Metabolic Syndrome & Workplace Wellness: A Total Worker Health™ Approach to Designing Healthy Workplaces

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Conflict of Interest Disclosure

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Objectives

• Understand pathways between work environment and obesity/overweight.
• Identify factors relevant to low wage workforce.
• Describe strategies for addressing work-related risk factors for obesity/overweight.

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Funding support

CPH-NEW is supported by Grant Number 1 U19 OH008857 from the U.S. National Institute for Occupational Safety and Health.

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Part 1

BACKGROUND: OBESITY AND WORKPLACE INTERVENTIONS
What is Metabolic Syndrome?

- A group of risk factors that raises risk for cardiovascular disease, diabetes, stroke.

- Risk Factors:
  - High waist circumference
  - High blood pressure
  - High fasting blood sugar
  - Elevated triglycerides
  - Low HDL cholesterol

Obesity in the U.S.

- Obese Body Mass Index (BMI) 30 or more; overweight BMI 25-29.9
- Obesity associated with heart disease, stroke, high blood pressure, osteoarthritis

- Healthy People 2020 Goals:
  - Increase to 33.9% people at healthy weight
  - Reduce to 30.6% obese adults
  - Increase to 54% BMI assessment
Obesity Trends* Among U.S. Adults
BRFSS, 1990, 2000, 2010
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.

Tobacco Use, Physical Inactivity, and Obesity

- Obese employees (BMI ≥ 35) have 4.2% higher health-related productivity loss, equal to $506 per employee per year. *J Occup Environ Med. 2008;50(1):39-45*

- Medical costs (2008) associated with obesity estimated at $147 billion; medical costs paid for obese individuals $1,429 higher annually than for normal weight. *Health Affairs. 2009;28(5):w822-831*

Factors contributing to obesity

- **Hormonal response to meals**
- **Metabolic rate**
- **Biological Factors**
- **Energy Intake**
- **Energy Expenditure**
- **Psychosocial**
- **Depression**
- **Occupational**
- **Leisure time**

**SES Factors**
- **Energy Intake**
- **Energy Expenditure**

**Diet composition**
- **Food frequency**
- **Education**
- **Occupation**

Adapted from http://www.sickkids.ca

Workplace intervention strategies to control obesity/overweight

**Environmental changes and policy**
- Onsite food availability
- Onsite exercise options
- Employer incentives

**Worksite intervention components**
- Informational messages
  - Healthy eating
  - Physical activity

**Behavioral and social skills or approaches**
- Self-awareness
- Self-efficacy
- Social support

**Knowledge**
- Nutrition needs
- Exercise requirements

**Attitudes**
- Self-care
- Body image

**Social norms and support**
- Family, peer, community
- Management support

**Environmental conditions**
- Convenience and safety for exercise
- Access to affordable healthy food

**Primary outcome**
- Body size and composition


Analytic framework for worksite nutrition and physical activity interventions to improve weight status

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Effectiveness of Different Workplace Health Interventions

- Schröer et al. (2014) Occupational Medicine
  - Analyzed 15 reviews, covering 379 original studies.
  - Outcomes Assessed: Reduced BMI, improved physical fitness, increased physical activity levels, dietary outcomes

  - Analyzed 47 studies
  - Outcomes: body mass index (BMI), weight, and percent body fat

Systematic reviews of evidence

- Most common: information/behavioral
- More intense, multi-component, more effective
- No one silver bullet
- Effects are modest
- Evidence varies

GAP--Programs often do not address job related drivers of overweight.

“Individual” or “lifestyle” factors are influenced by the environment – including working conditions.

### Physical working conditions

- Smoking
- Diet, nutrition
- Leisure exercise
- Obesity

### Work organization & psychosocial conditions

- Who does what?
- How often?
- When?
- How?

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**Work Organization**

A “risk factor” for obesity?

“…the combination of the way in which work processes are designed and arranged, as well as the broader organizational practices that influence job design.”

