

Predicting Return to Work in Workers with All-Cause Sickness Absence Greater than 4 Weeks: A Prospective Cohort Study

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Abstract *Introduction* Long-term sickness absence is a major public health and economic problem. Evidence is lacking for factors that are associated with return to work (RTW) in sick-listed workers. The aim of this study is to examine factors associated with the duration until full RTW in workers sick-listed due to any cause for at least 4 weeks. *Methods* In this cohort study, health-related, personal and job-related factors were measured at entry into the study. Workers were followed until 1 year after the start of sickness absence to determine the duration until full RTW. Cox proportional hazards regression analyses were used to calculate hazard ratios (HR). *Results* Data were collected from N = 730 workers. During the first year after the start of sickness absence, 71% of the workers had full RTW, 9.1% was censored because they resigned, and 19.9% did not have full RTW. High physical job demands

(HR .562, CI .348–.908), contact with medical specialists (HR .691, CI .560–.854), high physical symptoms (HR .744, CI .583–.950), moderate to severe depressive symptoms (HR .748, CI .569–.984) and older age (HR .776, CI .628–.958) were associated with a longer duration until RTW in sick-listed workers. *Conclusions* Sick-listed workers with older age, moderate to severe depressive symptoms, high physical symptoms, high physical job demands and contact with medical specialists are at increased risk for a longer duration of sickness absence. OPs need to be aware of these factors to identify workers who will most likely benefit from an early intervention.

Keywords Return to work · Long-term sickness absence · Prognostic factors

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Introduction

Long-term sickness absence is a major public health and economic problem [1]. Although the vast majority of all sickness absences is short-term, longer absences disproportionately contribute to the costs of sickness absence [1]. Long-term sickness absences account for more than a third of total work loss days and up to 75% of absence costs [1]. Furthermore, longer sickness absences are associated with a reduced probability of return to work (RTW) [1]. Besides economic consequences, long-term sickness absence has severe consequences for the worker. Long-term sickness absence increases the risk of social isolation, reduces meaningful activity and may make the worker doubting his own competence [2, 3].

Sickness absence and RTW are both complex, multifactorial phenomena, which are not only related to biomedical factors but also influenced by a wide variety of personal and job-related factors [4–6]. In the International Classification of Functioning, Disability and Health (ICF), disability and functioning are viewed as outcomes of interactions between health conditions and contextual factors, encompassing personal and environmental factors [7]. Studies that examined prognostic factors for sickness absence often focused on the onset of sickness absence and on specific disorders [5, 8–11]. However, evidence is lacking for factors that are associated with the duration until RTW in workers sick-listed due to any cause. In a recent systematic review, Dekkers-Sanchez et al. [5] identified 16 factors that were significantly associated with long-term sickness absence in workers sick-listed for at least 6 weeks. Because most factors were studied in only one study and only two factors were studied twice, strong evidence for any of these factors could not be established. Weak evidence was found for associations between older age and history of sickness absence with long-term sickness absence. Other person-related and job-related factors, such as poor general health, mental health disorders, low income and lack of skill discretion, were insufficiently studied [5].

In a Dutch cohort study of workers, previous sickness absence was only related to a longer duration until RTW if that previous sickness absence episode was due to similar complaints as the current sickness absence episode [12]. Moreover, workers sick-listed due to psychological symptoms had the longest duration until RTW, compared to those sick-listed due to musculoskeletal problems and other physical health problems [12]. In addition, behavioral determinants (low work attitude, low willingness to expend effort in RTW and low social support) and job-related determinants (high supervisor support, low co-worker support and working in public administration, construction, financial and commercial services, transport or educational

sector) were related to a longer duration until RTW [13, 14]. In a longitudinal study with a 2-year follow up among workers sick-listed for at least 3 weeks, Hoedeman et al. [15] found high levels of somatic symptom severity, health anxiety and older age to be associated with a longer duration of sickness absence.

