementation model
- Intervention
- Challenges
- Insights and opportunities

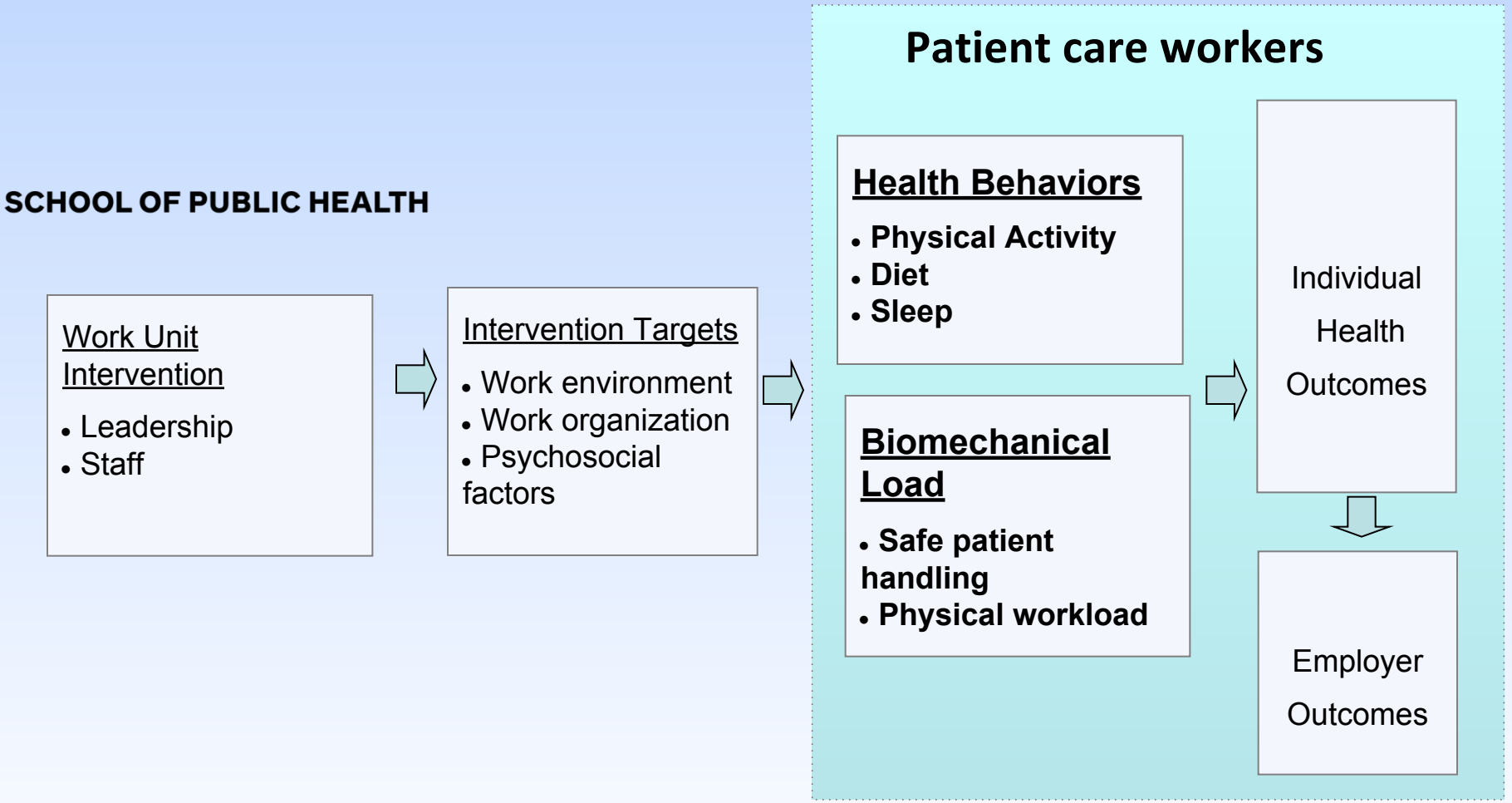
High Combined Risks

- 2nd highest number of nonfatal injuries and illnesses
- Elevated Risk musculoskeletal disorders (MSDs)
- Inadequate physical activity,
  - overweight and obesity and associated dietary patterns,
  - night or rotating shifts and related sleep deficiencies
- Risks in the work environment impact both MSDs and health behaviors:
  - high work demands
  - low co-worker and supervisor support
  - long work hours

