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The impact of depression and diabetes mellitus on older workers' functioning

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ABSTRACT

Objective: Using the International Classification of Functioning, Disability and Health as a framework, this study investigates the impact of depression and diabetes mellitus on older workers' functioning (problems with concentration, physical functioning, need for recovery and work and social participation restrictions). The study focuses on how these chronic conditions, in their interaction with the work context, affect older workers' functioning, which may be an important precursor of early retirement.
Methods: Older workers (≥45 years) with depression ($n = 127$) or diabetes mellitus ($n = 107$) enrolled in the prospective Maastricht Cohort Study (MCS) were followed between October 2008 and October 2012. Linear, logistic and Cox regression analyses were performed to investigate the effect of these health conditions on workers' functioning compared to a reference group of older workers without a chronic condition ($n = 1612$). The interaction with participants' working conditions (psychological job demands, decision latitude and strenuous work) was also analysed.
Results: Compared to the reference group, depression and diabetes mellitus were (over time) positively related with need for recovery caseness and restrictions in social participation but not with restrictions in work participation. Depression was positively related with concentration problems and need for recovery, whereas diabetes mellitus was negatively related with physical functioning. Finally, the relationship between functioning and depression and diabetes mellitus depends on working conditions.
Conclusion: Older workers with depression or diabetes mellitus are vulnerable to losses in specific domains of functioning. The impact on functioning varies across working conditions, providing insight for disease-tailored preventive measures.

1. Introduction

Demographic trends including low birth rates and the ageing of the population constrain the available labour supply and the financial sustainability of pension systems worldwide [1]. Throughout the European Union, the labour participation of older workers has become a common concern [2]. In line with the World Health Organization (WHO) [3], we define older workers as aged 45 or older because of the anticipated decline in some physical capacities and their implications for early retirement from age 45 onwards [4,5].

Impaired health is known to cause sickness absenteeism [6], which among older workers is a major risk factor for early labour market exit (e.g., disability pension) [7]. For those workers who remain active, impaired health may push them into early retirement. One reason is that health problems often imply constraints on an individual's ability to function and perform effectively or maintain a stable lifestyle while employed [1]. This aligns with the conservation of resources theory [8]: health is a valuable resource, and when individuals are no longer able to function effectively, they may withdraw from work to protect remaining resources. This reasoning applies to older workers in particular because most lifespan theories assume increasing constraints on both internal (e.g., physical health) and external resources (e.g., access to training) as people age [9,10]. In addition, impaired health may also change the prioritisation of activities other than employment that a person allocates time and energy to (e.g., spending more time with family and friends, leisure activities), which in turn may affect late career decisions including early retirement [11].

To date, little is known about how impaired health specifically influences career decisions at an older age because impaired health is most often operationalised in general terms (an overall health assessment or the presence of any chronic condition) [12]. However, health impairment might not be associated with early labour market exit unless the specific health condition implies limitations for an individual's functioning [13]. In other words, having a health condition may not coincide with limitations in functioning and the absence of a health condition at an older age does not necessarily suggest that an individual does

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not have any limitations in functioning. In this study, we extend prior research by focussing on the impact of two chronic conditions on functioning in older age.

Two major chronic conditions of increasing importance for the ageing workforce are diabetes mellitus and depression [14]. Worldwide, about 382 million people have diabetes mellitus and its prevalence is expected to increase in the next decade [15] in the working-age population as well [16]. Depression is also increasing and was recently identified as the primary cause of disability [17]. Both diabetes mellitus and depression have been found to hinder work participation across all age groups, as indicated by higher levels of work disability, sickness absence, lower employment rates and fewer working hours [18–25], and these chronic conditions substantially add to health-related costs in the workplace [14]. Although depression and diabetes mellitus can be disabling conditions to which older workers may be more vulnerable than younger workers [26,27], their effects on older workers' functioning in particular has not been extensively studied. The few existing (longitudinal) studies have found that among older workers, diabetes mellitus or depression are associated with lower levels of work participation (e.g., early retirement, sickness absence) [12,28–33], at a level that is relatively higher than that of younger workers with these conditions [20,34]. Although these studies are highly valuable, the pathways linking the health condition to early exit from work (via functioning) and the role of the work environment remain unaddressed empirically [29,30]. Only one recent longitudinal study has linked diabetes mellitus with diminished productivity in older workers [35]. In the present study, we are concerned with the relationship between older workers' functioning and depression and diabetes mellitus. Depression and diabetes mellitus are the target of this study because of their relevance for an ageing workforce, and because studying these conditions may enhance our understanding of the ways in which different types of chronic conditions, in their interaction with the work context, are related to functioning.