In order to get a better understanding of RTW and to support the development of interventions aimed at RTW, it is necessary to identify factors that are associated with the duration of sickness absence in sick-listed workers. In the Netherlands, entitlement for a disability pension is determined after a maximum of 2 years of sickness absence. In those 2 years, the worker and employer are both responsible for activities aimed at RTW. Workers are obliged to visit an occupational physician (OP) in the first 6 weeks of sickness absence, who advises on RTW based on a multifactorial problem analysis. The multifactorial problem analysis is conducted by the OP to assess the risk on long-term sickness absence, and contains information on the type of problems, whether the worker receives treatment and the private, work and social context. Based on this analysis, a RTW plan including work adjustments and other interventions has to be made. Thus, assessment of prognostic factors for RTW at this time is of particular importance in the Dutch system. The cause of sickness absence may not always be clear at that point in time and the worker and OP may disagree about the cause of sickness absence. Moreover, RTW is not only influenced by medical factors, but also by personal and job-related factors, and therefore, identifying factors predicting RTW in workers sick-listed due to any cause is relevant. The objective of the present study was to study the association of health related, personal and job-related factors with the duration until full RTW in workers on sickness absence for at least 4 weeks.

Methods

Design and Study Population

This is a prospective, longitudinal study in which data collected in the recruitment phase of a randomised clinical trial (RCT) were used. Aim of that RCT, of which the design is described elsewhere, was to evaluate the cost-effectiveness of a Collaborative Care treatment in sick-listed workers with major depressive disorder (MDD) [16]. The recruitment was conducted in collaboration with a large, Dutch occupational health service (OHS), covering about 15% of the total Dutch working population. In order to recruit participants for the RCT, workers on sickness absence between 4 and 12 weeks due to any cause were sent a questionnaire, accompanied by written information

about the study and an informed consent form [16]. Workers who were still on sickness absence were asked to fill in the questionnaire. It was not possible to check whether workers who did not respond to the questionnaire were still sick-listed, which makes it impossible to provide a reliable response percentage of the recruitment procedure. In the first screening wave, the complete baseline questionnaire was sent to screen eligible workers, which was later adapted by only sending the screener for depressive symptoms. In this study, data were used from the first screening wave, comprising the comprehensive questionnaire. In the present study, workers on sickness absence for at least 4 weeks due to any cause were included. Workers with a major depressive disorder who participated in the RCT were excluded from this study, as well as workers on sickness absence due to pregnancy-related health problems. Furthermore, workers who were no longer absent from work when filling in the questionnaire were excluded. The study protocol was approved by the Medical Ethical Committee of the VU University Medical Center.

Measures

Dependent Variable

The dependent variable in this study is the duration until full RTW, starting from the first day of sickness absence. Full RTW was defined as the first full RTW with equal earnings, lasting for at least 4 weeks. In accordance with the Dutch Health Law, two sickness absence episodes with less than 4 weeks of full RTW in between, were counted as a single absence episode. The duration of sickness absence was censored at 1 year after the start of sickness absence. Data were censored for workers whose sickness absence ended because they resigned [17]. Sickness absence data were derived from the OHS register.

Independent Variables

In line with the ICF model, the independent variables in this study include health-related, personal and job-related factors. The independent variables were collected by self-report at entry into the study.

Health-Related Factors

Chronic medical illness was measured with the Dutch Central Bureau of Statistics (CBS) list, a questionnaire containing 28 conditions [18]. The CBS list was dichotomized into (0) no chronic medical condition and (1) at least one chronic medical condition. Physical symptoms were measured with the Physical Symptoms Checklist (Lichamelijke Klachten Vragenlijst, LKV), a 51-item checklist

assessing the number and intensity of functional somatic symptoms [19]. This measure ranges from 0 to 51 and was dichotomized, with scores of five or more coded as (1), referring to high physical symptoms [20]. The Patient Health Questionnaire (PHQ) was used to measure depression, anxiety (including generalized anxiety and panic) and somatization [21]. The depression scale of the PHQ, the PHQ-9, ranges from 0 to 27 and was dichotomized, with scores above nine coded as (1), referring to moderate to severe depressive symptoms [22, 23]. The somatization scale of the PHQ, the PHQ-15, ranges from 0 to 30 and was dichotomized, with scores above nine coded as (1), referring to medium to high somatization [24]. The generalized anxiety scale and the panic scale of the PHQ both result in dichotomous variables, with workers classified as having, respectively, generalized anxiety or panic disorder coded as (1) [21].

