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Return to Work Expectations of Workers on Long-Term Non-Work-Related Sick Leave

Maite Sampere · David Gimeno · Consol Serra · Manel Plana · Juan Carlos López · José Miguel Martínez · George L. Delclos · Fernando G. Benavides

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Abstract *Introduction* Despite suggestions that worker perception might be the best predictor of return to work (RTW), there still is limited research on time to RTW in workers with lengthy non-work-related sick leave. *Methods* Prospective cohort study of 663 workers with a current long-term non-work-related sick leave episode recruited during the first medical visit in a mutua (Spanish health insurance company) and followed until their sick leave episode ended. Workers completed a baseline questionnaire regarding their perceptions of sick leave episode and expectations of RTW (i.e., health status, work ability, expectations and time required to RTW, self-efficacy and self-perceived connection between health and job). Time to RTW was established based on the mutua's register. Cox regression models were used to examine the associations of worker perception and expectation of RTW with time to RTW within the study population as a whole as well as in three diagnostic subgroups (i.e., musculoskeletal disorders, mental disorders and other physical conditions). *Results* As a whole, time to RTW was longer for workers reporting poor health [hazard ratio (HR) = 0.71, 95%CI 0.59–0.85], extremely reduced work ability (HR = 0.69, 95%CI 0.53–0.88), a longer period of time required to RTW (HR = 0.36, 95%CI 0.25–0.52) and lack of expectation of returning to the same job (HR = 0.13, 95%CI 0.06–0.31). Workers with musculoskeletal and other physical conditions showed a similar pattern to whole study population, while workers with mental disorders did not. *Conclusion* Self-required time and RTW expectations are important prognostic factors in sick listed workers by all types of health conditions certified as non-work-related. Questioning the workers on their perceptions and expectations of RTW during medical visits could help health care professionals to identify individuals at risk of long-term sickness absence and facilitate triage and management of the patient.

Keywords Non-work-related sick leave · Time to return to work · Diagnostic group · Occupational health

M. Sampere (✉) · M. Plana · J. C. López
Medical and Health Care Services Division, Mutual Midat Cyclops (MC-MUTUAL), C/ Provença 321, 08037 Barcelona, Spain
e-mail: msampere@mc-mutual.com

M. Sampere · D. Gimeno · C. Serra · J. M. Martínez · G. L. Delclos · F. G. Benavides
Department of Experimental and Health Sciences, Center for Research in Occupational Health (CISAL), Universitat Pompeu Fabra, Barcelona, Spain

D. Gimeno
Southwest Center for Occupational and Environmental Health, Division of Epidemiology, Human Genetics, and Environmental Sciences, The University of Texas School of Public Health, San Antonio, TX, USA

D. Gimeno · C. Serra · J. M. Martínez · G. L. Delclos · F. G. Benavides
CIBER de Epidemiología y Salud Pública (CIBERESP), Barcelona, Spain

C. Serra
Servicio de Prevención, Parc de Salut MAR, Barcelona, Spain

G. L. Delclos
Southwest 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

Introduction

Sick leave episodes due to non-work-related health problems (i.e., injuries or diseases of non occupational origin)

are responsible for most of the economic cost arising from all temporary sick pay benefits in Spain, currently exceeding 8 billion Euros [1]. To these, medical care and employers' direct and indirect costs must be added. In Spain, only about one third of the non-work-related sick leave episodes last more than 15 days but these account for most of the total sick leave-related costs [2]. Reducing the number of non-work-related sick leave episodes, particularly lengthy episodes, is a goal shared by workers, companies, health care and social security systems, because of the loss of health, decreases in productivity and costs related to medical care and sick pay benefits.

An early estimate of the prognosis for patients on sick leave could serve to identify cases less likely to recover and return to work (RTW) who are at higher risk of long-term absence or early job retirement [3]. Prognosis is affected by non-clinical and clinical factors. Personal and sociodemographic characteristics, occupational factors, legislation, insurance schemes and healthcare service system play an important role in the RTW process [4–8]. Besides these non-clinical factors, still, the likelihood of RTW and duration of sick leave greatly depends on the sick leave related diagnosis [9]. Health professionals are often requested to estimate the duration of sickness absence, but their accuracy to predict the further course of long-term sick leave is not high [10]. Recent evidence, suggests that workers with sick leave estimate their future length of sick leave more accurately than health professionals, especially in cases of long-term sickness absence [11, 12] and that workers' expectation of RTW is positively associated with likelihood [13, 14] and time to RTW [15].

