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## **“Study of job stress: norms, determinants, and prospective study of its relation to sickness absence and to the incidence of coronary heart disease”.**

Prof Dr G. DE BACKER<sup>1</sup> (coordinator),  
Prof Dr P. COETSIER<sup>2</sup>, Prof Dr. P. VLERICK<sup>2</sup>  
Prof Dr W. DE CORTE<sup>3</sup>  
Prof Dr G. KARNAS<sup>4</sup>  
Prof Dr. M. KORNITZER<sup>5</sup>

<sup>1</sup> Department of Public Health

<sup>2</sup> Department of Personnel, Management, Work and Organisational Psychology

<sup>3</sup> Department of Data Analysis  
University of Gent –UG-

<sup>4</sup> Laboratory of Industrial and Commercial Psychology

<sup>5</sup> Laboratory of Epidemiology and Social Medicine  
Free University of Brussels - ULB

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### **Introduction**

The idea that job stress plays an important role as a cause of sickness absence and heart disease is popular in the public but controversial among scientists. This is due to difficulties in conceptualising stress and with problems with standardised measurement of stress in individuals and groups. There are also uncertainties as to the mechanisms whereby person- and situation-related moderators influence the relation between objective stressors at work and the perception of job stress. The relation between their perception and short- and long-term health problems is also insufficiently understood.

The objectives of the BELSTRESS project can be summarised as follows:

- to describe the distribution of perceived job stress scores in men and women aged 35-59 years, working in a variety of jobs;
- to analyse the relation between perceived job stress and the incidence of fatal and non-fatal acute myocardial infarction;
- to analyse the relation between perceived job stress and the incidence of sickness absence;
- to study perceived job stress in a conceptual model including organisational antecedents, objective job stressors, and person- and situation-specific moderators.

### **Materials and methods**

The BELSTRESS study was carried out in 24 Belgian organisations; a total of 21,419 persons aged 35-59 years participated. In a sub-sample of organisations 99 functions were studied from a work and organisational psychology perspective.

The epidemiological part is based on a questionnaire and a bioclinical examination; validated and standardised instruments were used. Perception of job stress was assessed with the job content questionnaire (JCQ) developed by Robert KARASEK. Participants were monitored for 1 year as regards sickness absences; follow-up for cardiovascular diseases is still ongoing.

In the work and organisational psychology part, a structured interview with subject matter experts was used.

## Results and discussion

### I. The epidemiological part

#### *Distributions and determinants of job stress scores*

A detailed description of the distributions of the main scores derived from the JCO was possible with the large dataset collected in 24 organisations in different industrial sectors. Job demand, decision latitude, social support at work, and job strain were analysed by age, gender, job title, industrial sector, and mother tongue. Furthermore, we examined associations with several psycho-social and behavioural factors and with the classical coronary risk factors.

Perception of job stress was different between job titles in both genders, independently of age and educational level. In the large number of men, it was possible to go into more detail and to examine the results by industrial sector. It was shown that independently of age and educational level and for a given job title, job stress scores differed between industrial sectors.

The JCO scores differed significantly in relation to a variety of psycho-social factors. The association with educational level is well known, which is why adjustment for educational level was done in the majority of analyses. Other interesting findings concern the strong associations between JCO scores and depression, health complaints, an exhaustion scale, and the intake of psychotropic drugs. All these associations go in the same direction: a higher perception of workload, less decision latitude, and a high prevalence of job strain when the psychological factors are worse.

Associations with behavioural factors such as alcohol consumption and physical activity are less pronounced, with the exception of a greater decision latitude in the physically active participants. Some associations were observed with the classical coronary risk factors; to achieve internal consistency of these findings requires more detailed analyses.

#### *Association between job stress and sickness absence*

The results regarding the association between job stress and sickness absence are based on a one-year follow-up of 12,708 participants; the analysis on all participants will not be possible until later in the year once all organisations have been followed for more than 1 year. The preliminary results, however, are already of great interest and confirm the hypothesis that perceived job stress is associated with the incidence of sickness absence.