Personal Factors

Participants provided information on demographics such as age, gender, marital status and educational level. Age was dichotomized into (0) ages 18 to 44 and (1) ages 45 or above. Marital status was dichotomized into (0) not married/cohabiting and (1) married or cohabiting. Educational level was categorized into three categories, ranging from (0) low (including primary school, lower vocational education and lower secondary school), to (1) moderate (including intermediate vocational education and upper secondary school), to (2) high (including upper vocational education or university) [25]. Health care utilization in the past 3 months was measured with the Trimbos/iMTA questionnaire for Costs associated with Psychiatric Illness (TiC-P) and included contact with an OP, a general practitioner (GP), a mental health professional, a medical specialist, a paramedic, a social worker and contact with alternative medicine [18]. These variables are from a different order than the other factors in this study, in that people with high health care utilization will often have the worst outcomes, not so much because health care would be detrimental for them, but because it reflects a more severe condition. The variables on health care utilization were dichotomized into (0) no health care visit in the past 3 months and (1) at least one health care visit in the past 3 months. Previous sickness absence was derived from the OHS register and was assessed with two variables: the number of absence episodes in the past 2 years and the number of absence days in the past 2 years. The number of absence episodes was dichotomized, with two absence periods or more coded as (1), referring to a high number of absence episodes. The number of absence days was dichotomized, with 28 absence days or more coded as (1), referring to a high number of absence days.

Job-Related Factors

Job-related factors were measured with five scales from the Job Content Questionnaire (JCQ), which were dichotomized based on the highest quartile of the range of the scale [26]. Decision latitude, consisting of 9 items, ranges from 24 to 96 and was dichotomized with scores above 78 coded as (1). Psychological job demands, including 5 items and ranging from 12 to 48, was dichotomized with scores above 39 coded as (1). Physical job demands, a 5-item scale ranging from 5 to 20, was dichotomized with scores above 17 coded as (1). Social support, encompassing co-worker and supervisor support, is an 8-item scale ranging from 8 to 32, which was dichotomized with scores above 26 coded as (1). Finally, job insecurity, a 3-item scale ranging from 3 to 12, was dichotomized with scores of nine or higher coded as (1).

Data Analysis

Data analysis followed two, consecutive steps. First, potential factors were selected through univariate analyses for all variables and the duration until full RTW. Factors that showed an association with the outcome measure with a P -value $<.20$ were selected for the next step, the backward Cox proportional hazard regression model. Non-significant factors were manually eliminated until the regression model only contained factors with P -values $<.05$. Hazard ratios (HRs) were calculated for these factors. Interaction terms between the associated factors were also tested for significance. The proportional hazards assumption was checked by plotting the log minus log plot. All analyses were adjusted for the duration of sickness absence at entry into the study. The analyses were performed with SPSS 15.0 software.

Results

Characteristics of the Study Population

Data were collected from $N = 730$ sick-listed workers. $N = 10$ workers were excluded because they participated in the RCT, $N = 145$ workers were excluded because they were no longer absent from work when completing the questionnaire, and $N = 13$ workers were excluded because of sickness absence due to pregnancy-related health problems. The remaining $N = 562$ workers were included in this study, as indicated in the flowchart (Fig. 1).

Characteristics of the study population are presented in Table 1. A total of $N = 399$ (71%) participants had lasting, full RTW within 1 year after the start of sickness absence. Fifty-one participants (9.1%) were censored because they

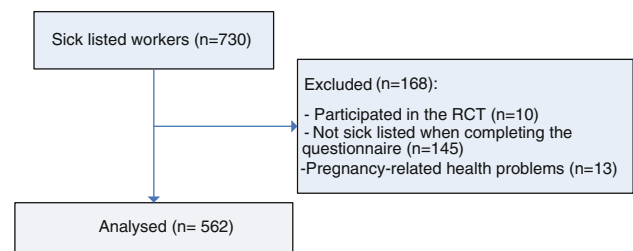


Fig. 1 Flowchart of participants

resigned from work and the remaining $N = 112$ (19.9%) participants did not have lasting, full RTW during follow-up.

