

Work and Health
CHS 278/EHS M270
Spring 2009

March 31, 2009 – June 9, 2009

Instructors:

Peter Schnall, M.D., MPH, Clinical Professor of Medicine, UCI Center for Occupational and Environmental Health, and Adjunct Professor, UCLA School of Public Health

BongKyo Choi, Sc.D., MPH, Associate Project Scientist, UCI Center for Occupational and Environmental Health

TA: Erin Wigger, B.A., ISM, Center for Social Epidemiology

Office Hours by Appointment Only
Please Send Email Requests C/O erinwigger@netscape.net

Course Description:

The impact of work on psychological and physical health, including cardiovascular disease, is explored in the context of newly emerging research. The focus is on work organization, psychosocial stressors, measurement (including hands-on experience), contextual factors (gender, ethnicity, social class), and how work stressors can be ameliorated. The class will have 10 three-hour sessions and will meet weekly.

Course Requirements:

(1) Readings:

Schnall PL, Belkic K, Landsbergis PA, Baker D. (eds.) The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000;15 (Complementary copy provided by instructor)

Schnall PL, Dobson M, Rosskam E. Unhealthy Work: Causes, Consequences and Cures. Baywood Publishing, 2009. In Press. (Readings from this book are in the Course Reader)

The Course Reader should be obtained from Course Reader Material at: 180 Broxton Ave, 1081 Westwood Blvd. (310) 443- 3303

(2) Practicum:

The course will include hands-on use of a psychosocial packet to be handed out at the first class. Students will administer this packet of questionnaires to one working person and score the questionnaire. The practicum will give you experience with using these questionnaires and your knowledge will be tested as part of a take-home midterm.

(3) Grading:

Knowledge of information covered in the practicum portion of the class will be tested as a part of the take-home midterm (30%), three homework exercises (10% each, 30% total) and a final exam, which will also cover lecture materials and readings (30%.) The final exam will be distributed at the last class session. Performance on in-class quizzes and participation reflecting an understanding of the course readings will make up the remaining 10% of the grade.

Overview of Sessions:

Week	Date	Description
1	3/31	Introduction to psychosocial factors in the workplace
2	4/07	Conceptual and theoretical models: operationalization, measurement, and assessment of psychosocial factors
3	4/14	Cognitive ergonomics: A new approach to brain research and cvd
4	4/21	Physiological mechanisms leading to adverse physical and mental health outcomes
5	4/28	Assessing health outcomes with a focus on obesity and other cardiovascular risk factors
6	5/05	Contextual factors mediating outcomes
7	5/12	International and cross-cultural comparisons; economics costs of stressful working conditions
8	5/19	Secondary intervention: individual programs
9	5/26	Programs and policies for regulation of workplace stressors; primary intervention: work organization redesign
10	6/02	Course wrap-up and conclusions, final exam distributed

Description of Sessions:

I. Introduction to psychosocial factors in the workplace (March 31)

Working people develop a wide variety of illnesses during their working lives, manifested in time lost from work, disability, physical incapacity, psychological distress and ultimately morbidity and mortality. How/whether these manifestations are connected to work is a critically important issue for those in the fields of medicine, occupational and public health. We will introduce the social epidemiologic approach, in which the workplace is viewed as a key determinant of a wide variety of behavioral and health outcomes. In other words, we focus upon the workplace as a relatively distal cause of these outcomes and view personality and individual factors as more proximal. Through viewing of a segment of Charlie Chaplin in the film *Modern Times*, we present two approaches to occupational health psychology, one of which focuses on individual coping and the other on the impact of the workplace on the individual. We present a brief overview of the field of stress research, and then examine in depth the historical origins of theoretical models of workplace psychosocial stressors.

Practicum: Packet to be handed out and discussed in class. Review Participant-Observation Exercise One (to complete by Session II).

Readings:

Why the workplace and cardiovascular disease? In: Schnall PL, Belkic K, Landsbergis PA, Baker D. (eds.) Occupational Medicine: State of the Art Reviews: The Workplace and Cardiovascular Disease. 2000; 15: pp. 1-5.