Despite the large costs of temporary sick leave, research on worker perception on RTW is still sparse and many aspects remain unknown. Several studies have investigated the impact of perceived health status [16, 17], work ability [16, 18], expectations of RTW [13, 15, 19] and self-efficacy [8] on RTW. However most of these studies have been performed in workers with musculoskeletal problems [16], mental disorders [15] or in sick listed workers with different health conditions [13, 18, 19] while prior research examining RTW stratified by a diagnostic group within a single study has rarely been addressed [8, 17]. On the other hand, these studies do not clarify whether sickness absence is attributable to work or not, an important question that has implications for research and prevention [20, 21].

Research on long-term non-work-related sickness absence is needed to help design interventions to reduce time to RTW and to prevent workers in temporary sick leave to progress to permanent disability and early job retirement [3].

In this longitudinal cohort study we examine the associations between time to RTW and sick-listed worker perceptions of their health status, work ability, RTW expectations and time required to RTW, self-efficacy and self-perceived connection between health and job in employees on long-term non-work-related sickness absence. We also investigate whether these factors differ across different heath conditions (i.e., musculoskeletal disorders, mental disorders and other physical conditions).

Methods

Study Population and Design

In Spain, work- and non-work-related sick leave episodes are defined according to a medico-legal judgment made by a physician. Work-related sick leaves are those due to work-related health problems (i.e., injuries occurring at workplaces or during commuting, and officially listed diseases) [22]. Non-work-related sick leaves are those due to health problems that have not legally or medically been considered as being caused by working conditions, either because they are not included on the official list of occupational diseases (e.g., mental health disorders) or because the treating physician does not consider an occupational etiology to be likely (e.g., many cases of low back pain, pre-existing asthma not exacerbated by work).

When the sick leave is due to non-work-related health problems, certification and medical care is provided by general practitioners from the National Health Service. During the episode, the sick pay benefit is equivalent to approximately 60% of the monthly base salary from the 4th to the 20th day of the sick leave and increases to 75% from the 21st day onwards. It is paid by the employer from the 4th to the 15th day of sick leave, and by the social security system from the 16th day onwards. The maximum duration of non work-related sickness absence is 18 months (an initial 12 months, plus a 6 month extension). However, this can be further extended to 24 months when the clinical course suggests the possibility of further improvement and eventual return to work, thus avoiding a designation of permanent impairment [22]. Since 1995, at the employer's request, health insurance companies (called mutuas in Spain) are allowed to manage the worker's sick pay benefit and to offer some care complementary to the National Health Service medical care for non-work related sick leave episodes from the 16th day onwards. However, mutuas are not allowed to perform either the initial or the final medical certification [22].

A prospective cohort study was carried out, constructed from a population base of 210,285 workers from 22,626 companies in the Spanish provinces of Barcelona and Madrid for whom a single mutua provided case management of non-work-related sick leave episodes.

Cohort participants included workers with a current non-work-related sick leave episode exceeding 15 days (long-term non-work-related sick leave episode), recruited during their first medical visit in a mutua between March 1, 2007 and March 30, 2008. After obtaining informed consent, 57.1% (788/1,380) workers completed a baseline questionnaire. Workers who declined participation more often had mental disorders (27.1% vs. 18.5%; $P = 0.004$), but no differences were observed by sex ($P = 0.914$) or age ($P = 0.105$). The final sample with complete data for the study variables included 663 workers (84.1%) who reported better work ability (16.6 vs. 4.2; $P = 0.007$) and perceived less time required to RTW (41.0% vs. 32.7%; $P = 0.005$) than those excluded. The study protocol was approved by the institutional review board and safety committee of the mutua.

Follow Up

All participants were followed until the end of the episode or for a maximum of 24 months.

The follow-up period for each sick leave episode began at the start of the episode and considered ended when one of the following occurred: recovery or improvement, contract termination, permanent disability, death or loss to follow-up.

Data Collection

Baseline data on sociodemographic characteristics, occupational factors and worker perceptions of current sick leave episode and expectations of RTW were collected at the time of recruitment into the cohort using a self-administered questionnaire. The questionnaire was developed based on a literature review conducted for the period 1995-2005 to ascertain those factors most frequently investigated concerning sickness absence and its duration [4, 5, 23]. After follow up, baseline data were linked to the mutua's register of sick leave episodes, in order to collect end dates for each episode, final diagnosis (coded according to ICD-9) [24] and the reason for temporary non-work-related episode termination (i.e., recovery or improvement, contract termination, permanent disability, death or lost to following).

