Effect of working conditions on non-work-related sickness absence

M. Sampere¹,², D. Gimeno²,³, C. Serra²,³, M. Plana¹, J. M. Martínez²,³, G. L. Delclos²,³,⁴ and F. G. Benavides²,³

¹Medical and Health Care Services Division, Mutual Midat Cyclops (MC MUTUAL), C/Provença 321, 08037 Barcelona, Spain, ²Center for Research in Occupational Health (CiSAL), Department of Experimental and Health Sciences, Universitat Pompeu Fabra, Barcelona, Spain, ³Southwest Center for Occupational and Environmental Health, Division of Epidemiology, Human Genetics and Environmental Sciences, The University of Texas School of Public Health, San Antonio Campus, San Antonio, TX, USA, ⁴CIBER de Epidemiología y Salud Pública, Barcelona, Spain, ⁵Occupational Health Service, Parc de Salut MAR, Barcelona, Spain, ⁶Southwest Center for Occupational and Environmental Health, Division of Epidemiology, Human Genetics and Environmental Sciences, The University of Texas School of Public Health, Houston, TX, USA.

Correspondence to: M. Sampere, Medical and Health Care Services Division, Mutual Midat Cyclops (MC MUTUAL), C/ Provença 321, 08037 Barcelona, Spain. Tel: +34 934051244; fax: +34 934954091; e-mail: msampere@mc-mutual.com

Background There is limited evidence of the role of working conditions as prognostic factors for non-work-related sickness absence (i.e. absence due to injuries or diseases of non-occupational origin).

Aims To analyse the association between working conditions and time to return to work (RTW) in workers with long-term (>15 days) non-work-related sickness absence.

Methods We followed up a total of 655 workers, who completed a baseline questionnaire including physical and psychosocial work factors, until their non-work-related long-term sickness absence ended. Time to RTW was determined based on the health insurance company register. Cox proportional hazard models were constructed to evaluate the associations between working conditions and time to RTW.

Results A self-perceived high level of physical activity at work and work with back twisted or bent were related to longer duration of sickness absence. We did not find any strong evidence of associations between psychosocial work factors and time to RTW, although higher job insecurity and low reward showed marginal statistical significance.

Conclusions Hazardous physical working conditions are associated with longer duration of non-work-related sickness absence. Workplace ergonomic interventions could conceivably shorten the length of sickness absence that has not originated at work.

Key words Occupational health; sickness absence; work environment.

Introduction

Studies on time to return to work (RTW) usually combine work and non-work-related sickness absence episodes [1–3]. But working conditions may be prognostic factors of non-work-related sickness absence [4]. A retrospective study of 76 598 episodes of non-work-related sickness absence found their duration varied by industry [5]. Research on the prognostic role of work on non-work-related sickness absence can help to design effective interventions aimed at reducing time to RTW and to prevent workers on temporary leave from progressing to permanent disability and premature retirement [6]. In this prospective study, we examined the associations between working conditions and time to RTW in a cohort of workers with long-term non-work-related sickness absence.

Methods

A prospective cohort study was constructed from a population base of 210 285 workers from 22 626 companies in two Spanish provinces (Barcelona and Madrid) for whom a single health insurance company provided case management of non-work-related sickness absence. Between 2007 and 2008, we recruited workers with current long-term (>15 days) non-work-related sickness absence during their first medical visit. Participants provided consent and completed a baseline questionnaire at recruitment and were followed up until their episode ended. Time to RTW was determined based on the insurance company’s register. The institutional review board and safety committee of the insurance company approved the study protocol.
Self-reported physical working conditions included the intensity of physical activity at work (low, moderate, high and very high) and the frequency of exposure (never or almost never, 25, 50, 75% and almost the entire workday) to repetitive movements, work with arms above shoulders and work with back twisted and/or bent during the workday. We grouped responses into ‘low, moderate versus high and very high’ and ‘<75 versus ≥75% of the working day’. We assessed psychological job demands (six items, Cronbach’s α = 0.69), job control (10 items, α = 0.78), work social support/management quality (10 items, α = 0.85), reward (four items, α = 0.88) and job insecurity (four items, α = 0.74) with the validated Spanish short version of the Copenhagen Psychosocial Questionnaire [7]. A 5-point Likert-type response items were used (‘never = 0, only once, sometimes, often, and always = 5) for all dimensions but job insecurity (‘not worried’ = 0 to ‘very worried’ = 4). Each scale was categorized into three levels (low, intermediate and high), according to reference tertiles [7]. We required a 75% item completion to score a scale; otherwise it was set to missing.