Stressors at the Workplace: Theoretical Models. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15 (1): pp. 69-105.

Recommended:

Health, Productivity and Work Life in Karasek RA, Theorell T. Healthy Work: Stress, productivity and the reconstruction of working life. New York. Basic Books, Inc., 1990. pp. 1-31.

II. Conceptual and theoretical models: operationalization, measurement, and assessment of psychosocial factors (April 7) – *Speakers Peter Schnall and Bongkyoo Choi*

Several theoretical models of workplace psychosocial stressors have been empirically validated, including the Demand Control Support, or job strain, model and the Effort-Reward Imbalance (ERI) model. Karasek's job strain model states that the greatest risk to physical and mental health from stress occurs to workers facing high psychological workload demands or pressures combined with low control or decision latitude in meeting those demands and low social support from others. The JCQ is one of the most popular instruments for assessing psychosocial working conditions. The lecture will address general features of the JCQ including psychometric information about the core scales – job control, job demands, and social support at work. In addition, recent international efforts for developing a new version of the JCQ (i.e., JCQ 2.0) will be presented, along with some intellectual inquiries on job demands and cultural adaptation of the JCQ (e.g., differential item functioning) in non-US countries.

Johannes Siegrist's broader ERI model defines stressful job conditions as a "mismatch between high workload (high demand) and low control over long term rewards". In comparison to the DCS model with its emphasis on moment to moment control over the work process (i.e., decision latitude), the ERI model provides an expanded concept, emphasizing macro level, long term control vis-à-vis rewards such as career opportunities, job security, esteem and income. The ERI model also integrates the exigencies and rewards of the job with the individual's input and coping style.

This session describes three main approaches for measurement of job characteristics: self report questionnaires (e.g., Job Content Questionnaire to measure job strain, ERI questionnaire, Occupational Stress Index); imputation of job characteristics scores based on aggregate data (e.g. national job title averages); and external assessment (e.g. supervisor or coworker ratings, job analysis by expert observers). We review important research results, highlight advantages and limitations of each method and discuss some issues to be resolved through future research. We recommend multi-method strategies for convergent validation, using as many of these approaches as possible.

Practicum: In-class review of questionnaire packet to be administered, scored and turned in by Session III.

Readings:

Measurement of psychosocial workplace exposure variables. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15(1): 163-188.

Karasek RA, Theorell T. Healthy Work: Stress, productivity and the reconstruction of working life. New York. Basic Books, Inc., 1990, pp.31-82.

Stressors at the Workplace: Theoretical Models. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15 (1): 73-87.

Kasl, S. The Influence of the Work Environment on Cardiovascular Health: A Historical, Conceptual, and Methodological Perspective. Journal of Occupational Health Psychology 1996; 1(1): 42-56.

III. Cognitive Ergonomics: A new approach to brain research and CVD (April 14)

Complementary to constructs such as the Job Strain model and ERI, that are based heavily upon sociological theory, are approaches derived from cognitive ergonomics and brain research. These help describe, in more quantitative terms, the burden of work processes upon the central nervous system (CNS). Thus, e.g., when speaking of psychologically demanding work, we can go far beyond queries about “working hard” and “working fast,” to analyze tasks in terms of allocation of mental resources. In the Occupational Stress Index (OSI), an additive burden model, we have sought to delineate work stressors in terms of how the CNS receives and processes information. Thus, we consider objective factors such as the nature and temporal density of incoming signals, the complexity and speed with which these are processed, inter alia, as well as how much control the worker has in modulating these, and other, demanding factors. From the vantage point of cognitive ergonomics, there is an inextricable coupling between the demand and the control dimensions: with sufficient decision latitude, or control, a worker can modulate even a fairly onerous, though not overwhelming, psychological workload to meet his or her moment to moment needs and capacities. This approach helps us to better define, and thereby hopefully to protect the worker against exposure to overwhelming psychological demands. Cognitive ergonomics and brain research also point us to another dimension of stressful work: “disaster potential” or “symbolic aversiveness”, a new dimension incorporated into the OSI. For survival reasons, our nervous systems are constructed to selectively allocate mental resources to threatening stimuli, even if the threat is only of a symbolic nature. The heaviest burden upon conscious attentional resources occurs when one continuously follows a barrage of signals to which he or she must be prepared to rapidly respond, such that momentary lapse, error or delay could have serious, or even fatal consequences; this is Threat Avoidant Vigilance. We provide practical information and instruction on how to utilize psychosocial stress questionnaires, including the JCQ, ERI and the OSI.