Time to Return to Work

Time to return to work was calculated from the difference in days between the date of the end and the start of sick leave episode, plus one. Participants were considered to have returned to work when the end of the sick leave episode was due to recovery or improvement and if they were still employed by the same company at the moment when the episode ended (n = 573). A participant was not considered to have returned to work, and was censored in the analysis, when the end of the episode was the result of a change in sick leave benefits due to work contract termination (n = 49), permanent disability (n = 21), death (n = 2) or was lost to follow-up (n = 18).

Worker Perceptions of Current Sick Leave Episode and Expectations of Return to Work

Five variables on workers' perceptions of their current sick leave episode and expectation of their RTW were assessed from self-reported questionnaire (Appendix): (1) Self-perceived health status was assessed using the general health item from the Health Questionnaire SF-12. Responses were collapsed into "good" (excellent, very good and good) and "poor" (fair and poor) categories; (2) Work ability was measured on a numerical scale from 0 to 10 [18] and values were recoded into three categories: "not at all or slightly reduced work ability" (from 0 to 3), "moderately reduced" (from 4 to 6) and "very or extremely reduced" (from 7 to 10); (3) Response options on time needed to RTW (i.e., return to the job the worker had before going on sick leave) (Appendix, question 3) were collapsed into <1, 1–3, >3 months, I will never be and I don't know; (4) The perception of a relationship between the current health and job was obtained from the question: "Do you think that your current health is related to your job?" Possible responses were "No", "Yes, partly", "Yes completely" [16]; and, (5) General self-efficacy was measured using three items from the General Self-Efficacy Scale [25] (Appendix, questions 5–7). Responses to each question ranged from 0 (never or almost never) to 4 (always). The indicator of self-efficacy was obtained by averaging the scores of the three items, grouped by tertiles as low (<2.67), moderate (2.68–3.32) and high (≥3.33).

Covariates

Age, sex, educational level (primary or less, secondary, postsecondary), co-habitation status (single vs. married/co-habiting), smoker (current, former, never), body mass index, physical activity at work (low/moderate vs. high/very high), psychological demands (low, intermediate, high), having a job with possibility for personal growth (low, intermediate, high), and job insecurity (low, intermediate, high) were considered as potential covariates [4–7]. In addition, workers at recruitment had different sick leave episode durations, so we included as a covariate the days on sick leave at recruitment dichotomized in <45 days and ≥45 days. This cut-off point was established according to the mutua's internal protocol, whereby all

workers with sick leave episode for more than 44 days are requested to attend a medical visit at the mutua. Because of too few cases in most diagnostic groups these were grouped into musculoskeletal disorders (i.e., codes ICD-9 710-739), mental disorders (i.e., codes ICD-9 290-319) and other physical conditions (i.e., codes ICD-9 001-289, 320-709 and 740-999).

Statistical Analysis

A Kaplan–Meier survival analysis was performed to calculate the median time to RTW and corresponding 25th and 75th percentiles. The association of worker perceptions on sick leave, expectations of RTW and covariates with time to RTW was examined using hazard ratios (HR) and 95% confidence intervals (95%CI) from Cox proportional survival regression models. Survival analysis is most commonly used to model the time to a negative or undesirable event, such as death or disease. The term "hazard" in this context refers to the "instantaneous risk" of death or disease at a certain moment in time, and in relation to a control group. In the present study, the event of interest is a positive or favourable outcome (i.e., RTW), and thus a HR > 1 expresses a higher "instantaneous risk" of RTW and, therefore, a reduced duration of sick leave until RTW than in the reference group. A HR < 1 expresses a lower "instantaneous risk" of RTW and, consequently, longer duration until RTW [26].

First, we examined the bivariate association of worker perception on sick leave, RTW variables and each covariate with time to RTW. A covariate was included in an adjusted model if it was associated with the outcome in the bivariate analysis ($P \leq 0.20$) and continued to be associated with the outcome ($P \leq 0.05$) in at least one of the five multivariate models (one for each main variable). Then, the contribution of the covariates to the associations between perception and RTW variables and time to RTW was explored by including each of the following sets of factors: sociodemographic variables (age, sex, co-habitation status), occupational factors (physical activity and job insecurity) and mutual adjustment for the other perception and RTW variables (health status, work ability, expectations and time to RTW, relation between health and job and self-efficacy). Finally, the analysis was repeated with simultaneous adjustment for all the above covariates. All models were adjusted for days on sick leave at recruitment. In addition, stratified analyses were conducted by sex and diagnostic group (i.e., musculoskeletal disorders, mental disorders and other physical conditions). The proportionality of hazards assumption was considered to be justified after examination of the Schoenfeld residuals [27]. Stata® v.10 and SPSS® v.15 were used for the statistical analyses.