Be Well Work Well

- Estimate the efficacy/feasibility of an integrated intervention for patient care staff
  - reduce MSD symptoms (low back pain)
  - diet, physical activity, sleep
- Large academic teaching hospital
- 8 in-patient units
  - 4 units: Integrated intervention
  - 4 units: Usual care
- January 2013 – December 2013

Integrated Implementation Model Overview



Formative Research

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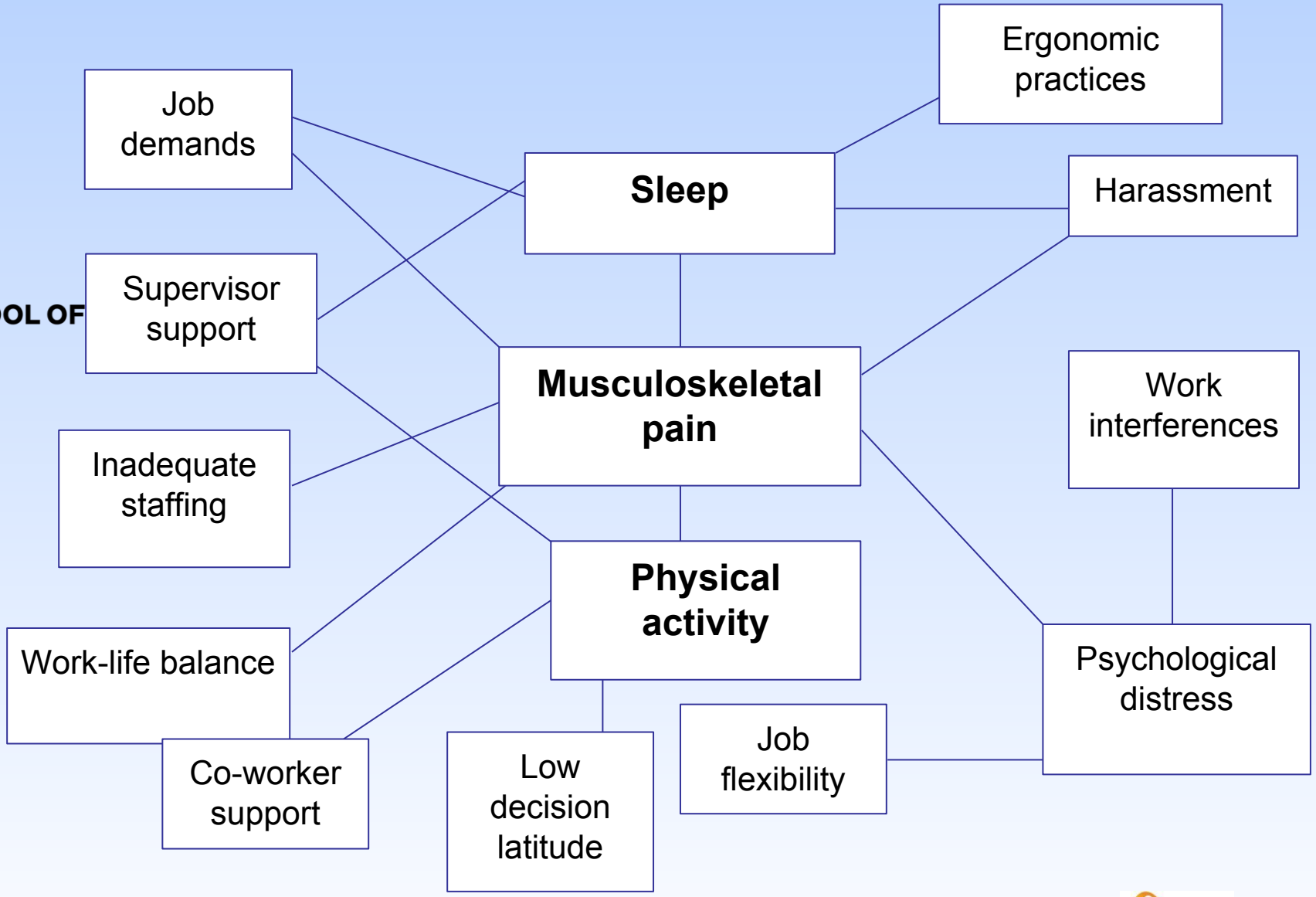
- Cross-sectional survey (2009)
  - Patient care staff (n = 1,572; RR 79%)
- Administrative database
- Accelerometer validation sub-study
- 3 month pilot (2011)
- Interviews: nurse directors and patient care staff
- Literature review

Summary of Findings



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Be Well Work Well

From the interviews

Nurse Director

"Another Major concern for me is the staff's perception or inability to get breaks. You know they get in the back room....but they still jump up in the middle of their lunch to answer the beeps. I can't get them to take their breaks".