Practicum: Discussion of Exercise 1.

Readings:

Cardiovascular evaluation of the work and workplace: A practical guide for clinicians. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15(1): 213-222.

Stressors at the Workplace: Theoretical Models. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15(1):87-98.

IV. Physiological mechanisms leading to adverse physical and mental health outcomes (April 21)

This session will draw from extensive research which reveals that a wide range of workplace conditions have been implicated as risk factors for a variety of health problems including cardiovascular disease (CVD), psychological distress and work-related musculoskeletal disorders. These workplace conditions include shift work, long work hours, and chemical, physical, and psychosocial conditions. The most consistent evidence is provided by sources of psychosocial stress at work. The deleterious physiological effects of different stressful work scenarios are reviewed, with a focus on cardiovascular hemodynamic changes leading to the development of essential hypertension. Mechanisms will be discussed by which long work hours and shift work as well as exacerbating physical stressors such as noise, glare, heavy lifting, vibration, cold and heat can impact upon physiologic systems. Occupational groups exposed to a large number of these stressors are found to be at high risk for hypertension, myocardial infarction, stroke, peptic ulcer disease, headache, musculoskeletal disorders, burnout, depression, anxiety and other undesirable outcomes. They may also be susceptible to mood and sleep disturbances and disrupted relationships with family and friends.

Practicum: Feedback on Exercise 2. Review writing up a work history. Work History Report (Exercise 3) due Session V.

Readings:

The central nervous system: Bridge between the external milieu and the cardiovascular system. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15(1):107-115.

Evidence for mediating coneurocardiologic mechanisms. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15(1): 117-162.

V. Assessing physical health outcomes with a focus on obesity and other cardiovascular risk factors (April 28) – *Speakers Peter Schnall and BongKyoo Choi*

Research studies reveal that a wide range of workplace conditions have been implicated as risk factors for a variety of health problems including cardiovascular disease (CVD), psychological distress and work related musculoskeletal disorders. These workplace conditions include shift work; long work hours, threat avoidant vigilant work and chemical, physical, and psychosocial conditions. We will review the strength of evidence for these outcomes and examine the role of potential confounders in evaluating the research results. We will present an overview of methods to assess health outcomes including medical exams, workplace injury records. Special emphasis will be given on workplace ambulatory blood pressure monitoring as an efficacious, non-invasive method for identifying work-related hypertension.

Obesity, an excessive of body fat, has been a serious public health issue in the United States (US) since 1980. Among US adult aged 20-74 years, the prevalence rate of obesity (defined as Body Mass Index > 30

kg/m²) has increased dramatically from 15% in 1980 to 34.3% in 2005-2006 National Health and Nutrition Examination Data. It is agreed among experts that the recent increase of obesity prevalence rate arises from change in the environment rather than from changes in gene. However, the roles of work stress have never been fully explored as risk factors for obesity in US workers. A theoretical framework for the linkage between work stress and obesity and recent empirical findings from a large US working population data will be presented.

Practicum: Work History Report due; Extra credit assignment due

Readings:

Workplace factors and CVD outcomes. In: Schnall PL, Belkic K, Landsbergis PA, Baker D (eds.) Occupational Medicine: State of the Art Review. The Workplace and Cardiovascular Disease. 2000; 15(1): 49-57. (Read Brisson section on Women, work, and cardiovascular disease.)