Results

The median duration of sick leave until RTW was 89 days; 25% of episodes lasted less than 60 days (P25), while 25% lasted more than 139 days (P75). In the bivariate analyses (Table 1), it was observed that time to RTW increased with each year of age (HR = 0.99; 95%CI 0.98–0.99) and was greater for women (HR = 0.73; 95%CI 0.62–0.86).

At baseline, health status was self-perceived as poor by 51.9% of workers, 47.2% reported their work ability was very or extremely reduced and 21.7% reported that their current heath was totally related to their job. In contrast, 41.0% perceived needing less than 1 month to return to the same job and 39.7% scored high in general self-efficacy. In the bivariate analysis, poor perceived health status (HR = 0.53; 95%CI 0.45–0.63), very or extremely reduced work ability (HR = 0.47; 95%CI 0.37–0.59), lack of expectation of returning to the same job (HR = 0.09, 95%CI 0.04–0.21) and reporting a connection between the current health problem and the job performed were associated with a longer time to RTW. Duration of sick leave episode tended to increase with time estimated by the worker to be able to perform the same job the worker had before going on sick leave (Table 1).

In all multivariate models (Table 2) among the total study population these associations remained statistically significant except for the connection between the current health problem and job (HR = 0.83; 95%CI 0.64–1.06). Sex-stratified analysis (Table 3), however, showed that women who totally related health and work had longer episodes (HR = 0.63; 95%CI 0.42–0.95). A general similar pattern of association was detected in both sexes. However, perceived poor health status was only significantly related to longer non-work related episodes in women as work ability did for men.

Diagnostic-stratified analyses (Table 4) showed workers with musculoskeletal disorders and other physical conditions had a pattern similar to that of the total study population, but employees with mental disorders did not. Perceived health status (HR = 0.96; 95%CI 0.55–1.69) and work ability (HR = 2.93; 95%CI 0.62–13.92) were not related to time to RTW in workers on sick leave for mental disorders, whereas making a partial (HR = 0.43; 95%CI 0.23–0.81) or complete (HR = 0.41; 95%CI 0.20–0.82) connection between health and job was related to longer episodes. Time required by the worker to be able to perform the same job and RTW expectation was related to time to RTW across different health conditions.

Discussion

This prospective study found that workers with a long-term non-work-related sick leave episode who reported poor

Table 1 Sample characteristics, time to return to work (median duration and 25th and 75th percentiles) and associations (HR, 95%CI) with time to return to work from bivariate Cox regression models in a cohort of workers with a non-work-related sick leave of more than 15 days (n = 663)

	n	(%)	DM (P25; P75)	HR (95%CI)[a]
Age [mean (standard deviation)]	39.8	(11.4)	89.0 (60.0; 139.0)	0.99 (0.98–0.99)
Sex				
Male	364	(54.9)	82.0 (59.0; 126.0)	1
Female	299	(45.1)	97.0 (63.0; 166.0)	0.73 (0.62–0.86)
Co-habitation status				
Single	272	(41.0)	74.0 (54.0; 117.0)	1
Married or co-habiting	391	(59.0)	96.0 (64.0; 152.0)	0.74 (0.62–0.87)
Physical activity at work				
Low or moderate	435	(65.6)	85.0 (60.0; 132.0)	1
High or very high	228	(34.4)	94.0 (62.0; 166.0)	0.77 (0.65–0.92)
Job insecurity				
Low	63	(9.5)	68.0 (53.0; 104.0)	1
Intermediate	186	(28.1)	83.0 (59.0; 135.0)	0.66 (0.49–0.88)
High	414	(62.4)	94.0 (63.0; 150.0)	0.59 (0.45–0.78)
Days on sick leave at recruitment				
< 45 days	407	(61.4)	71.0 (50.0; 117.0)	1
≥45 days	256	(38.6)	112.0 (75.0; 182.0)	0.57 (0.48–0.68)
Diagnostic group				
Musculoskeletal disorder	314	(47.4)	89.0 (61.0; 129.0)	1
Mental disorder	119	(17.9)	89.0 (64.0; 171.0)	0.78 (0.62–0.99)
Other physical conditions	230	(34.7)	90.0 (57.0; 141.0)	1.02 (0.85–1.22)
General health status				
Good	319	(48.1)	74.0 (53.0; 115.0)	1
Poor	344	(51.9)	105.0 (69.0; 179.0)	0.53 (0.45–0.63)
Work ability				
Not at all or slightly reduced	110	(16.6)	65.0 (49.0; 101.0)	1
Moderately reduced	240	(36.2)	77.0 (53.0; 114.0)	0.83 (0.65–1.05)
Very or extremely reduced	313	(47.2)	111.0 (71.0; 171.0)	0.47 (0.37–0.59)
Time required to RTW				
< 1 month	272	(41.0)	66.0 (49.0; 91.0)	1
1–3 months	105	(15.8)	112.0 (80.0; 155.0)	0.45 (0.36–0.58)
> 3 months	43	(6.5)	144.0 (100.0; 227.0)	0.32 (0.23–0.46)
I will never be able to	17	(2.6)	225.0 (157.0; 748.0)	0.09 (0.04–0.21)
I don't know	226	(34.1)	108.0 (70.0; 179.0)	0.36 (0.29–0.43)
Relation between health and job				
No	280	(42.2)	83.0 (57.0; 121.0)	1
Yes, partially	239	(36.0)	89.0 (64.0; 145.0)	0.74 (0.62–0.89)
Yes, completely	144	(21.7)	106.0 (64.0; 166.0)	0.61 (0.49–0.76)
General self-efficacy				
High	263	(39.7)	90.0 (58.0; 142.0)	1
Moderate	150	(22.6)	85.0 (60.0; 117.0)	1.04 (0.84–1.29)
Low	250	(37.7)	89.0 (63.0; 156.0)	0.85 (0.71–1.03)