Staff Nurse

"... I... I think it's also... I don't know if it's like inbred within nurses to be thinking of patients? "I have a patient down there who's..." you know, or, "I have X, Y, Z things to do, so," what you end up doing is that you run to the vending machine, inhale your food and run back out..."

Implications for the Intervention

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- Leadership Intervention
  - Build supervisor support
  - Support ergonomic practices
  - Facilitate flexibility - work breaks
  - Support for participation in on-unit activities

Leadership Intervention

- Ergonomic surveillance rounds and interview around safety practices
  - Housekeeping
  - Awkward postures
  - Safe patient handling and mobilization
- Work organization practices interview
  - Health and safety, health promotion practices including break practices

Leadership Intervention (cont'd)

- Integrated Feedback Report

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- Leadership Coaching sessions
  1. Development of unit action plan
  2. Refine: break practices
  3. Refine: safe patient handling practices
  4. Refine: Building a healthy culture
  5. Addressing sustainability

Staff Intervention

Month	On Unit	Off Unit
January	Kickoff	
February	Healthy eating on job	
March	Recruitment: BeFit	
April	Sleep Hygiene	
May		BeFit: 10 week diet/PA program
June	SP Handling Training	
July	Recruitment: Coaching	Integrated Telephone Health Coaching
August		
September	Exercise Challenge	
October		
November	Ergonomics	
December	Wrap-up/celebration	

Facebook Groups

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[Be Well Work Well]

This bento box was sent in by a vegetarian, she's got some yummy protein and snacks to keep her moving for her entire shift.

Does this look as delicious to you as it does to me?

Sample Integrated Messages

- Your patients need a healthy you. Make the right moves for your patients and yourself, even when you're busy.
  - Protect your patients by moving them safely. Use a lift. Always take the time to adjust your workstation
  - Strengthen yourself by moving, eating, and sleeping right.

- Getting the sleep you need not only helps you feel great, it helps you choose healthier foods, be physically active, and reduces your risk of injury

Implementation Challenges

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- Distinct Unit Cultures
- Patient care comes before personal health and safety
- Competing priorities
- Staff have little time for intervention activities
- Space for on-unit activities is limited
- Changing staff scheduling patterns not possible

Insights and Opportunities

- Implementation model
  - Leadership component is critical to creating health promoting work environment
- Intervention Delivery
  - Flexibility is key
  - Intervention Staff w/nursing background
  - Plan for off unit intervention activities
- Nature of the work matters

Investigator Staff

Glorian Sorensen, PhD, MPH (PI)

Jack Dennerlein, PhD (Co-I)

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Les Boden, PhD (Co-I)

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Greg Wagner, MD (Co-I)

Thank you!

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Be Well Work Well

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Epidemiologic pilot investigating mental health among New England construction workers

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Silje Endresen Reme

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Pilot Grants under the Center

- Contribute to the current work of the Center
- Seed future work and fit with the overall direction and mission of the Center
- Address a scientifically important problem relevant to worker health and worksite environments influencing worker health

- April 2012 – April 2013

Background I

- Construction workers face numerous occupational and non-occupational hazards
- High risk of musculoskeletal disorders (Holmstrom et al 1995; Arndt et al 1996; Dong et al 1995; Guo et al 1995)
- Prelim findings indicate even higher risk for mental health problems (Peterson et al 1998; Marchand 2007; Dong et al 2011)

Background II

- Psychological distress associated with:
  - Occupational injuries (Zheng et al 2010; Kim et al 2009)
  - Musculoskeletal pain (Demyttenaere et al 2006; Kessler etal 2001; Von Korff et al 2005; Pincus et al 2002)
- Psychological distress and safety climate: mediator (Siu et al 2004)
- Untreated mental disorders: risk factor for suicide (Phillips et al 2002; Quin et al 2003)
- Construction workers: higher suicide rates then other occupational groups (Andersen et al 2010; Heller et al 2007; De Looper & Magnus 2005)