To analyse these issues, we used the International Classification of Functioning, Disability and Health (ICF) as a framework. The ICF distinguishes diseases or health conditions from limitations in functioning. Within the ICF framework functioning is conceived of as a universal human experience that can be conceptualised and classified from different perspectives: the perspective of the body (i.e., body functions and structures) and the perspective of the individual and society (i.e., personal activities and participation) [36]. The ICF anticipates possible relationships between a health condition and functioning and how these eventually guide older workers' career decisions. According to the ICF, diabetes mellitus and depression may affect such decisions because older workers might have decreases in physical or mental functions, limitations in (work-related) activities and restrictions in social and work participation. Regarding the health conditions under study we measured concentration, a core element of neuropsychological functioning [37], which captures an individual's functioning from the perspective of the body. Concentration is a key aspect of one's ability to execute control and is highly relevant in the work environment. Concentration problems are likely to lead to working memory deficits and/or difficulties in learning new information, switching or maintaining mental states and performing multiple tasks simultaneously without error, all of which lead to diminished task performance [38,39]. To assess limitations in activities, we focused on both daily and work-related functioning: the degree to which older workers experienced limitations in performing daily physical tasks or activities, and the degree to which individuals needed to recuperate from work-induced fatigue, primarily experienced after a workday (need for recovery) [40]. Last, the study assessed whether older workers experienced restrictions in work and social participation. The ICF takes into account that relationships between health conditions and functioning will also depend on both contextual (e.g., working conditions) and personal characteristics (e.g., gender). We focus in line with theories such as the job demand–control (JD–C) model [41] and the job demands–resources (JD–R) model [42] on the role of both unfavourable working conditions (e.g., psychological job demands and physical job demands) that imply certain physiological and/or psychological costs and favourable working conditions (e.g., decision latitude) that are energizing, functional or help to buffer the effects of unfavourable working conditions and their associated physiological and/or psychological costs. In accordance with the conservation of resources theory [8], we can expect that individuals with a chronic condition are more vulnerable to losses in personal resources and functioning than workers without a chronic condition. For workers with chronic conditions, unfavourable working conditions may be more aggravating, whereas favourable working conditions may help ameliorate their functioning.

The current study aims to extend our understanding of the impact of impaired health on older workers' functioning in terms of concentration problems, physical functioning, need for recovery and work and social participation restrictions. By focusing on diabetes mellitus and depression, and extending the focus to overall functioning and the role of working conditions, this study's insights could be useful for designing preventive measures and interventions aimed at sustaining the workforce participation of older workers with impaired health.

2. Method

2.1. Sampling and procedures

This study is based on data from the Maastricht Cohort Study (MCS), conducted in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments. The MCS was established in May 1998 and included 12,140 participants from 45 different companies. At the baseline measurement, all participants were between 18 and 65 years old [43,44].

In the present study, the follow-up wave of the MCS study in October 2008 was defined as the baseline and our study duration was four years to the next follow-up in October 2012. Earlier waves were unsuitable as baselines because the number of older employees with diabetes mellitus or depression was too small, and because some of the central outcomes (e.g., work and social participation restrictions) were assessed only from that follow-up wave onwards. At the baseline in 2008, n = 6082 respondents participated. At the follow-up in 2012, n = 5894 questionnaires were sent out and n = 4783 valid questionnaires were received (a response rate of 81%). Eligible participants for this study were all employees aged 45 years or older at baseline, excluding those who were on disability leave or received illness benefits through the Dutch Sickness Benefits Act (n = 2987).

2.2. Measures

2.2.1. Identification of depression and diabetes mellitus and the reference group

At the baseline, depression was assessed by a combination of questions. To be considered depressed, respondents had to respond affirmatively to the question *Have you ever in the past been diagnosed with depression by a medical doctor or psychologist*? and to indicate that they currently suffered from depression. The latter was assessed using the Health and Work Performance Questionnaire (HPQ), which inventories the presence of 34 pre-specified conditions and whether respondents are currently receiving or previously received treatment for these conditions [45]. Respondents could list one additional health condition in an open-ended question. Respondents were labelled as having depression when they marked for this condition the answer *Yes, I currently have this condition and I have been treated for this in the past* or *Yes, I currently have this condition and I am currently receiving treatment*. Current treatment for depression was defined as the respondent stating that he or she was currently receiving treatment for this condition on the HPQ. For diabetes mellitus, respondents had to indicate that they

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