[a] All models were adjusted for days on sick leave at recruitment (i.e., <45 days, ≥45 days)

health, extremely reduced work ability, requiring more time to perform the same job and lack of expectations of returning to the same job, took longer to return to work than their counterparts. This finding was independent of potential confounders such as sociodemographic and occupational factors. A similar pattern of associations was

Table 2 Adjusted associations (HR, 95%CI) of worker perceptions on current sick leave and expectations of return to work with time to return to work in a cohort of workers with a non-work-related sick leave of more than 15 days (n = 663)

	Model 1 HR (95%CI)	Model 2 HR (95%CI)	Model 3 HR (95%CI)	Model 4 HR (95%CI)
General heath status				
Good	1	1	1	1
Poor	0.56 (0.47–0.67)	0.53 (0.45–0.63)	0.70 (0.58–0.84)	0.71 (0.59–0.85)
Work ability				
Not at all or slightly reduced	1	1	1	1
Moderately reduced	0.84 (0.66–1.06)	0.82 (0.65–1.05)	1.04 (0.81–1.33)	1.04 (0.81–1.34)
Very or extremely reduced	0.48 (0.38–0.61)	0.48 (0.38–0.60)	0.68 (0.53–0.87)	0.69 (0.53–0.88)
Time required to RTW				
< 1 month	1	1	1	1
1–3 months	0.46 (0.39–0.58)	0.46 (0.36–0.58)	0.49 (0.39–0.63)	0.50 (0.39–0.63)
> 3 months	0.35 (0.24–0.49)	0.33 (0.23–0.47)	0.34 (0.24–0.48)	0.36 (0.25–0.52)
I will never be able to	0.10 (0.04–0.23)	0.10 (0.04–0.22)	0.12 (0.05–0.28)	0.13 (0.06–0.31)
I don't know	0.37 (0.31–0.46)	0.37 (0.30–0.45)	0.43 (0.35–0.53)	0.46 (0.37–0.57)
Relation between health and job				
No	1	1	1	1
Yes, partially	0.79 (0.61–0.89)	0.78 (0.64–0.94)	0.85 (0.70–1.03)	0.85 (0.70–1.03)
Yes, completely	0.62 (0.49–0.78)	0.66 (0.52–0.84)	0.80 (0.63–1.01)	0.83 (0.64–1.06)
General self-efficacy				
High	1	1	1	1
Moderate	1.03 (0.83–1.29)	1.11 (0.89–1.38)	0.89 (0.71–1.11)	0.93 (0.74–1.17)
Low	0.87 (0.72–1.06)	0.94 (0.77–1.14)	1.10 (0.90–1.34)	1.13 (0.92–1.38)

Hazard ratio (HR) in model 1 is adjusted for sociodemographic variables (age, sex, co-habitation status); HR in model 2 is adjusted for occupational variables (physical activity and job insecurity); HR in model 3 is mutually adjusted for variables in the table; HR in model 4 is adjusted for all of them. All models were adjusted for days on sick leave at recruitment (i.e., <45 days or ≥45 days)

found when considering sick leave episodes related to musculoskeletal disorders and other physical health conditions. For mental health disorders, perception of a relationship between current health status and job was associated with longer duration while self-rated health and work ability did not. Time estimated by the worker to be able to perform the same job and self RTW expectation were related to time to RTW across different health conditions.