Aims

- Aim 1: Describe mental health problems of US construction workers through mental health survey instrument (phase 1)

- Aim 2: In a subsample scoring high on survey mental health scales: explore mental health status through a semi-structured psychiatric interview (phase 2)

- Aim 3: Examine the association between mental health problems, injuries and musculoskeletal pain

Measurement tools

- Survey:
  - Hopkins Symptom Checklist 25
  - Kessler 6 (K6)
  - Nordic pain questionnaire
  - Work characteristics
  - Work injuries/accidents
  - Lifestyle (smoke, alcohol)
- Clinical interview:
  - Mini International Neuropsychiatric Interview (MINI)

Procedure

- 4 construction sites (July-Aug 2012)
- Mental health surveys
- Additional consent to follow up phone interview
- HSCL Cut-off: 1.50 (usually 1.75)
- Incentive for participation:
  - $5 Dunkin Donuts gift cards
  - Book bag with educational material, resources etc
- Completion rate: ~90%

Methods

- Surveys: n=172
- Clinical interviews: n=10

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Results: background

- Age: 18-64 (M=41)
- Sex: 158 male (94%)
- Race:
  - White: 150 (94%)
  - Black: 8 (5%)
- Ethnicity
  - Hispanic: 7 (4%)
  - Non-Hispanic: 160 (95%)
- BMI: 29 (18-48)
- Education:
  - GED: 51%
  - Some college: 30%
  - College degree: 19%