Landsbergis PA, Schnall PL, Dietz DK, Warren K, Pickering TG, Schwartz JE. Job strain and health behaviors: Results of a prospective study. American Journal of Health Promotion 1998; 12(4): 237-245.

VI. Contextual factors mediating outcomes (May 5)

We will discuss current models of the complex pathways through which social conditions produce stress and influence behavior and risk of disease which progresses from general macro social conditions down to micro level processes in individual persons. These models describe how social structure (e.g., socioeconomic status or social class, race, gender) shapes the immediate social environment (e.g., working conditions, housing, neighborhood, access to services), which influences lifestyle behaviors (e.g., smoking, diet, exercise), personality and psychological characteristics (e.g., hostility, self efficacy, depression, Type A behavior, individual coping), and physiological risk factors for disease (e.g., blood pressure, cholesterol, overweight). In the context of these models, research findings linking personality/psychological characteristics, social conditions, job conditions and disease states are discussed. In addition, emphasis will be placed on recent research on the job strain model and the influence of job characteristics on behaviors, psychological characteristics and physiological responses to stress. This includes studies on the effects of "passive" (low demand low control) jobs on reducing self efficacy and increasing passive behavior, external locus of control, feelings of depression and learned helplessness; and the effects of "active" (high demand high control) jobs on increasing active learning, internal locus of control, a broader range of coping strategies, and intellectual flexibility.

Practicum: Feedback on Work History Report

Midterm distributed and reviewed in class

Readings:

Johnson JV, Hall EM. Class, work, and health. In: Amick B, Levine S, Tarlov AR, Walsh DC (eds.): Society and Health. New York, Oxford University Press, 1995, pp. 247-271.

Perry-Jenkins, M, Repetti, R, Crouter, AC. Work and family in the 1990's. Journal of Marriage and the Family 2000; 62: 981-998.

Karasek RA, Theorell T. Healthy Work: Stress, productivity and the reconstruction of working life. New York. Basic Books, Inc., 1990, pp. 89-103.

VII. Work stressors and psychological health outcomes; economic costs of workplace psychosocial factors (May 12) – *Speakers Peter Schnall and Isabel Garcia*

A broad research field has developed to assess the role of work in relationship to psychological health or mental illness. Occupational health psychology as a research field has focused, in particular, on the association between work stressors and psychological health outcomes such as burnout, anxiety and depression. We will review the evidence for the contribution of work-related factors, such as job strain, to burnout, anxiety and depression as well as the mediating influences of gender and personality. Additionally, we will examine evolving research on “emotional labor” an aspect of the working conditions of human service work associated with high levels of burnout.

In the second half, costs associated with job stress will be discussed. Stressful working conditions are associated with increased absenteeism, tardiness, and intentions by workers to quit their jobs all of which have a negative effect on the economic soundness of a work organization. The costs of workers' compensation for work related disease may also provide an incentive to reduce workplace exposure to psychosocial stressors.

Midterm Due

Readings:

Ahola, Kirsi et al. Contribution of Burnout to the Association Between Job Strain and Depression: the Health 2000 Study. Journal of Occupational and Environmental Medicine Volume 48, Number 10, October 2006.

Work, Psychosocial Stressors and the Bottom Line. In Schnall PL, Dobson M, Roskam E. Unhealthy Work: Causes, Consequences and Cures. Baywood Publishing, 2009. In Press.

VIII. Secondary intervention: individual programs (May 19)

Stress management programs (secondary intervention) teach workers about the nature and sources of stress, the effects of stress on health, and personal skills to reduce stress. We will also discuss programs that are complementary to these efforts, such as individual stress management and health promotion. Examples will be provided of programs that integrate workplace health promotion and occupational health.