Our findings reporting the association of poor health and a reduced ability to perform the usual job with longer time to RTW are consistent with prior recent literature on time to RTW [16–18, 23] and with other research on the effect of self-rated health and work ability on long- term sickness absence [28, 29] and likelihood of returning to work [30]. In addition, longer time required by the worker to be able to perform the same job and negative recovery expectations of returning to the same job were also associated with slower RTW. This is also consistent with prior research suggesting that a positive RTW expectancy predict a shorter time to RTW [15] and most workers who believe they will not return to work do not actually return [13]; and as shown in our study, if they do, they take a longer time.

General self-efficacy was not related to time to RTW in our cohort in contrast with other literature [31]. Although it may be possible that scoring low on this scale is a consequence of being ill, rather than a prognostic factor of long-term sickness absence [32], our results regarding self-efficacy should be consider preliminary given methodological limitations of the self-efficacy measure we used. Due to space constraints in the questionnaire, we only used three of the 10 items [32] from the Spanish version [25] of the General Self-Efficacy Scale to construct a general measure. Recently, a new specific RTW self-efficacy scale [33] and specific subscales on self-efficacy for RTW (i.e., willingness to expend effort in completing the behavior, persistence in the face adversity and willingness to initiate behavior) have been developed and tested to reflect the different dimensions of self-efficacy [8, 34]. High willingness to expend effort in performing a specific behavior was associated with a shorter time to RTW in employees on long-term sickness absence with different types of health conditions [34] and remained significantly associated with time to RTW across different health conditions (i.e., musculoskeletal conditions, other physical conditions and mental health conditions) [8].

Table 3 Adjusted associations of worker perception on current sick leave and expectations of return to work with time to return to work stratified by sex in a cohort of workers with a non-work-related sick leave of more than 15 days (n = 663)

	Men			Women		
	n	(%)	HR (95%CI)	n	(%)	HR (95%CI)
General heath status						
Good	212	(58.2)	1	107	(35.8)	1
Poor	152	(41.8)	0.87 (0.68–1.12)	192	(64.2)	0.64 (0.48–0.85)
Work ability						
Not at all or slightly reduced	70	(19.2)	1	40	(13.4)	1
Moderately reduced	136	(37.4)	1.01 (0.74–1.39)	104	(34.8)	1.03 (0.67–1.58)
Very or extremely reduced	158	(43.4)	0.59 (0.42–0.81)	155	(51.8)	0.73 (0.47–1.13)
Time required to RTW						
< 1 month	166	(45.6)	1	106	(35.5)	1
1–3 months	66	(18.1)	0.57 (0.42–0.77)	39	(13.0)	0.39 (0.26–0.60)
> 3 months	22	(6.0)	0.31 (0.18–0.51)	21	(7.0)	0.49 (0.29–0.84)
I will never be able	8	(2.2)	0.31 (0.10–1.00)	9	(3.0)	0.07 (0.02–0.24)
I don't know	102	(28.0)	0.38 (0.28–0.52)	124	(41.5)	0.48 (0.35–0.67)
Relation between health and job						
No	152	(41.8)	1	128	(42.8)	1
Yes, partially	121	(33.2)	0.88 (0.68–1.15)	118	(39.5)	0.76 (0.56–1.03)
Yes, completely	91	(25.0)	0.92 (0.66–1.28)	53	(17.7)	0.63 (0.42–0.95)
General self-efficacy						
High	150	(41.2)	1	113	(37.8)	1
Moderate	102	(28.0)	0.95 (0.70–1.29)	48	(16.1)	0.84 (0.57–1.24)
Low	112	(30.8)	1.05 (0.76–1.43)	138	(46.2)	1.20 (0.91–1.60)

HR = hazard ratio adjusted for sociodemographic variables (age, sex, co-habitation status), occupational variables (physical activity and job insecurity) and mutually adjusted (Model 4). All models were adjusted for days on sick leave at recruitment (i.e., <45 days or ≥45 days)

The main difference with prior research, however, is that we analysed only certified non-work-related sick leave episodes rather than any sickness absence as usually analysed in the literature. Mixing non-work and work related episodes may confound the associations as well as difficult the design of effective interventions to reduce time to RTW since work and non-work related sick leave episodes could have different determinants or these could vary on their level of influence [4]. In future research it would be of interest to assess specific subscales and specific RTW self-efficacy in workers with a long-term non-work related sick leave episode.