Results: Aim 1

ıental health problems
orkers by using a
vey instrument

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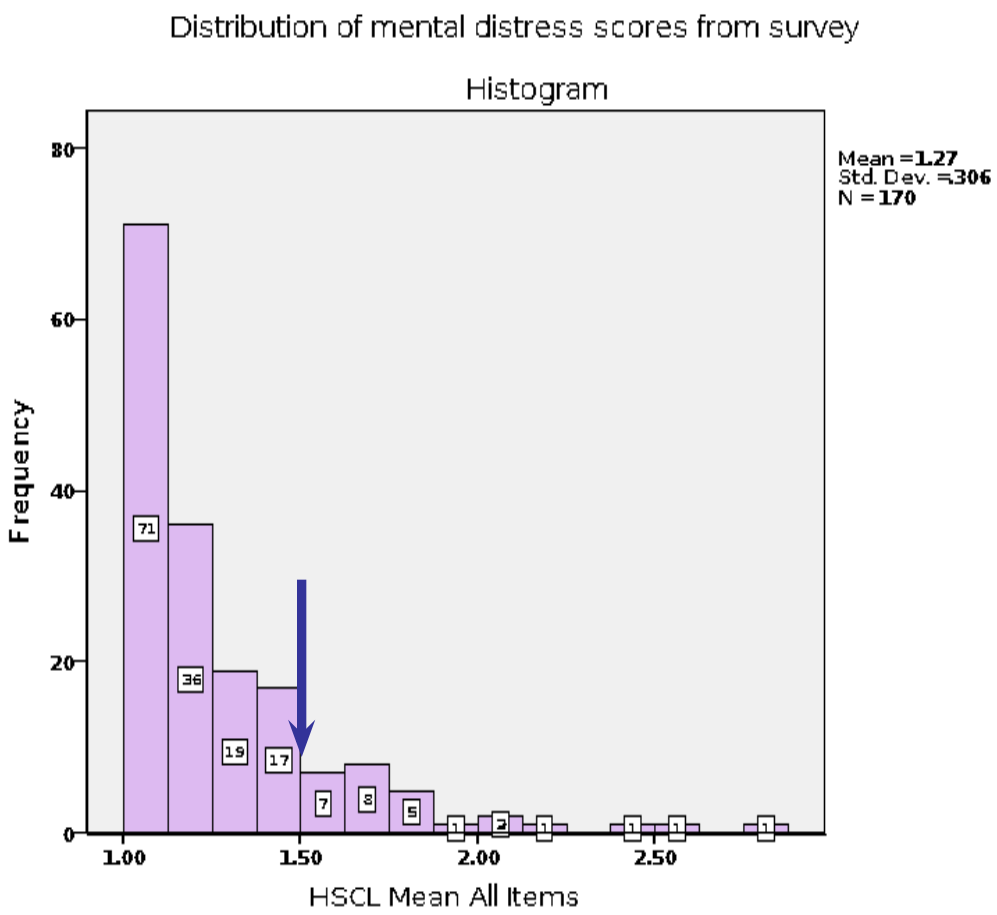
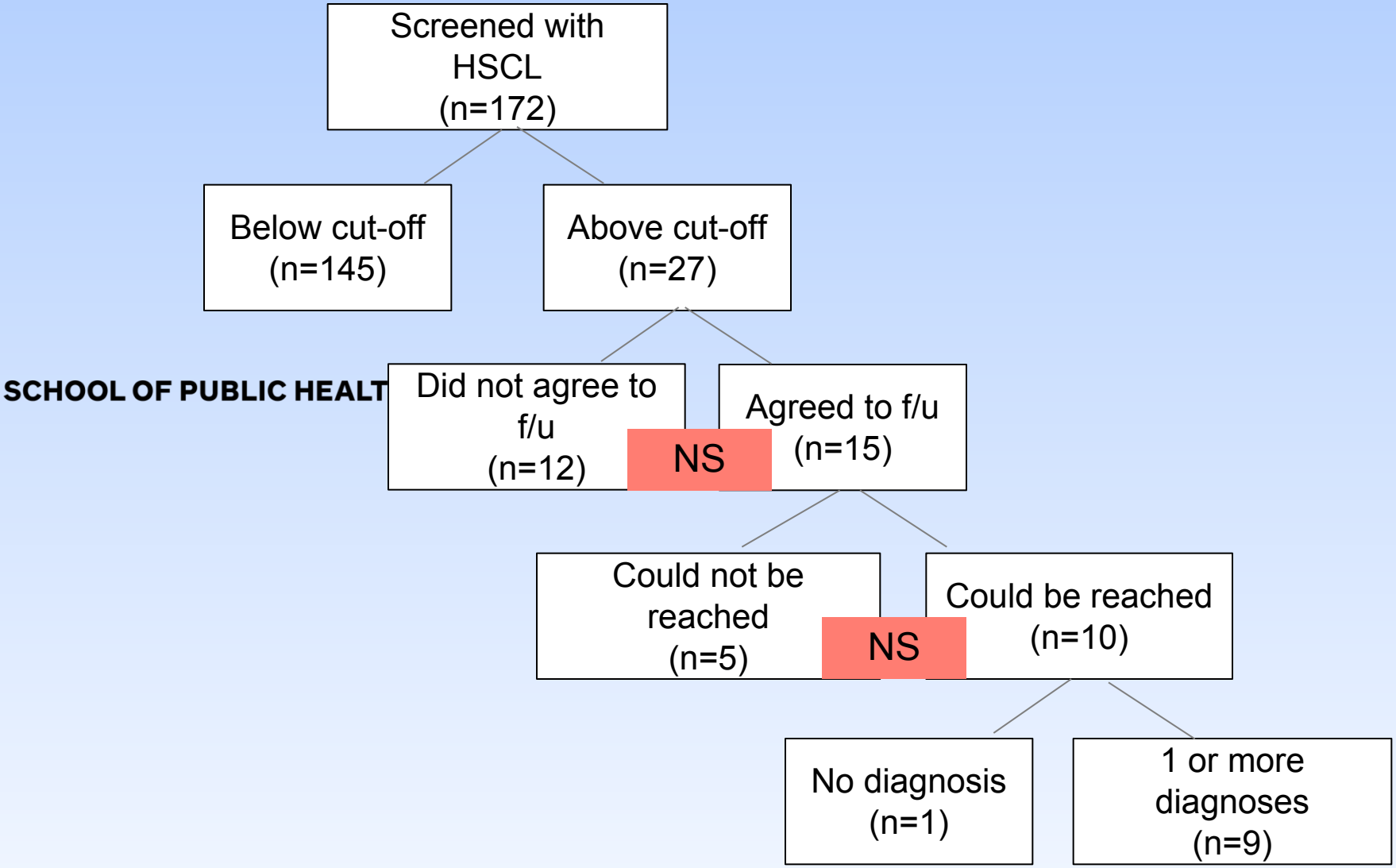


16% substantial distress

Results – Aim 2

In a subsample of the workers scoring high on specific survey mental health scales, we will explore and characterize their mental health status through a semi-structured psychiatric interview

