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Addressing long-term sickness absence: moving beyond disease, illness and work-related factors for effective prevention

Although only a relatively small percentage of workers report sick for longer than a few days or weeks, it should be noted that long-term sickness absence constitutes the major part of the already substantial costs of sickness absence for companies and society (1). Moreover, long-term absence from work has been associated with a further detrimental impact on the mental health and wellbeing of the workers involved (2). These adverse effects, on top of the diminished social contacts with colleagues and coworkers and related alienation from work, often result in a return-to-work (RTW) barrier that grows as the duration since reporting sick from work increases. Moreover, the tendency of human beings to try to stick to the existing circumstances in uncertain situations (3), such as persisting sickness behavior, might further hamper the RTW process. Taken together, all these factors can lead to a downward spiral of deteriorating health and increased difficulties with reintegrating back into work. And as such, the process of long-term sickness absence can lead to permanent work disability. So its prevention should be an important component of occupational health policy, not only to reduce sickness-absence-related costs but also to improve workers' health and eventually avoid work disability.

Establishing evidence-based models that depict the process leading up to long-term sickness is a logical and important step in establishing and improving preventive strategies. Most of the formulated current sickness absence models have a strong focus on health (4, 5) but other factors – often work-related or addressing social protection – have also been included. The large, multinational study by Mortensen et al (6) in this issue of the *Scandinavian Journal of Work, Environment and Health* contributes to the Literature as it considers the relevance of a factor outside the domain of work and health, namely informal caregiving (ie, unpaid assistance with the daily activities of sick, disabled, or elderly relatives), as a predictor of long-term sickness absence. The authors report that informal caregiving was associated with a higher risk of sickness absence among women [hazard ratio (HR) 1.13, 95% CI 1.04–1.23]. Mortensen et al opted for the inclusion of their underlying theoretical causal model in the form of a directed acyclic graph (DAG), a graphical representation of the assumed causal associations introduced by Robins (7). A DAG not only provides relevant and graphically illustrated information on the underlying theoretical model, but it also guides the statistical analyses and selection of potential confounders, as well as possibly preventing the reporting of spurious associations due the inclusion of colliding factors. A stimulating and helpful discussion for further use of the DAG, and its associated collider bias, can be found in the work of Glymour et al (8), for example. As presented by Mortensen et al (6), the DAG might be the starting point for others to discuss and elaborate on models of long-term sickness absence, and *Scand J Work Environ Health* might be a platform to facilitate and document this process.

As a starting point for the discussion on the predictive models for long-term sickness absence, there are two relevant issues that remain undervalued and can be illustrated by Mortensen et al's findings. The first is that cultural and legal differences potentially have a strong mediating effect on the reported associations with long-term sickness absence. For example, with regards to informal caregiving, not only do legal differences exist – as the authors mention (6) – but cultural differences can also be observed in the expectancies and perception of caregiving roles, and these might add to the considerable differences between various national and cultural groups. Note that one might assume these disparities are further amplified by differences in (expected) gender/social roles in both the informal caregiving as well as work.

So a spectrum of legal and cultural differences might add to the possible explanations for the noticeable divergence in the reported associations between the different cohorts included in the Mortensen et al study (6). Moreover, the flexibility of working time and provisions to enable or support caregiving (as facilitated by the employer through legislation or labor agreements) can differ extensively between employers, trades, sectors, and countries, and, as such, might have an additional modifying impact on the association between caregiving, job strain and long-term sickness absence, which necessitates the development of more elaborate sickness absence models.

A second issue relates to the presented causal mode. The effect of job strain and informal long-term sickness absence caregiving are indicated as part of the pathway via the deterioration of health. But the impact of many factors (in or outside work) on long-term sickness absence do not necessarily follow the pathway directly from health deterioration to sickness absence. As indicated by Wikman et al (9), other factors beyond health can be associated with long-term sickness absence. For example, Benavides (4) has emphasized the role of policies and job security. Furthermore, in some cases, sickness absence can also be employed as a coping mechanism, for example to cope with demanding conflicts between work and family (10) where informal caregiving, as studied by Mortensen (6), might be an important factor necessitating sickness absence as a way to cope with fluctuations in demands of the caregiving role. In that respect, health should be regarded as only one of the many factors leading up to sick leave. And as such it has been often noted that participation problems (such as sickness absence) may originate from a specific disease, but – in a clinical context – it is often observed that individuals with exactly the same injury or pathology will have widely differing responses to their symptoms and show disparities in sickness absence and productivity (11). This means that not only work-related factors but also personal, contextual and other non-work related factors (such as caregiving roles) can all be relevant in explaining these differences (12). A model which might be a useful framework for addressing the complex pathway towards long-term sickness absence could be based on the International Classification of Functioning (ICF) (13). Heerkens et al (14) have described a way to incorporate the complex role of work-related factors in this model to better understand the broad concept of health, which also includes functioning (14). Due to the graying of the working populations in many western countries, the process where the focus within occupational health should shift towards the participation of workers, with or without an illness, becomes even more important in light of the increasing number of workers with a chronic health condition (15).

It is one thing to elaborate and establish evidence-based models to explain long-term sickness absence risk, but quite another to translate and integrate this knowledge into successful preventive strategies. Until now, many preventive actions addressing sickness absence have focused on health protection and disease promotion by addressing health and work-related factors. However, there might be substantial room for improvement when factors beyond disease and illness, such as personal and (work-related) environmental factors, are also considered for preventive action. Identifying factors causally associated with the increased risk of long-term sickness absence is therefore an important starting point in developing targeted interventions. Knowing causal risk factors, however, is not enough to guide preventive interventions as identified risk factors might be impossible or very hard to address or modify. One such factor could be informal caregiving, which Mortensen and colleagues have shown to be related to long-term sickness absence (6), but is probably hard to tackle directly in preventive strategies for long-term sickness absence. Another preventive approach, based on the principles of indicated prevention, might successfully use information on a broad spectrum of risk factors.

To date, most efforts to address long-term sickness absence within occupational health concern primary prevention and optimizing the RTW process. As indicated prevention follows a different strategy, it might be of additional added value. For example, high-risk workers can be detected using a screening instrument, based on prediction models, and subsequently offered a specific intervention before sick-

ness absences occurs. Taimela et al (16) found that indicated prevention can be successful in preventing sickness absence in their study of workers with a combination of health- and workability-related issues who were offered an occupational health intervention. And, in an earlier study, we have shown that the inclusion of private and contextual factors is of substantial added value for the development of models predicting whether a worker reports sick for >28 days or not (17). For these comprehensive prediction models, it has been shown that the risk of long-term sickness absence in identified, high-risk workers can successfully be reduced (18, 19). Mortensen et al's study (6) reinforces the importance of including factors outside health, work and workability when considering the prediction of long-term sickness. And this in turn might lead to further optimization and broader implementation of preventive programs to reduce long-term sickness absence and as such contribute to a healthy and productive workforce. Furthermore, such an approach based on indicated prevention can also contribute to improved labor participation of workers with chronic conditions. Although contextual factors have been considerably less-well studied, they can nevertheless provide crucial information on the actions needed to increase the participation of older workers in working life and prevent work disability (15, 20). To conclude, the study of Mortensen et al (6) can be regarded as an essential step in the unravelling of the complex pathway towards the improved functioning of workers and the prevention of long-term sickness absence and eventually also work disability.

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