Despite our cohort study being based on workers with a sick leave episode certified as non-work-related, 21.7% perceived their health problem as strongly related to their work and 36.0% as partially related. In a previous study conducted in Spain, similar results were detected. Thirty seven percent of sick-listed workers on non-work related sick leave reported their diseases were probably related to work, while only 15.9% were probably related to working conditions according to the expert's opinion [35]. The divergent result between physicians and workers could be explained because physicians are likely to apply more restrictive criteria in their assessments [35]. In our cohort, perception of a relationship between current health status and job was only significantly associated with more time to RTW in the subgroup with mental health disorders. In Spain, such disorders (e.g., depression) are not recognised as occupational diseases but instead as non-work-related disorders. This certification depends on the medical criteria; if it is restrictive it can lead to misclassification of diseases, adding further complexity to the analysis of non-work-related sick leave episodes. On the other hand, workers who declined participation more often had mental disorders than participants, which may have biased our results. Future research conducting separate analyses for non-work and work related sickness absence will need to clarify these issues.

Some methodological issues are to be considered when interpreting our findings. Participants were recruited from a single mutua, and only included workers whose companies had delegated case management to this mutua. Although mutuas presently cover 67% of the Spanish working population [36] and the mutua in our study was the sixth

Table 4 Adjusted association of worker perception on current sick leave and expectations of return to work with time to return to work stratified by diagnostic group in a cohort of workers with a non-work-related sick leave of more than 15 days (n = 663)

	Musculoskeletal disorder			Mental disorder			Other physical conditions		
	n	(%)	HR (95%CI)	n	%	HR (95%CI)	n	%	HR (95%CI)
General heath status									
Good	179	(57.0)	1	27	(22.7)	1	113	(49.1)	1
Poor	135	(43.0)	0.52 (0.39–0.71)	92	(77.3)	0.96 (0.55–1.69)	117	(50.9)	0.72 (0.52–0.99)
Work ability									
Not at all or slightly reduced	50	(15.9)	1	3	(2.5)	1	57	(24.8)	1
Moderately reduced	114	(36.3)	0.92 (0.63–1.34)	38	(31.9)	4.14 (0.87–19.72)	88	(38.3)	1.07 (0.72–1.58)
Very or extremely reduced	150	(47.8)	0.49 (0.33–0.72)	78	(65.5)	2.93 (0.62–13.92)	85	(37.0)	0.71 (0.48–1.05)
Time required to RTW									
<1 month	132	(42.0)	1	33	(27.7)	1	107	(46.5)	1
1–3 months	54	(17.2)	0.59 (0.42–0.84)	17	(14.3)	0.34 (0.16–0.69)	34	(14.8)	0.47 (0.30–0.75)
>3 months	18	(5.7)	0.36 (0.20–0.64)	7	(5.9)	0.41 (0.12–1.35)	18	(7.8)	0.44 (0.25–0.76)
I will never be able to	5	(1.6)	0.36 (0.09–1.52)	7	(5.9)	0.12 (0.03–0.43)	5	(2.2)	0.09 (0.01–0.71)
I don't know	105	(33.4)	0.50 (0.36–0.68)	55	(46.2)	0.39 (0.23–0.67)	66	(28.7)	0.45 (0.31—0.67)
Relation between health and job									
No	130	(41.4)	1	25	(21.0)	1	125	(54.3)	1
Yes, partially	109	(34.7)	1.13 (0.84–1.52)	61	(51.3)	0.43 (0.23–0.81)	69	(30.0)	0.74 (0.53–1.03)
Yes, completely	75	(23.9)	1.06 (0.72–1.56)	33	(27.7)	0.41 (0.20–0.82)	36	(15.7)	0.70 (0.42–1.17)
General self-efficacy									
High	137	(43.6)	1	24	(20.2)	1	102	(44.3)	1
Moderate	85	(27.1)	0.95 (0.68–1.31)	13	(10.9)	0.69 (0.28–1.71)	52	(22.6)	0.87 (0.59–1.29)
Low	92	(29.3)	1.07 (0.79–1.64)	82	(68.9)	1.03 (0.57–1.85)	76	(33.0)	1.20 (0.85–1.71)

