

Common infections and the role of burnout in a Dutch working population

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Abstract

Objective: To determine if burnout is a risk factor for common cold, flu-like illness and gastroenteritis. **Methods:** We conducted a prospective cohort study among 12,140 employees at baseline, using three consecutive self-administered questionnaires. The Maslach Burnout Inventory—General Survey (MBI-GS) was used to define employees with burnout complaints (Level 1) and clinical burnout (Level 2). The cross-sectional relationship between burnout and the occurrence of common infections was assessed at baseline, using logistic regression analysis. Survival analysis with Cox regression was performed to study the longitudinal relationship between burnout and the subscales of the MBI-GS as risk factors for common infections. **Results:** For both levels of burnout, an increased incidence of common infections was found at baseline. The largest effect was found for the relationship between

burnout and gastroenteritis (OR: 1.86, CI: 1.57–2.21 for Level 1 and OR: 3.59, CI: 2.09–6.17 for Level 2). The longitudinal analyses showed comparable results, although less pronounced. The largest effect was again found for gastroenteritis (RR: 1.55, CI: 1.28–1.86 for Level 1 and RR: 2.09, CI: 1.09–3.98 for Level 2). For flu-like illness and common cold, we found smaller but significant effects at Level 1, but not at Level 2. The subscale “Exhaustion” was found to be the strongest predictor for infections at both levels of burnout. **Conclusions:** This study provides evidence for burnout as a risk factor for common infections in a large heterogeneous population. Taking into account that burnout or its subscales are not primary etiological agents for these common infections, the observed effects are large.

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Introduction

Burnout is a work-related syndrome, which is characterized by emotional exhaustion, depersonalisation and diminished personal accomplishment [1,2]. Emotional exhaustion is the key aspect of the syndrome and refers to feelings of being over-extended and drained from one's emotional resources. Depersonalisation refers to negative, cynical, detached and impersonal attitudes and feelings towards other people. Reduced personal accomplishment refers to a decline in one's feelings of competence and a tendency to

evaluate oneself negatively, particularly regarding one's work with other people [3]. Burnout has traditionally been associated with jobs in the human service sector involving intensive contact with people in need of aid. However, more recently, burnout is also considered a major issue in occupational health [1] in other sectors. Burnout as encountered outside human services comprises three elements: exhaustion (Ex), cynicism (Cy) and professional efficacy (PE). The Maslach Burnout Inventory—General Survey (MBI-GS) has been specifically developed to assess burnout outside human services. The Maslach Burnout Inventory (MBI) is universally accepted as the standard to assess burnout. Schaufeli and Enzmann [4] calculated that the MBI is used in over 90% of all published articles and dissertations. Several studies have confirmed the hypothesized three-factor study of the MBI-GS [3,5,6]. Moreover, this factor

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structure appears to be invariant across occupational groups [3,5,6] and cross-national [3].

Several job characteristics have been suggested as risk factors for burnout, as well in human services as outside this sector. There is evidence that factors like job demands, and a lack of social support, feedback and autonomy are risk factors for burnout [7]. But also demographic characteristics like, age, gender, marital status and education have been associated with the risk for burnout. Burnout has important dysfunctional ramifications, implying substantial costs for both organizations and individuals because of, for example, increases in turnover, absenteeism, reduced productivity and consultation of human services [8–10]. Freudenberger [11] found that several mental complaints based on clinical observations, like exhaustion, headache, insomnia, irritability, suspicion, negativism, cynicism, frustration and disappointment were more prevalent among burnout patients.

There have been very few studies dealing with burnout as a precursor of illness. Burnout may have a negative effect on the immune system and consequently increase the incidence of infections. In a previous study [12], using the same cohort data as the present one, we found that fatigue, measured with the Checklist Individual Strength [13], was a risk factor for common infections like common cold, flu-like illness and gastroenteritis [12]. Although the origin of fatigue can be work-related and nonwork-related, it can also have a mental, physical and biological origin. In contrast, burnout is a work-related syndrome and caused by stressful work conditions. Until now, there are only a few studies that reported associations between burnout and aspects of the immune system. Hendrix et al. [14] found a small but statistically significant correlation between emotional exhaustion and the prevalence of common cold and flu in a stress-based health promotion model. Also, Freudenberger [11] found a relationship between burnout and increased susceptibility for common cold. In a study by Bargellini et al. [15], 71 physicians of all grades were recruited among different departments to a cross-sectional survey. It was found that physicians who reported high levels of personal accomplishment showed significantly higher numbers of total lymphocytes, T cells (CD3), T helper cells (CD4) and T suppressor cells (CD8) than those who scored low levels. Nakamura et al. [16] studied the three components of the MBI in relation to natural killer cell activity (NKCA) and cell subsets in 42 male workers. It was found that workers with a high depersonalisation score showed a lower NKCA and a lower proportionality of CD57⁺CD16⁺ cells (natural killer cell subset) to total lymphocytes. Persistent low NK cell function has been shown to be associated with greater risk for health impairments, including infectious diseases and cancer [16]. In a study of Kushnir and Melamed [17], wartime and pre-war (baseline levels) burnout and related symptomatology were compared among 162 Israeli civilians who carried on with the employment duties throughout the Gulf war. It was found that pre-war burnout was positively associated with wartime upper respiratory tract infections.

The prospective Maastricht Cohort Study was used as a framework to study the effect of two levels of burnout (clinical burnout and burnout complaints) on the susceptibility to common infections (common cold, flu-like illness and gastroenteritis) in a large heterogeneous working population. The study was performed in a longitudinal setting. Because other studies indicated that specific scales of the MBI were related to impairment of the immune system, we also studied the effects of the individual subscales of the MBI-GS (exhaustion, cynicism and professional efficacy).

Methods

The questionnaire

The participants of the Maastricht Cohort Study received nine questionnaires in total, at four monthly intervals, and a total observation period of 3 years (1998–2001). Once a year, the participants received a questionnaire with both exposures (work-related factors, individual characteristics, domestic and social factors) and outcomes (fatigue, need for recovery, burnout, etc.) measured on an individual level using self-administered questionnaires. The participants received a short questionnaire twice a year, measuring mainly outcomes. Burnout was only measured once a year in the extensive questionnaires. The current study is based on the data collected in the first year of study (T0, T1 and T2).

The study population

At baseline the Maastricht Cohort Study surveyed a large heterogeneous population of employees in 687 different professions [18] working in 45 different companies and organizations and followed this group for 3 years [19,20]. A total of 12,161 employees completed the baseline questionnaire. Written consent was obtained from all participants. The overall response was 45%. Twenty-one questionnaires were discarded because of technical reasons [21], resulting in a study population at baseline of 12,140 employees. The average age at baseline was 40.97 years (\pm S.D. 8.93); 26.9% of the participants were women and 73.1% were men.

Burnout

Burnout was measured with a Dutch translation of the MBI-GS [22]. The MBI was originally developed to determine burnout in human service providers. Recently, the MBI-GS was developed, a measure of burnout that can also be used in other occupations [23]. This MBI-GS has three subscales that parallel the MBI: exhaustion (Ex), cynicism (Cy) and professional efficacy (PE). The exhaustion items are generic, without the MBI's emphasis on emotions and without direct reference to service recipients. The items

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