Factors Associated with the Duration Until Full RTW in Long-Term Sick-Listed Workers

The following factors had an association of $P > .20$ in the univariate analyses and were therefore excluded from the backward Cox proportional hazard regression model: marital status, educational level, panic, decision latitude, job insecurity, contact with OP, contact with mental health professional in the past 3 months, the number of absence episodes in the past 2 years and the number of absence days in the past 2 years.

Table 2 shows the results of the final model. HRs and 95% confidence intervals are presented, with HRs smaller than 1 representing a longer duration until RTW. The results show that high physical job demands, contact with medical specialists, high physical symptoms, moderate to severe depressive symptoms and older age are associated with a longer duration until RTW in sick-listed workers. Table 3 shows the, unadjusted, median durations until RTW for the subgroups of workers scoring low or high on the associated factors. For illustrative purpose, the Kaplan–Meier curve for an associated factor, physical job demands, is shown in Fig. 2. There were no significant interaction terms.

Discussion

Main Findings

In the present study, factors associated with the duration until full RTW were examined in workers on sickness absence for at least 4 weeks due to any cause. The results showed that high physical job demands, contact with medical specialists, high physical symptoms, moderate to severe depressive symptoms and older age were significantly associated with a longer duration until RTW in workers on sickness absence longer than 4 weeks.

Table 1 Characteristics of the study population at entry of the study (N = 526–562)

| <i>RTW</i> | |
|---|-------|
| Full return to work within 1 year (%) | 71.0 |
| Duration until full RTW, in days (median) | 168.0 |
| Duration of sickness absence at entry into the study, in days (median) | 67.0 |
| <i>Health-related factors</i> | |
| Chronic medical condition (% with ≥ 1) | 71.5 |
| Physical symptoms, high (% with LKV ≥ 5) | 40.9 |
| Depressive symptoms, moderate to severe (% with PHQ-9 ≥ 10) | 30.6 |
| Somatization, medium to high (% with PHQ-15 ≥ 10) | 43.8 |
| Panic (% classified) | 7.4 |
| Generalized anxiety (% classified) | 15.2 |
| <i>Personal factors</i> | |
| Gender (% male) | 48.0 |
| Age (% ≥ 45 years) | 55.9 |
| Married or cohabiting (%) | 71.9 |
| <i>Educational level</i> | |
| (% low) | 43.3 |
| (% moderate) | 32.4 |
| (% high) | 24.3 |
| <i>Health care use in the past 3 months (at least one contact)</i> | |
| Contact with GP (%) | 88.4 |
| Contact with OP (%) | 86.9 |
| Contact with mental health professional (%) | 33.4 |
| Contact with medical specialist (%) | 53.9 |
| Contact with paramedics (%) | 35.4 |
| Contact with social worker (%) | 10.3 |
| Contact with alternative medicine (%) | 12.3 |
| <i>Previous sickness absence</i> | |
| Episodes of sickness absence in the past 2 years, high (% ≥ 2) | 52.3 |
| Total days of sickness absence in the past 2 years, high (% ≥ 28) | 36.1 |
| <i>Job-related factors</i> | |
| Decision latitude, high (% ≥ 78) | 31.5 |
| Psychological job demands, high (% ≥ 39) | 19.6 |
| Physical job demands, high (% ≥ 17) | 6.9 |
| Job insecurity, high (% ≥ 9) | 32.8 |
| Social support, high (% ≥ 26) | 23.6 |

Table 2 Backward Cox proportional hazard regression model on the duration until full RTW*

| | HR** | 95% CI ** | P value |
|--|------|-----------|---------|
| Physical job demands (high, ≥ 17) | .562 | .348–.908 | .019 |
| Contact with medical specialists (≥ 1) | .691 | .560–.854 | .001 |
| Physical symptoms (high, ≥ 5) | .744 | .583–.950 | .018 |
| Depressive symptoms (moderate to severe, ≥ 10) | .748 | .569–.984 | .038 |
| Age, ≥ 45 | .776 | .628–.958 | .018 |

