

Dansk Epidemiologisk Selskab og Dansk Selskab for Arbejds- og Miljømedicin
afholder videnskabeligt møde
om

**Composite variables in medical research,
- generally, and with a focus on occupational stress research**

September 20th, 1300 to 1700 h
Bispebjerg University Hospital, auditorium, entrance 50

The meeting is open to all members of Lægevidenskabelige Selskaber

Lunch will be served from 1200 to 1300 h in an adjacent smaller room. Registration for lunch is mandatory, at the latest on September 13th to Hanne Tulinius (htul@regionh.dk).

The meeting language is English.

Organizers: Danish Epidemiological Society (Lau Thygesen, Katrine Strandberg-Larsen), and Danish Society of Occupational and Environmental Medicine (Sigurd Mikkelsen, Johan Hviid Andersen, Jens Peter Bonde).

Moderator: Lau Thygesen

Background and motivation for the meeting

The combined effect of two factors on an outcome is usually examined in regression analysis by models that include both factors as covariates. If an interaction between the two factors is suspected the model may further include an interaction term defined as the product of the two factors. This model is informative with respect to the independent effects of each of the two factors and their interaction.

The two dominant stress theories, Karasek's job strain theory and Siegrist's effort-reward-imbalance (ERI) theory, are usually examined by a composite variable. Job strain is usually measured by the product of demands and control after dichotomizing the continuous variables by a median split into binary variables. ERI is usually measured by the ratio between efforts and rewards, and the effects of this ratio may be examined as a continuous variable and by categories, including dichotomization, often at unity.

The difference between the two ways of examining the combined effect of two factors is if the main effects of the two factors are included in the regression model or not.

Proponents of the standard regression model claim that an effect of a composite variable without adjustment for the main effects can lead to ambiguous or misleading inferences. Proponents of the



composite variable model with no adjustment for main effects claim that this analysis may be more meaningful in analyses of the interplay between two variables.

The two analytic methods may lead to very different results. There is a need, therefore, to discuss and settle, if possible, which of the two methods is most appropriate from a scientific point of view.

This discussion has further perspectives since composite variables are frequently used in medical research. Examples are body mass index, waist-hip ratio, Tiffeneau Index (forced expiratory volume in 1 second/forced expiratory volume), allostatic load index, socioeconomic status, diagnoses, scales and concentrations of chemicals..

Programme:

- 1300 –1330 Sigurd Mikkelsen: Introduction and background for the meeting
- 1330 –1400 Mika Kivimäki: IPD-Work main models for the analysis of job strain and effort-reward-imbalance effects on an outcome
- 1400 –1430 Michael Ingre: Job strain and coronary heart disease
- 1430 –1500 Break, coffee/tea and cake
- 1500 –1530 David Coggon: Combined effects of two or more variables, epidemiological considerations
- 1530 –1600 Niels Keiding: Combined effects of two or more variables, statistical considerations
- 1600 –1700 Discussion (panel of speakers, discussion with the audience)

Speakers and moderator

Sigurd Mikkelsen, MD, DrMedSci, consultant emeritus, Department of Occupational and Environmental Medicine, Bispebjerg University Hospital, Copenhagen, Denmark.

Mika Kivimäki, MD, PhD, professor, Director, Whitehall II Study, Dept. of Epidemiology, University College London, England.

Michael Ingre: Psychologist, PhD, 1) Department of Clinical Neuroscience, Karolinska Institutet, Sweden, 2) Institute for Globally Distributed Open Research and Education, Sweden

David Coggon, DM, FMedSci, professor emeritus, MRC Lifecourse Epidemiology Unit, University of Southampton, England.

Niels Keiding, professor emeritus, Section of Biostatistics, Department of Public Health, Faculty of Health Sciences, Copenhagen University, Denmark.

Lau C Thygesen, MSc Public Health, PhD, associate professor, National Institute of Public Health, University of Southern Denmark, Denmark.