Part 2

JOB-RELATED PREDICTORS OF OBESITY
Work factors leading to obesity
What does the science tell us?

- Shifts/Sleep Insufficiency
- Job Stress
- Sedentary occupation
- Other exposures
Work factors leading to obesity: Sedentary occupations

**Sedentary Occupations**

- Reported by 69.5% of workers in sample of 2,019 U.S. workers.
- Common in high education groups (executive, administrative, managerial, professional)
- Significant associations between obesity among U.S. workers when combined with LOW physical demand.

Choi et. al. AJIM 2010

Work factors leading to obesity

**Shift work; sleep disruption/insufficiency**

- Associated with disease outcomes
  - High BMI, Diabetes
  - Cardiovascular Disease (CVD)
  - Hypertension

- Long work hours
  - Increased dependency on job site foods
  - Fatigue → low physical activity

- Limited sleep (<6hrs/night)
  - Disrupts insulin metabolism → adipose production
  - Suppresses leptin → hunger, food intake
**Work factors leading to obesity**

**Job stress**
- CVD
- Anxiety
- Depression
- Musculoskeletal Disorders (MSDs)

**Associated with disease outcomes**
- Low leisure-time physical activity
- Low participation and adherence in workplace exercise programs
- Can influence food choice, eating patterns

**Associated with behavioral outcomes**

**Job Conditions Associated with Stress**
- High workload and long hours
- Low job control
- Authoritarian management style
- Poor interpersonal relationships
- Ambiguous work roles
- Job insecurity
- Unsafe or extreme environmental conditions
Higher job stress is associated with greater prevalence of lifestyle risk factors: Low coworker support, shift work, low decision making, assault, lifting heavy loads

Work factors leading to obesity

Chemical irritants

Chemicals (e.g. herbicides)
- ↓ Insulin metabolism → diabetes → obesity

Asthmagens (breathable dusts, chemicals)
- More common among obese adults
- May limit ability to be physically active
Work factors leading to obesity

Secondary Pathways

Secondary to disability
• post-injury
• asthma
• other medical conditions that might reduce exercise frequency/intensity

Secondary to medication
• anxiety or depression (stress, assault)
• other potentially work-related conditions

Obesity/overweight and the role of working conditions

• 8 focus groups of lower-wage workers
  – Recruited through MassCOSH & Boston Workers’ Alliance
  – Spanish- & English-speaking
• Topic: how the workplace affects dietary and/or exercise behaviors
• 63 participants
  – 65% female; 83% Latino & 22% African/Afro-American (not mutually exclusive)
  – Cleaning, restaurants, construction, manufacturing, health care/human services
Obesity/overweight and the role of working conditions: Results of a qualitative and participatory investigation


Food environment at work
- Available food choices
- Kitchen equipment
- Space to eat at work

Psychosocial stressors
- High demands
- Low control
- Low social

Physically demanding work
- Illnesses and injuries
- Leisure time activity

Time pressure
- Scheduling
- Multiple jobs/responsibilities

Physical Workload, Schedules, etc…

- Physically demanding job:
  - “I don’t have the desire to do exercise after standing for 15-16 hours.”
  - “You come home and you are so tired that you either don’t want to eat, or you want to eat a lot.”

- Meal breaks:
  - “At 10:00 a.m., they give me a 15-minute break. I don’t have time to eat healthy food.”

- High demands
  - “The work that three people used to do is given to one person. That creates more stress and eating more…”

- Low control
  - “Working in factories, you have to eat fast or get fired.”
Maria’s Story

“Lifting the mattress and tucking in the sheets over 240 times a day and bending down to clean up to 30 bathtubs causes us pain as we rush to clean 30 rooms.”
– “María”, housekeeper

90% of the hotel housekeepers, including Maria, took pain medication regularly for injuries they associated with work, making it possible for them to keep earning their living.

After taking the pain medication for several months, Maria found that her weight had dramatically increased.