HR = hazard ratio adjusted for sociodemographic variables (age, sex, co-habitation ststus), occupational variables (physical activity and job insecurity) and mutually adjusted (Model 4). All models were adjusted for days on sick leave at recruitment (i.e., <45 days or ≥45 days)

largest in Spain, sickness absence duration may vary by mutua and case management entity [37]. Participant recruitment was conducted at the first medical visit to the mutua which occurred during the first 3 months of sick leave in 97% of cases in our cohort. Although in Spain mutuas can legally schedule this medical visit from the 16th day onwards, in our study, the mutua's internal protocol mandated a medical visit for all workers with a sick leave episode of more than 44 days only. Consequently, these workers were more likely to be recruited into our study than workers with episodes between 16 and 44 days of duration. In order to minimize the effect of obtaining self-reported data from workers with differing length of sick leave episodes, we adjusted for days on sick leave at recruitment. This adjustment, however, had a small impact on the reported association (data not shown) so it is unlikely that the reported associations were biased due to questionnaire completion by workers with longer days on sick leave at recruitment. Last, the final sample included workers with greater work ability and shorter time perceived to RTW than the excluded sample. This may have biased our results towards an underestimation of the reported associations.

We obtained data on duration of sick leave episode until the first RTW only, so our findings may not be applicable to relapse episodes [38]. Our findings may not be applicable either to workers with work-related sick leave or to the working population experiencing sick leave episodes shorter than 15 days, both of which may have different determinants. Although we controlled for individual factors frequently associated with sickness absence in the literature, contextual factors (e.g., local unemployment rate, macroeconomic characteristics, legal definitions of sick leave, level and type of health care services and sick pay benefits) vary widely between countries [39] and may influence the length of sick leave episodes [40, 41]. Thus, our findings may be limited to countries with a context similar to Spain. The country-to-country variation highlights the need for international comparative studies, a first step being the actualization of existing outdated efforts comparing the legal frame of sick leave within the European Union [42].

Our study is not without strengths. We used data from a prospective cohort of workers with certified non-work-related sick leave for more than 15 days, what allow us knowing specific determinants in lengthy non occupational sick leaves. Second, the temporary non-work-related episodes were followed until its end and the reason for episode termination was collected (i.e., recovery or improvement, contract termination, permanent disability, death), allowing us to specifically analyze the time of disability until return to work, unlike other studies analyzing the duration of sickness absence regardless of whether or not the employee returns to work. And third, all key data regarding the sick-leave episode (e.g., end date and whether the worker returned to work or not) were collected from official registers, rather than self-reports, thus avoiding information bias.

Despite the limitations, workers' own perceptions on required time and expectation regarding their future RTW seem to be important prognostic factors for non-work-related sick leave duration across different health conditions (i.e., musculoskeletal disorders, mental disorders and other physical conditions). Injured workers may largely be reflecting prognostic information that their clinicians share with them but worker perception regarding sick leave and RTW draws a line between a group ready for rehabilitation and a group who in addition need motivational help or adaptive coping strategies [43, 44]. Questioning the workers on their perception and expectation of RTW during medical visits could help health care professionals to identify individuals at risk of long-term sickness absence in the early stages of sickness absence; in turn, this should facilitate triage and management of the patient.

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Conflicts of interest None declared.

Appendix

1. In general, would you say that your health is: *(by this we mean your current health, at this moment in time)*

   [ ] Excellent

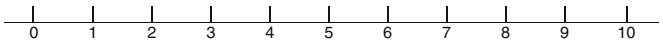
   [ ] Very good

   [ ] Good

   [ ] Fair

   [ ] Poor

2. To what extent do you feel that, at this current moment in time, your ability to perform your usual job is lower than before? *Mark the appropriate number with an X (0= hardly reduced at all, 10= extremely reduced):*

3. Approximately how long do you think you will need to return to the job you had before you went on sick leave? *(we understand that this question is difficult to answer, please try to give an answer, even if it is only approximate)*

   [ ] Less than 1 week

   [ ] Between 1 and 4 weeks

   [ ] Between 1 and 3 months

   [ ] Between 4 and 6 months

   [ ] Over 6 months

   [ ] I will never be able to perform the job I used to before

   [ ] I do not know, I have no idea how long I will take to recover

4. Do you think that your current health is related to your job?

   [ ] No

   [ ] Yes, partly

   [ ] Yes, completely

5. Do you have the confidence in yourself to effectively deal with unexpected happenings or events?

   [ ] Never or almost never

   [ ] Only from time to time

   [ ] Sometimes

   [ ] A lot

   [ ] Always

6. Can you solve the majority of problems if you try hard enough?

   [ ] Never or almost never

   [ ] Only from time to time

   [ ] Sometimes

   [ ] A lot of the time

   [ ] Always

7. Come what may, in general, are you able to handle it?

   [ ] Never or almost never

   [ ] Only from time to time

   [ ] Sometimes

   [ ] A lot of the time

   [ ] Always

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