Age	#diagnoses	M.I.N.I. Diagnoses
26	0	None
46	1	Generalized anxiety disorder
21	1	Previous manic episode
49	1	Current major depressive episode
38	1	Current panic disorder
29	1	Previous major depressive episode
47	3	Current depression, generalized anxiety disorder, suicide risk (low)
N/A	4	Current depression, previous manic episode, previous panic disorder, antisocial personality disorder
37	7	Current depression, previous manic episode, current panic disorder, social anxiety, PTSD, alcohol dependancy, generalized anxiety disorder
33	9	Current depression, suicide risk (low), previous manic episode, current agoraphobia, PTSD, alcohol dependancy, alcohol abuse, bulimia


Screened with HSCL (n=172)
Below cut-off (n=145)
Above cut-off (n=27)
Did not agree to f/u (n=12)
NS
Agreed to f/u (n=15)
Could not be reached (n=5)
NS
Could be reached (n=10)
No diagnosis (n=1)
1 or more diagnoses (n=9)

Results: Aim 3

Based on the survey results, examine the association between mental health problems, pain and injuries

Mental distress and pain

Independent variables	OR (95% CI)	p-value
Any low back pain	2.59 (1.03-6.56)	**0.04**
Gender	0.93 (0.18-4.87)	0.75
Age	0.98 (0.94-1.02)	0.42
Education	1.43 (0.57-3.54)	0.44

Independent variables	OR (95% CI)	p-value
2 or more pain sites	3.06 (1.19-7.89)	**0.02**
Gender	1.19 (0.23-6.22)	0.83
Age	0.99 (0.95-1.03)	0.61
Education	1.48 (0.59-3.68)	0.40

Results: mental distress and injuries

Independent variables	OR (95% CI)	p-value
Any injury	2.29 (0.90-5.79)	0.08
Gender	1.53 (0.28-8.50)	0.62
Age	0.99 (0.95-1.04)	0.65
Education	1.59 (0.66-4.27)	0.28

Independent variables	OR (95% CI)	p-value
4 or more injuries	4.83 (1.36-17.20)	**0.02**
Gender	1.38 (0.26-7.26)	0.70
Age	0.99 (0.95-1.04)	0.75
Education	1.43 (0.57-3.58)	0.44

Discussion I

- Rapid mental health screening able to identify CWs with mental disorders
- Psychological distress associated with:
  - Musculoskeletal pain (back)
  - Multiple pain sites
  - Work-related injuries
  - Work disability

Discussion II

- Supports a comprehensive approach to worker:
  - *health* - knowledge about an overlooked dimension
  - *safety* - knowledge about determinant of occ injuries

- Inform intervention planning:
  - Integrate psychosocial factors with workplace safety in a total worker health framework

Limitations

- Small population
- Cross-sectional design
- Convenience sample
- White men with good financial status
- Self-report injury data

Project Team

Principal Investigator: Silje Endresen Reme

Co-Investigator: Alberto Caban-Martinez

PhD-student: Henrik Børsting Jacobsen

Research assistant: Lynn Onyebekef

Faculty Advisor: Jack Dennerlein

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Thanks for the attention!

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Knowledge, Attitudes, and Practices toward Integrated Approaches to Worker Health among Small- to Medium-sized Businesses

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Deborah McLellan, Jennifer Allen, Glorian Sorensen, Candace Nelson, Nico Pronk

Stress, Work, and Health Conference

May 18, 2013

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What is an integrated approach to workplace health?

- Strategically coordinates and links:
  - Health and safety
  - Worksite health promotion
  - Worker well-being
- And addresses the following levels:
  - Systems
  - Environmental
  - Organizational
  - Individual
- Communication and participatory engagement are key
- Exists on a continuum

Rationale for integrating OSH with WHP

- Work and health influence each other
- Integrated programs
  - improve worker health behaviors
  - increase participation in programs
  - improve OSH program management systems
  - might save money

Sorensen G, et al, 2006: LaMontagne, et al, 2004

Background

- Promising results re: integrated approaches--mostly from large companies
- Focus on Small- to Medium-sized Businesses (SMBs) (<750 employees) important
  - Employ most workers
  - Less likely to offer health programs
  - Often use vendors to provide programs
- Vendors do not offer integrated programs