These associations have already been adjusted for possible effects of other determinants of sickness absence such as age, educational level, smoking, marital status, family load, alcohol consumption, arterial hypertension, and overweight. The JCO scores correlated with all constructs of sickness absence, independently of all other variables; differences in sickness absence were substantial and highly significant between the JCO quartile scores. Low decision latitude and low social support were particularly associated with sickness absence.

#### *Association between job stress and coronary heart disease*

The association between the perception of job stress and the incidence of CHD has not yet been analysed because we need a longer follow-up period in order to observe sufficient incident cases for the analysis. The work is ongoing and will not be finished for another 1 to 2 years.

With the cross-sectional data collected at screening we are able to conduct a case-control study.

The results of this case-control study do not show differences in the JCQ scores between prevalent cases of CHD and controls. However, coronary patients who return to work are a selected sub-sample which may not represent the coronary population as regards job stress perception. Still, the observed results should be interpreted in the framework of the international literature on the subject, summarised in the introduction of the report.

## II. The work and organisational psychology part

In the first part of the study, descriptive and bivariate analyses were used to gain better understanding of job stress and its antecedents, and to identify short-term reactions to job stress. In the descriptive statistics we see that employees do experience job stress; 42.3% of the respondents say they are quite stressed or very stressed during their work. Even when we measure perception of job stress with the Karasek questionnaire, we find 24.3% of the respondents in the high-strain group.

To gain clear understanding of the antecedents of job stress we use the conceptual model of Kahn and Byosière. Organisational antecedents show that high stress is measured in organisations where there is (a) an atmosphere of discordance between the employer and the union, (b) a high degree of formalisation, and (c) a rather bad financial situation. As a significant job stressor we found that people who always work during daytime are more stressed than people in any other work system. The degree of autonomy within the function gives us a remarkable result: a higher degree of autonomy does not necessarily mean that employees experience less stress. Apart from demographic variables such as personal antecedents, coping was studied. It seems that people who avoid problems experience more job stress than people with any other type of coping behaviour. For the situation-related variables it is obvious that people with a higher degree of social support from colleagues or bosses perceive less job stress.

According to our study, when employees perceive a lot of job stress the short-term stress reactions are (a) a high intention to turnover, (b) more health complaints, and (c) a greater tendency to depression.

In a second part of the study the data of the BELSTRESS study are computed by multilevel analysis. In this part of the study we want to gain better understanding of (a) organisational, (b) function-related, (c) person-related, and (d) situation-related antecedents important to understanding and adjusting job stress, short-term reactions, and long-term consequences. Based on the model of Kahn and Byosière a testable structural model has been constructed. In a second phase, structural equation modelling (SEM) was used on the structural model and four selected function groups of the BELSTRESS database. The results show that job stress is especially associated with a too-high degree of psychological job demands. In reality, psychological job demands are tempered insufficiently by social support from colleagues and bosses. There are also strong indications for stress as an explanation for depressed feelings and health complaints. If we take a look at the total effect instead of only the direct effect of stress, we see that it becomes even more important. On the other hand, job stress is not the main cause of absenteeism or intention to turnover.

The aim of the third and last part of the study is to construct an objective criterion for job stress and make it operational so that the criterion can be used as an indicator for comparing functions for job stress. This especially means detecting objective function characteristics that are important to understanding stressors, stress, and strain as perceived by the employee. Because this is rather a pilot study and because of the restrictions related to multilevel SEM, we limit the aim of this

study to developing and testing a structural model concerning the association between the dimensions of the function measured by the SME's (subject matter experts) and a selection of person-related stressors and strains measured by the BELSTRESS questionnaire. The result is much better than the results we are used to seeing; we found determination percentages of 60 and more. Apart from this result, we can identify which combination of functional characteristics leads to perception of job stress. The role of time pressure is particularly important in this regard; after adjustment for individual differences, too much enforced speed elicits stress. Pace and time pressure are also highly associated with emotional and health complaints. We think this result justifies priority to this problem in a stress reduction policy.