

ABSTRACT

Identification of factors determining the level of work ability of men performing physical and mental work as a function of age

Introduction

Work ability, described by the WAI (Work Ability Index), is defined as the result of an interaction between capabilities and skills of an employee, their health condition, and job requirements, as to the amount of physical and mental effort. Learning about risk factors that may affect the premature decline in work ability is crucial in the context of remaining at work until the retirement age, and beyond. Investigating these relationships seems to be particularly important in the group of men who, despite the fact that they assess their health condition better than women, live about eight years shorter than females, more often suffer from cardiovascular and cancer diseases, are less educated, more often work in conditions of exposure to harmful factors, suffer from accidents at work, and care less about their health and lifestyle (GUS, 2020; GUS, 2021; Bożewicz, 2019).

Objective

The main aim of the PhD thesis was to assess occupational and non-occupational factors determining a high level of work ability, as determined by the WAI index, as well as to identify factors that reduce work ability among men in various age groups performing physical and mental work.

Material and methods

The basis of the doctoral dissertation constituted a cross-sectional study conducted by the Paper And Pencil Interview, that is a face-to-face interview by using a paper questionnaire in a group of 2,000 men.

The selection of a study group was quota-targeted. The group consisted of men in 5 age ranges (20-25 year-olds, 30-35 ones, 40-45 ones, 50-55 ones and 60+ ones) performing physical and mental work.

The survey book included the following questionnaires: Work Ability Index (WAI), Tuomi et al. (1998) translated by Pokorski (1998); a questionnaire assessing selected elements of lifestyle (developed for the study); International Physical Activity Questionnaire (IPAQ, long version) adapted to Polish conditions by the team of Biernat (2007); Nordic Musculoskeletal Questionnaire (NMQ), Kuorinka et al. (1987); and Your Job questionnaire, which is a translation of the American Job Content Questionnaire, Karaska (1985) in a Polish adaptation by Żolnierczyk-Zreda and Bedyńska (2014).

A multivariate logistic regression model was used to assess the association of the studied factors with work ability. The WAI work ability index was divided into two levels, namely: low (0) related to poor and moderate work ability rating and high (1) related to good and excellent work ability.

Results of the study

The mean age of the male subjects was 42.1 years (SD=14.1). The study included a group of men performing mental (N=1000) and physical work (N=1000) aged 20 - 65. Most of the subjects had secondary (53%) and higher education (26.3%). The overall average working experience in the studied sample was 19.5 (SD=13.2) and their averaged working experience in current jobs was 8 years and 3 months (SD=7.7). The majority of study participants worked in the following sectors: construction (33.8%), trade and services (25.3%), public administration (8.6%), banking and finance (7.9%) and IT industry (7.1%). Most of the assessed men reported an excellent (42.7%) and good (37.6%) work ability. A moderate work ability was noted in a group of 15.7% employees, whereas 1.4% of the participants reported poor work ability.

Lower values of the work ability index were statistically significantly more often observed among blue-collar workers, in older age groups, among widowed men, with a long total work experience (>30 years), with a lower level of education, employed in a non-standard work system as well as overweight and obese.

A significant proportion of the subjects were overweight and obese (50.2%). More than half of the men consumed alcohol, 32% smoked cigarettes, and almost half of the subjects were characterized by high overall physical activity according to the IPAQ. The diet analysis also identifies abnormalities in insufficient daily intake of vegetables and fruits, as well as liquids. In addition, almost half of the respondents complained about the occurrence of musculoskeletal disorders during the last year, and more than 39% over the last week. The subjects most often

indicated the occurrence of complaints during the last year appearing in: a lumbosacral section (16.5%), a cervical one (14%) and a thoracic spine (13.1%).

The results of multivariate logistic regression analysis indicate that the chance of a high level of work ability of male subjects was reduced by such factors as: a low self-esteem of health and nutrition, occurrence of pain in the lumbosacral region, cervical one and a thoracic spine, a high level of physical effort at work, job insecurity, working in big teams, overweight and obesity and lack of work control.

The odds of obtaining a high level of work ability for men doing mental work were statistically significantly increased by normal body weight, a large number (more than 4) of meals consumed per day and social support. However, the presence of pain in the elbow joints, thoracic and lumbosacral spine, as well as low self-assessment of nutrition decreased the chance.

In contrast, among physical workers, steady employment and a high level of control over work increased the chance of obtaining a high level of work ability. On the other hand, low self-assessment of health, the presence of lumbosacral and cervical spine pain, low self-assessment of nutrition, and job insecurity lowered the chance of a high level of work ability in this group of workers.

Conclusions

The majority of work ability determinants identified in this study are influential, opening up the possibility of interventions. Interventions aimed at maintaining and strengthening work capacity should take into account the needs and problems of men as they change with age and a type of work they do.

A special group of recipients of programs aimed at maintaining and strengthening work capacity should be men in **the oldest age groups (>50 year-olds)**. Although their work ability was maintained at a good level, they were statistically significantly worse at assessing their current work ability compared to their peak form, were less likely to feel hopeful about the future, seemed less satisfied with a regular performance of their daily activities, and were less likely to be convinced that they would perform their current occupation in the next two years. In particular, ~~note~~ the need to initiate activities among men aged 50-55 aimed at: 1/prevention of musculoskeletal disorders (especially of the cervical and lumbosacral spine); 2/reduction of physical exertion at work; 3/ promotion of healthy nutrition; and 4/increase of the level of control over performed work. On the other hand, in the group of the oldest workers (60+), in order to increase the chance of high work ability ratings, it is advisable to implement health promotion

programs, especially preventive intervention programs aimed at preventing back pain and reducing job insecurity.

When formulating the content of programs to promote health and well-being in a workplace, it is advisable to pay attention also to needs of men who perform **physical work**. The analysis of research results indicates a number of disturbing data concerning precisely this group of workers. They rated statistically significantly worse their work ability than mental workers compared to the best one in their lives, their current work ability in relation to physical and mental exertion and their own prognosis of their ability to perform in the next 2 years. Noteworthy, they were more likely than mental workers to be overweight, consume alcohol, smoke cigarettes and smoke more cigarettes per day, and were more likely to indicate the presence of musculoskeletal disorders. Their jobs were also more stressful, due to lower levels of control, support from co-workers and supervisors and a higher level of job insecurity required more physical exertion, exposure to hazardous and toxic agents as well as had higher overall physical exposures. Interventions to maintain and strengthen the work ability of men in manual labor should target health promotion and healthy lifestyles paying special attention to health education and mental health promotion, especially in the context of reducing the impact of such occupational stressors as low levels of control and job insecurity.

Complex interventions to maintain and strengthen men's work capacity should be aimed at conducting programs in companies to support employees in various areas, the most important of which seem to be promotion and education of physical and mental health and healthy lifestyles, but not forgetting about the provision of appropriate working conditions. The findings suggest the need for further development and focus on a topic of men's health promotion, in particular:

- **health promotion** by encouraging regular preventive examinations and prevention of musculoskeletal disorders, especially back pain,
- **promotion of healthy lifestyles** by encouraging healthy eating and reducing excess body weight,
- **promotion of mental health** through activities to support employees with education on stress management techniques and effective stress management in the workplace.