Median time to RTW and 25th and 75th percentiles were computed from the Kaplan–Meier curve. Hazard ratios (HRs) and 95% confidence intervals (CIs) were calculated from Cox proportional hazards. The proportionality of hazards assumption was justified after examination of the Schoenfeld residuals [8]. We adjusted the models for age, sex, cohabitation status, self-perceived general health, functional limitation, feeling discouraged and depressed in the previous 4 weeks and days on sick leave at study recruitment. Physical and psychological working conditions were mutually adjusted. We used Stata v.10 and SPSS v.15 for the analyses.

Results

Of those invited to participate, there was a 57% (788/1380) response rate. The final complete data sample included 655 workers (83%) who provided complete data. Median time to RTW was 89 days; 25% of episodes lasted <61 days (P25), while 25% lasted >141 days (P75). Time to RTW increased with each year of age (HR = 0.98; 95% CI 0.98–0.99) and was greater for women (HR = 0.74; 95% CI 0.63–0.88). Musculoskeletal (47%) and mental disorders (18%) were the most common diagnostic groups. Mental disorders had longer time to RTW (HR = 0.81; 95% CI 0.64–1.02) than musculoskeletal disorders. A longer time to RTW was observed among workers who reported working with back twisted or bent during at least 75% of a working day (Figure 1), a high level of physical activity at work and higher perceived job insecurity. After adjustment, only work with back twisted or bent (HR = 0.81; 95% CI 0.67–0.97) and a perceived high level of physical activity (HR = 0.78; 95% CI 0.65–0.93) remained statistically significant. High job insecurity (HR = 0.76; 95% CI 0.57–1.01) and low reward (HR = 0.81; 95% CI 0.63–1.02) showed marginal statistical significance (Table 1).

Discussion

We found that workers with long-term non-work-related sickness absence who reported a high level of physical activity at work and working with their back twisted or bent during most of the working day took longer to RTW than their counterparts even when the work absence was not occupational in origin. Our findings are in agreement with evidence showing that high physical activity and certain uncomfortable work postures are related to longer absences [1,2].

Despite psychosocial work factors having been related to health problems, we did not find a relationship between exposure to those factors and time to RTW, and the overall evidence on their influence on time to RTW is inconsistent. Work-related factors such as high psychological demands, lack of control, low supervisor support, high insecurity and low reward have been associated with longer sickness absence in some, but not all, studies [1,3,4,9]. Mixing non-work and work-related episodes and lack of stratification by short- and long-term sickness absence in prior research may have contributed to the observed inconsistencies. We used a short questionnaire to assess general psychosocial dimensions, which could have masked associations between more specific factors, such
as quantitative or emotional demands, and RTW. In our
study, the overall reported exposure to psychological
work factors was higher than the reported exposure to
physical work factors. Part of the associations, and their
lack, we observed between work factors and RTW could
be attributed to exposure misclassification, particularly if
the reporting of psychosocial factors (e.g. in relation to
stress complaints) was more socially acceptable than re-
porting of physically strenuous conditions (e.g. in relation
to not being able to handle musculoskeletal conditions).

The impact of work environment exposures might be
less pronounced over the course of a disability [1], sug-
gest ing that long-term episodes are more closely associ-
ated with illness severity rather than other factors. The
lack of information about the severity of the health prob-
lem is one of the most common limitations of sickness ab-
se n ce studies. In our cohort, self-perceived health status,
feeling discouraged and depressed and functional limita-
tion due to the health problem were included as surro-
gates of the severity of the episode.

Causality cannot be established. Working conditions
were self-reported and while on sickness absence. Percep-
tions may vary depending on whether one is working or on
sick leave, with higher levels of unfavourable exposures
likely in those who are on sick leave [10]. In our cohort,
the exposure category reflecting the most unfavourable
working conditions was the most represented in all psy-
chosocial dimensions. Either workers on long-term sick-
ness absence were exposed to the worst working
conditions or the experience of being on sick leave influ-
enced the working conditions perception.

In summary, our results show that hazardous physical
working conditions are associated with longer time to
RTW for non-work-related sickness absence. Workplace er-
gonomic interventions, such as providing partial or full tran-
sitional job accommodations for workers with functional