Jose’s Story

“We suffered for years while our employer stole money from our wages and forced us to work in dangerous conditions. I was beaten up by my supervisor and my coworkers also faced physical and verbal abuses,”

- Jose, employee at a warehouse of a large supermarket chain for fourteen years.

Jose told MassCOSH that the injury he suffered from his assault caused him to become so depressed he needed to take medication. His wife too became depressed and took medication. Jose experienced weight gain and his wife became morbidly obese.
Part 3

INTERVENTIONS

The Workplace as a System

Company Level
(Structure, culture, organizational practices, technology)

Division/Department
(Resources; relation to other departments)

Job Level
(Work pace, supervision, work flow, decision-making opportunities)

Physical Exposures
Psychosocial Exposures

Other workplace exposures:
• Safety hazards
• Chemical, dust, biological, etc.
• Noise, temperature, radiation, etc.

Company Environment

Organizational Outcomes:
• Productivity
• Quality
• Customer satisf.
• Health care costs
• Workers’ comp.
• Absenteeism
• Turnover

Worker Outcomes:
• Health
• Job satisfaction
• Lifestyle
• Productivity
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Social-Ecological Model

Linnan et al., 2001: “individual behavior (e.g., participation in a work-site health promotion program) is affected by multiple levels of influence”

Policy
Community/Society
Organizational
Interpersonal
Individual

What is an integrated approach to total worker health?

Well-being
Safety
Coordinated planning
All levels participate
Workers
Management

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What does an integrated approach to weight management look like?

Healthy environment
- Healthy work scheduling
- Flexible work policies
- Jobs designed for variety, control
- Well equipped, clean break room for meals
- Policies for mealtime and rest breaks
- Strong health, safety, ergonomic protections

Healthy lifestyles
- Clean eating facilities
- Healthy food choices
- Stress management
- Well lighted, safe facility
- Management support for rest, movement breaks, flexibility

Sedentary work

Healthy workplace
- Supervisors trained, rewarded for encouraging moving breaks, MODELS
- Printers down the hall
- Comfortable, adjustable workstations
- Job redesign or rotation: add movement to the job!
- Standing/walking meeting

Healthy lifestyle
- Education: personal habits about stretching and movement
- Lifestyle and weight loss programs
- Safe, well lighted grounds
- Incentives, flexible hours to accommodate non-work physical activity
### Shift work/sleep disruption

**Healthy workplace**
- Healthy scheduling policies
- Shifts—avoid 12 hrs+
- No mandatory overtime

**Healthy lifestyle**
- Education: awareness about staying healthy with night work.
- Education about “sleep hygiene”
- Healthy food options on site
- Well equipped break room
- Incentives, flexible hours to accommodate non-work physical activity

### Job Stress

**Healthy workplace**
- Participatory management styles
- Supervisor training
- Work-family supports
- Healthy job design and career-pathing
- Culture of communication and respect
- Mental health services

**Healthy lifestyle**
- Stress management or mindfulness training
- Lifestyle and weight loss programs
- Healthy foods on site
- Safe well-lighted facility

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**References**

- www.uml.edu/centers/CPH-NEW
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Environmental exposures

**Healthy workplace**
- Strengthen safety culture and safety program to reduce exposures
- Safety audit—air quality
- Supervisor training
- New employee training

**Healthy lifestyle**
- Lifestyle and weight loss programs
- Healthy foods on site
- Safe well-lighted facility
- **Smoking cessation**
- Personal Protective Equipment

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**Best Practices for Worksite Intervention Planning**

- Gain **leadership support**
- **Engage all levels** of employees in planning interventions
- Ensure that strategies are sustainable, integrated
- Use **multiple** strategies to promote healthy organization and healthy employees
- Customize the strategies for employees
Summary

• The causes of obesity are complex.

• Working conditions may contribute to the development of overweight, and may present an obstacle to weight loss.

• Use caution when incentivizing workplace prevention programs – recognize that environmental factors can impact weight regulation.

• Effective workplace interventions focus on both work environment/job factors and behavior.

• Leadership support and employee engagement are essential for sustainable interventions.
References

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References


References


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