HR hazard ratio

CI confidence interval

* Analyses are corrected for the duration of sickness absence at entry into the study

** A HR <1 represents a longer duration until RTW

Table 3 Median durations until full RTW (in days) for subgroups of workers categorized in groups low and high on the associated factors

| Factors | Low | High | Difference (high-low) |
|----------------------------------|-------|-------|-----------------------|
| Physical job demands | 161.5 | 217.0 | 55.5 |
| Contact with medical specialists | 140.0 | 192.5 | 52.5 |
| Physical symptoms | 152.5 | 186.0 | 33.5 |
| Depressive symptoms | 160.0 | 180.5 | 20.5 |
| Age | 154.5 | 179.5 | 25.0 |

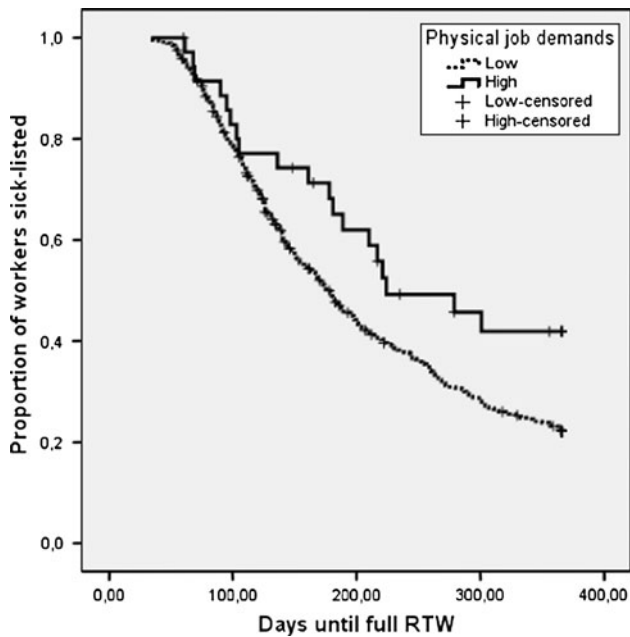


Fig. 2 Kaplan meier curve

Comparison Findings with Other Studies

In this study, physical job demands and contact with a medical specialist showed the strongest associations with the duration until RTW. With regard to the importance of job-related factors, studies so far showed inconsistent results. Although physically demanding work and low control over the work situation have often been found to be related to the onset of long-term sickness absence, evidence was lacking for the association with the duration of sickness absence in sick-listed workers [27–32]. In the present study, physical job demands were found to be related to the duration until RTW, but the relationship with the duration until RTW could not be found for decision latitude. Moreover, physical symptoms were associated with the duration until RTW. These results suggest that the physical condition of the worker and the physical demands in a job are more important for the duration until RTW when sick-listed than factors such as job control and social support. Furthermore, the statistical significance of ‘having had

contact with medical specialists in the past 3 months’, while controlling for physical symptoms and conditions, shows that when workers seek specialist care, this is associated with a longer duration until RTW. Visiting a medical specialist may reflect a more severe condition, but it might also imply that having specialist care keeps workers at home, waiting for a diagnosis or treatment [33]. Also, although previous studies found depressive symptoms to be associated with the onset of sickness absence and a longer duration of sickness absence in short-term sick-listed workers, it was not known whether this association would be present as well in workers sick-listed due to any cause [9, 10, 34]. The results of the present study show that in a population of sick-listed workers, moderate to severe depressive symptoms are related to a longer duration until RTW. This suggests that regardless of the initial cause of sickness absence, depressive symptoms such as a depressed mood, decreased self-esteem and social isolation will probably hinder the RTW process. Finally, the finding that older age was a significant factor for the duration until RTW confirmed previous research [5, 15]. It is interesting to note that previous sickness absence in the past 2 years was not significantly related to the duration until full RTW, while this has often been found to be an important prognostic factor for the (re-)occurrence of sickness absence [5, 12, 35, 36]. This contrasting result may be explained by differences in study populations and differing definitions of previous sickness absence. For instance, in a prospective Norwegian study among long-term absentees, only previous sickness absence longer than 20 weeks significantly increased the disability risk [37]. Post et al. [12] also studied the duration until RTW in sick-listed workers and found previous sickness absence to be an important factor only when that previous sickness absence was due to similar health conditions as the current sickness absence episode. In Hoedeman et al. [15] as well, previous sickness absence, assessed in days and in number of periods, was not associated with the duration until RTW in workers sick-listed for at least 3 weeks. Our results confirm those of Hoedeman et al. [15] and suggest that previous sickness absence per se, regardless of the cause of that previous sickness absence, is not an important factor for the duration until RTW in sick-listed workers.

