

Burnout as a predictor of all-cause mortality among industrial employees: A 10-year prospective register-linkage study[☆]

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Abstract

Objective: Burnout, a psychological consequence of prolonged work stress, has been shown to coexist with physical and mental disorders. The aim of this study was to investigate whether burnout is related to all-cause mortality among employees. **Methods:** In 1996, of 15,466 Finnish forest industry employees, 9705 participated in the ‘Still Working’ study and 8371 were subsequently identified from the National Population Register. Those who had been treated in a hospital for the most common causes of death prior to the assessment of burnout were excluded on the basis of the Hospital Discharge Register, resulting in a final study population of 7396 people. Burnout was measured using the Maslach Burnout Inventory–General Survey. Dates of death from 1996 to 2006 were extracted from the National Mortality Register. Mortality was predicted with Cox hazard regression models, controlling for baseline sociodemographic factors and register-based health status according to entitled medical reimbursement and prescribed medication for mental health problems, cardiac risk factors, and pain problems.

Results: During the 10-year 10-month follow-up, a total of 199 employees had died. The risk of mortality per one-unit increase in burnout was 35% higher (95% CI 1.07–1.71) for total score and 26% higher (0.99–1.60) for exhaustion, 29% higher for cynicism (1.03–1.62), and 22% higher for diminished professional efficacy (0.96–1.55) in participants who had been under 45 at baseline. After adjustments, only the associations regarding burnout and exhaustion were statistically significant. Burnout was not related to mortality among the older employees. **Conclusion:** Burnout, especially work-related exhaustion, may be a risk for overall survival.

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Introduction

Extensive overwork is acknowledged as a serious health risk [1]. In Japan, the phenomenon of *Karoshi*—death from overwork—has recently been recognized as a social concern [2]. Also, other psychosocial work conditions, such as low job control [3,4], high job strain, and effort–reward imbalance [5], and major downsizing in the organization

[6] have been found to contribute to the risk of early death. Furthermore, high experienced justice at work has been shown to buffer against premature death [7].

Burnout is a psychological reaction to chronic work stress [8,9] with the core content of gradual depletion of employees’ intrinsic energetic resources over time [10–12]. The most widely used conceptualization (e.g., Ref. [13]) views burnout as consisting of three major components: exhaustion, cynicism, and diminished professional efficacy [14,15]. The estimated prevalence of severe burnout has ranged from 3% to 7% in representative working populations [13,16,17]. Several work characteristics, such as high workload, role conflict and ambiguity, low predictability, lack of participation and support, and experienced unfairness, have also been shown to predict burnout [18–20].

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In some European countries, burnout has entitled financial compensation and the use of rehabilitation services for employees. In Sweden, for example, burnout has been a legitimate diagnosis for medical certificates [17,21], and in the Netherlands, burnout has been considered an occupational disease justifying work disability benefits [22,23]. In Finland, burnout does not justify compensation, but it has been shown to independently associate with physician-diagnosed sickness absences [24] and to predict disability pensions [25,26]. Burnout-related absences tend to last for relatively long periods [17], the excess risk being approximately 50–65 working days [24]. However, to our knowledge, there are no prospective studies linking burnout to overall survival.

Burnout has been shown to often coexist with depressive, anxiety, and alcohol use disorders [16,27] and musculoskeletal disorders and cardiovascular diseases [28]. In addition, in a 4-year prospective study of initially healthy men, burnout was associated with a twofold risk of developing a myocardial infarction [29]. Burnout has also been found to predict diabetes [30], the common cold [31], and sick leaves due to musculoskeletal disorders and diseases of the respiratory system [32]. Furthermore, burnout has been found to predict depressive symptoms [33], new cases of insomnia [34], and sickness absences due to mental and behavioral disorders [32].

The process between stress and health problems can be direct (i.e., stress predisposing to illness or accelerating the disease process in its subclinical phase), indirect (i.e., stress increasing unfavorable health behavior), or even reversed (i.e., coping with illnesses at work further increasing stress) [35]. As burnout reflects past accumulated exposure to a variety of stressful conditions at work [9], it may be a phase in the process between adverse psychosocial factors at work and ill health. However, it is equally possible that the early phases of illnesses reduce the possibilities to reach one's goals at work, eventually leading to burnout [26,33,36,37]. For example, in a prospective study among Finnish dentists, a reciprocal relationship between burnout and depression was established. However, the relationship between job strain and depression was totally mediated by burnout, while the relationship between job strain and burnout was only partially mediated by depression [33]. The mechanisms linking chronic stress and strain with mortality [38,39] are relevant in explaining the biological plausibility of the work stress process.

In a long-term cohort study, the association between burnout and diseases may differ between workers of separate age groups. Older workers are more likely to leave the work force or retire during the follow-up period. Therefore, those who continue working until the official retirement age may be characterized by especially high resiliency and effective health-enhancing coping strategies. Supporting this line of reasoning, recent longitudinal evidence showed that the association between chronic work-related stress and an increased risk of cardiovascular

disease was emphasized in the group of workers less than 50 years of age [40]. Since burnout develops as a consequence of prolonged work stress [13], it is possible also that the association between burnout and mortality might differ according to the age of the workers.

The aim of the present study was to investigate whether burnout predicts all-cause mortality among forest industry employees. We took the baseline health status of the participants into account by excluding those with major health problems and by adjusting for minor health problems. Following the above rationale, we examined age group as a potential moderator of the relationship between burnout and mortality.

Methods

Data collection

This study is a part of the ongoing 'Still Working' cohort study examining work-related antecedents of health, morbidity, and mortality in a multinational private sector forest industry corporation [41,42]. The researchers gave each employee in the corporation an identification code, which was marked in the questionnaire. The link between this identification code and the national personal identification number given to all Finns at birth was known only to the researchers and used later to merge the questionnaire data collected in 1996 to data from several national Finnish registers till the end of 2006. During spring 1996, the questionnaires which at that point did not contain any personal information were sent to the work units, distributed to employees by their supervisors, and, once completed, mailed directly to the Finnish Institute of Occupational Health. Participation was voluntary, and confidentiality was assured to all employees. Approval of the Ethics Committee of the Finnish Institute of Occupational Health was obtained for the study.

Participants

Of the eligible Finnish employees aged 16–65 years ($n=15,466$) who returned the questionnaire ($n=9705$, response rate 63%), 8371 could later be identified from the database of the National Population Register Centre containing the personal information. Of this base population, the 542 people who before baseline, according to the Finnish Hospital Discharge Register, had already been treated as an in-patient for the most common causes of death in Finland, i.e., alcohol problems, heart disease, cancer, and suicide attempt [43], were excluded. Furthermore, 433 persons were excluded due to missing values in the relevant items in the questionnaire leaving 7396 employees in the final study population. Women (24% vs. 21%, $P<.001$), nonmanual workers (38% vs. 19%, $P<.001$), and married participants (65% vs. 60%, $P<.001$) were overrepresented in the final

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