Practicum: Review of Midterm

Readings:

Murphy, LR, Sauter, SL (1996). Work organization interventions: state of knowledge and future directions. Forum, Soz.- Präventivmed. 49 (2004) 79–86

Van Dierendonck, D., Schaufeli, W. B., & Buunk, B. P. (1998). The evaluation of an individual burnout intervention program: The role of inequity and social support. Journal of Applied Psychology, 83, 392-407.

Munz, D. C., Kohler, J. M., & Greenberg, C. I. (2001). Effectiveness of a comprehensive worksite stress management program: Combining organizational and individual interventions. International Journal of Stress Management, 8, 4962.

IX. Programs and policies for regulation of workplace stressors; primary intervention: work organization redesign (May 26)

The first half of this session will review the variety of legal and legislative measures that have been instituted to reduce employee exposure to workplace stressors. These include legislation (and accompanying regulations) and collective bargaining by labor unions and employers, both of which are designed to reduce exposure to workplace chemical, physical, ergonomic and psychosocial hazards. The state of legislation (and regulations) in Europe, the United States and Japan is briefly reviewed. In addition, the use of workers' compensation and collective bargaining as prevention strategies in the United States will be discussed.

The second half of this session will look at how health educators, health psychologists, behavioral specialists and occupational health specialists have become increasingly aware of the workplace as a critical social environment that influences health behaviors. Two primary strategies (primary and secondary interventions, respectively) have been utilized to manage stress at work: organizational change approaches and stress management programs. Organizational change involves the identification of stressful aspects of work (e.g., excessive workload, conflicting expectations) and the design of strategies to reduce or eliminate the identified stressors. In this session primary prevention strategies, aimed at redesigning jobs, work organization and employer policies, will be considered using case studies as examples.

Practicum: None

Readings:

Interventions to reduce job stress and improve work organization and worker health. In Schnall PL, Dobson M, Roskam E. Unhealthy Work: Causes, Consequences and Cures. Baywood Publishing, 2009. In Press.

Kristensen, TG. Workplace intervention studies. In: Schnall PL, Belkic K, Landsbergis PA, Baker D. (eds.) The Workplace and Cardiovascular Disease. Occupational Medicine: State of the Art Reviews. 2000; 15: 293-305.

Landsbergis PA, Cahill J, Schnall PL. The impact of lean production and related new systems of work organization on worker health. Journal of Occupational Health Psychology. 1999; 4: 1-23.

X. Course wrap-up and conclusions (June 2)

This session will allow for a discussion that reviews the major themes of the course. The empirical (epidemiologic), theoretical, and biological evidence presented in this course provides convergent validation that the relationship between workplace stressors and a number of adverse health outcomes is causal. In other words, the empirical findings are consistent with and predicted by the theoretical models, while the linkage between the theoretical models and empirical evidence is demonstrated to be plausible by considering biological mechanisms and experimental research. Based upon these conclusions, new strategies are explored for enhanced prevention and clinical management, work place interventions, and social policy to reduce the impact of disease, psychological distress and unhealthy behaviors that result from stressful working conditions. These strategies acquire an urgent public health dimension, given the magnitude of the epidemic of stress-related diseases and widespread psychological/behavioral effects, and the current deterioration in conditions of working life. Creating a healthy work environment is a high

priority, and would entail the full participation of working people in the decision-making processes surrounding the organization of work.

Final distributed and reviewed in class

Readings:

Conclusion. In Schnall PL, Dobson M, Roskam E. Unhealthy Work: Causes, Consequences and Cures. Baywood Publishing, 2009. In Press.

The Tokyo Declaration on Work Related Stress and Health in Three Postindustrial Settings EU, Japan and USA. *J Tokyo Med Univ* 1998; 56: 760-767.

Gardell B. Worker participation and autonomy: a multilevel approach to democracy at the workplace. In: Johnson JV, Johansson G. (Eds.) *The Psychosocial Work Environment: Work Organization, Democratization and Health*. Essays in Memory of Bertil Gardell. Baywood Publishing Co., Inc., Amityville, 1991, pp. 193-223.

FINAL DUE - JUNE 9