Strengths and Limitations

A strength of this study is the focus on workers sick-listed due to any cause, because knowledge on the RTW of this population is scarce. Moreover, factors were included from multiple domains, covering health-related, personal and job-related factors. However, these factors were measured only at entry into the study, it is thus unknown what happened in the period between entry into the study and RTW.

Another strength of the present study is the record linkage of our health-related, personal and job-related data with sickness absence data from the OHS register [17, 34]. The exclusion from this study of depressed workers who participated in the RCT may have lead to bias by excluding a population in which particularly depressive symptoms may have been important for the duration until RTW. However, of the initial 730 workers of whom we had data, we excluded only ten workers because of their participation in the RCT.

Practical Implications and Further Research

One year after the start of sickness absence, 19.9% of the workers was still absent from work. When conducting the problem analysis, OPs need to be aware of the factors that are associated with a longer duration until RTW in sick-listed workers in order to identify workers who will most likely benefit from an early intervention. By intervening timely on modifiable factors, permanent work disability may be prevented. The findings of the present study suggest that high physical job demands in workers on sickness absence may indicate a need for early work(place) modifications aimed at (temporarily) reducing the physical demands in a job [38]. Active stakeholder involvement of at least the worker and the employer is recommended in this type of intervention [38, 39]. OPs who work in sectors with high physical job demands, such as the construction industry, should pay extra attention to this aspect. When workers visit a medical specialist, it is important that the OP and specialist discuss functional limitations and possibilities for activation and RTW. However, communication between OPs and treating physicians is limited and is hampered by the fact that both have different goals when treating the same patient [33]. Screening for depressive and physical symptoms in sick-listed workers may support OPs in identifying workers at risk for a longer duration of sickness absence. A validated instrument for the screening and monitoring of depressive symptoms is the PHQ-9 [22, 23]. Because a reduction in symptoms does not automatically lead to RTW, specific cognitive behavioural interventions aimed at both RTW and reducing depressive symptoms might be desirable for these workers [16, 40]. The LKV might be used as a screening instrument for physical symptoms, but further research is needed on that [19]. Like in the treatment of depressive symptoms, a focus on RTW is needed in the treatment of physical symptoms in order to achieve a more rapid RTW. However, there is often a lack of attention to work-related problems in curative care. More education on this issue may lead to a better focus of treating physicians on work and RTW and may facilitate communication with OPs [33, 41, 42]. Given the importance of both physical and depressive symptoms,

it would be interesting for future research to include the ‘intention to RTW despite having symptoms’ as potential factor associated with the duration until RTW. Previous research has indicated the importance of this intention in a population of sick-listed workers with distress [43]. Perhaps workers focus much on the severity of their symptoms when considering RTW, which may hinder the RTW process. For future research it would also be interesting to include repeated measurements of the potential associated factors to describe the process until full RTW in more detail. Moreover, a longer follow-up on sickness absence data would be interesting to assess full RTW after the first year of sickness absence and to include recurrent sickness absence as an outcome measure.

Conclusion

In sum, in this study high physical job demands, contact with medical specialists, high physical symptoms, moderate to severe depressive symptoms and older age were identified as factors associated with a longer duration until RTW. OPs need to take these factors into consideration when conducting the problem analysis and sickness guidance of sick-listed workers.

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Conflict of interests None.

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