Purpose of SafeWell Project and Presentation

- Work with JourneyWell, a health and well-being vendor to
  - Understand needs & interests of SMBs
  - Pilot test an integrated intervention in 3 SMBs
- Presentation focus:
  - results from qualitative interviews with SMBs on knowledge, attitudes, and practices re: integrated approaches

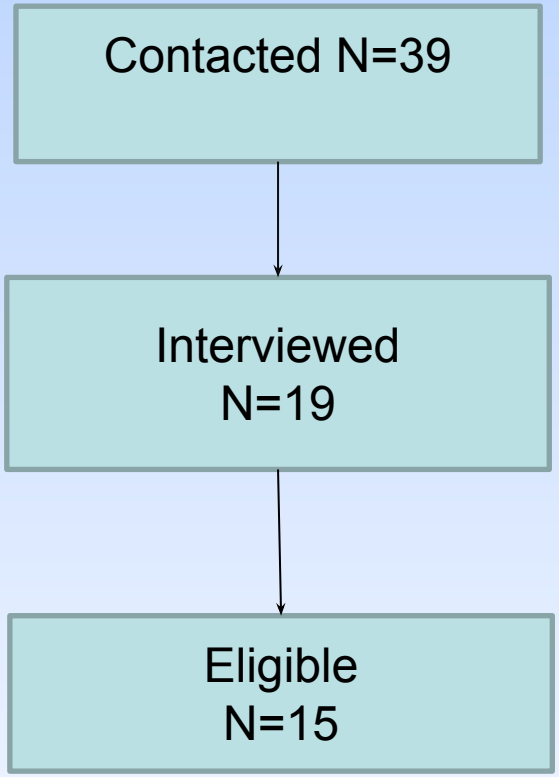
Methods

- Purposive sample of clients of Health Partners, Inc. (health, wellness, & safety services)
- Inclusion criteria
  - <750 employees
  - Manufacturing
  - Free-standing business
- 30-60 minute interviews during Fall 2012
  - with key decision-makers
- Audio-recorded and transcribed interviews

Analysis

- Content analysis analyzing qualitative data
- Reading and group discussion of transcripts by research team
- Structural and thematic coding using database indexing software (NVivo)

Recruitment Flow Diagram



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Have these SMBs heard of integrated approaches?

- Most have never heard of these approaches
- Many have heard of approach
- A few have not heard formally, but think they're familiar with them

Do SMBs think integrated approaches would work at their companies?

- Yes
  - "For us, yeah, …we're very intertwined anyway. A small company, people …wear a lot of hats."
- No
  - "[W]e're too small…I don't think we have enough manpower."

What do SMBs need to start/use integrated approaches?

- Get top management on board
- More personnel/resources
- Information on effectiveness and return on investment
- No issues getting buy-in
- Information on what others are doing

In what results are SMBs interested?

- Overall improved employee health
- Measurable results (e.g. lower BMI or smoking rates)
- Reduction in health care/workers' comp costs
- Reduction in workplace injuries
- Happy employees

How much are SMBs using integrated approaches?

- Using it now
  - "...[W]e know that a back injury, in the safety realm...DOES cross over into the...employee health realm...So, we understand that and that's why a lot of the committees do have the same group of people on them, so that we can focus not only on preventing that...type of incident from happening again, but also taking care of the employee..."

How much are SMBs using integrated approaches?

- Not at all
- Have started, but not fully there
  - “We’ve done a small piece..around stretching and ergonomics”
  - [T]here’s a lot of sharing, but not necessarily on a formal basis.”

Strengths and Limitations

- Formative work exploring themes re: integration important to management of SMBs
- Convenience sample
- Relatively small number of companies

Conclusions

- Wide range of knowledge about and degree of implementation of integrated approaches in SMBs
- Interest in how integrated approaches may benefit employees and the company's bottom line

Conclusions

- Top management support for integrated approaches perceived as vital
- SMBs may need additional resources, BUT
- They also may be implementing such approaches out of necessity (i.e. wearing multiple hats)

Implications for research & practice

- More research is warranted
  - Information on cost effectiveness/outcomes
- Fewer resources may exist BUT structure may support adoption and implementation

Implications for practice

- Better dissemination of information to decision-makers is needed
  - Channels: vendors, brokers, professional organizations
- Vendors may want to develop and provide integrated packages for SMBs

For more information

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