Table 1. Duration in days until RTW (median and 25th and 75th percentiles), unadjusted (HR) and adjusted (HRa) associations of work-
related factors with time to RTW in a cohort of workers with a non-work-related sick leave over 15 days (n = 655)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%)</th>
<th>Median (P25; P75)</th>
<th>HR (95% CI)</th>
<th>HRa (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive movements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;75% working day</td>
<td>252 (39)</td>
<td>84 (58; 129)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>≥75% working day</td>
<td>403 (61)</td>
<td>89 (62; 144)</td>
<td>0.91 (0.77–1.07)</td>
<td>1.05 (0.87–1.26)</td>
</tr>
<tr>
<td>Back twisted or bent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;75% working day</td>
<td>406 (62)</td>
<td>83 (60; 126)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>≥75% working day</td>
<td>249 (38)</td>
<td>104 (63; 173)</td>
<td>0.73 (0.62–0.87)</td>
<td>0.81 (0.67–0.97)</td>
</tr>
<tr>
<td>Work with arms above shoulders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;75% working day</td>
<td>585 (89)</td>
<td>89 (60; 137)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>≥75% working day</td>
<td>70 (11)</td>
<td>94 (65; 173)</td>
<td>0.77 (0.58–1.01)</td>
<td>0.89 (0.67–1.20)</td>
</tr>
<tr>
<td>Physical activity at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low, moderate</td>
<td>432 (66)</td>
<td>86 (60; 135)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>High, very high</td>
<td>223 (34)</td>
<td>92 (61; 165)</td>
<td>0.84 (0.70–1.00)</td>
<td>0.78 (0.65–0.93)</td>
</tr>
<tr>
<td>Psychological job demands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>112 (17)</td>
<td>80 (58; 138)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Intermediate</td>
<td>155 (24)</td>
<td>76 (53; 116)</td>
<td>1.06 (0.85–1.32)</td>
<td>1.16 (0.89–1.50)</td>
</tr>
<tr>
<td>High</td>
<td>388 (59)</td>
<td>96 (64; 149)</td>
<td>1.02 (0.85–1.24)</td>
<td>1.02 (0.80–1.29)</td>
</tr>
<tr>
<td>Job control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>214 (33)</td>
<td>89 (58; 137)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Intermediate</td>
<td>166 (25)</td>
<td>88 (61; 139)</td>
<td>1.06 (0.85–1.32)</td>
<td>1.05 (0.84–1.31)</td>
</tr>
<tr>
<td>Low</td>
<td>275 (42)</td>
<td>89 (63; 148)</td>
<td>1.02 (0.85–1.24)</td>
<td>1.05 (0.85–1.28)</td>
</tr>
<tr>
<td>Social support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>224 (34)</td>
<td>82 (59; 137)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Intermediate</td>
<td>151 (23)</td>
<td>83 (63; 139)</td>
<td>1.07 (0.86–1.34)</td>
<td>1.04 (0.82–1.31)</td>
</tr>
<tr>
<td>Low</td>
<td>280 (43)</td>
<td>92 (62; 145)</td>
<td>0.93 (0.77–1.13)</td>
<td>0.94 (0.74–1.19)</td>
</tr>
<tr>
<td>Job insecurity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>66 (10)</td>
<td>70 (53; 109)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Intermediate</td>
<td>182 (28)</td>
<td>82 (59; 132)</td>
<td>0.72 (0.54–0.97)</td>
<td>0.76 (0.56–1.02)</td>
</tr>
<tr>
<td>High</td>
<td>407 (62)</td>
<td>95 (63; 150)</td>
<td>0.64 (0.49–0.84)</td>
<td>0.76 (0.57–1.01)</td>
</tr>
<tr>
<td>Reward</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>123 (19)</td>
<td>78 (54; 131)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Intermediate</td>
<td>88 (13)</td>
<td>83 (63; 127)</td>
<td>1.08 (0.81–1.44)</td>
<td>1.00 (0.75–1.34)</td>
</tr>
<tr>
<td>Low</td>
<td>444 (68)</td>
<td>92 (62; 146)</td>
<td>0.89 (0.72–1.10)</td>
<td>0.81 (0.63–1.02)</td>
</tr>
</tbody>
</table>

HRa = hazard ratio adjusted for age, sex, co-habitation status (single versus married/cohabiting), self-perceived general health (good versus poor), functional limitation (none/little versus much), feeling discouraged and depressed during the previous 4 weeks (never/ever/sometimes versus always/almost always), days on sick leave at re-
cruitment (<45 versus ≥45 days), psychological job demands, job control and physical activity at work.
limitations secondary to their musculoskeletal problem, could reasonably facilitate RTW in such circumstances.

**Key points**

- Evidence is limited regarding the role played by working conditions as prognostic factors in non-work-related sick leave episodes.
- High physical demands and work with back twisted or bent were related to longer duration of sickness absence in a cohort of workers with a long-term non-work-related sick leave episode.
- Workplace ergonomic interventions might shorten the length of sick leave despite not having originated at work.

**Funding**

Health Research Fund (FIS 04/1062); Ministry of Labour and Social Affairs in Spain (FIPROS/2006/78).

**Acknowledgements**


**Conflicts of interest**

None declared.

**References**