Chronic fatigue syndrome-like caseness as a predictor of work status in fatigued employees on sick leave: four- year follow-up study

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Chronic fatigue syndrome-like caseness as a predictor of work status in fatigued employees on sick leave: four-year follow-up study

(short title: CFS-like caseness as predictor of work status)

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Abstract

Objective
Many chronic fatigue syndrome (CFS) patients are unemployed or unable to work, but most prognostic studies have failed to assess occupational outcomes in CFS. We aimed to assess whether CFS-like caseness (meeting the criteria for CFS) predicts work status in the long-term.

Methods
We conducted a prospective study in a sample of fatigued employees absent from work. Data were collected at baseline and four years later, and included CFS-like caseness and work status (inactive work status and full work incapacity). We used multiple logistic regression models to determine the association between CFS-like caseness and work status, controlling for potential confounders.

Results
CFS-like cases at baseline were three times more likely to be unable to work at follow-up than fatigued employees who did not meet CFS criteria at baseline (ORs between 3 and 3.3). These associations grew even stronger when we controlled for demographic and clinical confounders (ORs between 3.4 and 4.4).

Conclusion
A CFS-like status (compared to non-CFS fatigue) proved to be a strong predictor of an inactive work status and full work incapacity in the long-term. Since little is known about effective interventions that prevent absenteeism and work incapacity or facilitate return to work in subjects with chronic fatigue, there is a great need for powerful early interventions that restore or preserve the ability to work, especially for workers who meet criteria for CFS.

Introduction

Chronic fatigue syndrome is characterized by persistent, unexplained fatigue that lasts at least six months and impaired functional abilities. [1] Although alleviation of symptoms is not uncommon, full recovery from untreated CFS is rare. [2]
The prevalence of CFS among workers is estimated to be 3.6%. [3] The issue of CFS and work status has been addressed in two recent systematic reviews. [4 5] It was found that many CFS patients are unemployed or unable to work, and that the prognosis in terms of return to work is poor. However, it is also concluded in both reviews that most prognosis studies to date have failed to focus on occupational outcomes, despite the apparent economic and societal consequences of CFS. As a result, many questions remain unanswered: the association between functional impairment and work status is not well demonstrated, evidence on effective interventions restoring the ability to work is limited, and predictors of occupational outcomes in CFS have yet to be found. [4]
In the present report, we focus on CFS-like caseness as a predictor of work status in a sample of fatigued employees absent from work who were followed up approximately four years later. We believe we are the first to do so.

Methods

Design
We conducted a prospective study as part of a randomized trial described elsewhere. [6] Data used in the present analysis were collected at baseline assessment and at long-term follow-up. This additional follow-up measurement was conducted simultaneously for all participants, as a result of which the mean follow-up period is 3.8 years (range 3.1 to 4.8 years).

Subjects
Participants in the original trial were recruited in collaboration with a local occupational health service (OHS) that monitors a working population of 80,000 employees. Inclusion criterion was severe fatigue (a score of 35 or more on the Checklist Individual Strength [7]) for four months or more as one of the main health problems in combination with complete absenteeism from work for six to 26 weeks (thereby excluding formal work incapacity). Participants were excluded from participation if they: had medical conditions that explained fatigue; received co-interventions for fatigue; had a previously classified psychiatric disorder; or received psychological treatment. In addition, absenteeism should not be caused by problems unrelated to health (e.g. a conflict at work). Of the 151 participants who entered the original study, 127 (84%) responded to the long-term follow-up and were included in this analysis. Non-responders at follow-up were significantly more fatigued and had significantly lower levels of physical functioning at baseline than responders.

Study variables
Fatigue severity was measured with the subscale fatigue severity of the Checklist Individual Strength (CIS) [7]. Higher scores indicate a higher severity of fatigue, a score of 35 or higher is indicative of severe fatigue. Physical functioning was measured with a subscale from the Short Form Health Survey (SF-36) [8], with higher scores indicating higher levels of physical functioning. Participants were identified as *CFS-like cases* at baseline if they met all of the following research criteria: a CIS score of 40 or higher [9], a self-reported duration of fatigue complaints of six months or more and a SF-36 score on the subscale physical functioning of 60 or lower. Except for the symptom criteria, these research criteria approximate the CDC criteria for CFS. [1] Without proper medical examination, subjects who meet CFS criteria do not necessarily qualify as CFS patients, but a CFS-like status is widely regarded as a good proxy for medically diagnosed CFS. [10] None of the fatigued employees had a CFS diagnosis made by a physician at entry in the study.
Work status at follow-up was assessed in two ways: self-reported inactive work status (including sick leave, full or partial work incapacity, unemployment and retirement pension) and self-reported full work incapacity (including disability benefits) as specified in the Dutch Social Disability Act. Other variables included psychological problems (SCL-90 [11 12]), self-rated health (SF-36 [8]), self-efficacy (sense of control in relation to complaints, SES [6 9]), psychological attributions (beliefs regarding the psychological cause of complaints, CAL [6 9]), somatic attributions (beliefs regarding the somatic cause of complaints, CAL [6 9]), self-reported duration of absenteeism and a self-reported CFS diagnosis at follow-up.

Statistical analysis

We used multiple logistic regression analysis to determine the association between a CFS-like status at baseline and work status at follow-up. In a first step, CFS-like caseness at baseline was entered in the model. Subsequently, we controlled for potential confounders at baseline. We also controlled for treatment received in the original study and variations in follow-up time, but these variables were later omitted from the analysis since adjustment did not alter our findings. Logistic regression analysis was performed using SPSS (version 11.5).

Results

Characteristics of the sample

In table 1, the characteristics of the participants at baseline and at follow-up are presented. What stands out is the high level of fatigue and absenteeism at follow-up in the entire sample. 57% of the participants (still) met criteria for severe fatigue four years later, while 54 participants (43%) were not working at the time of follow-up. A substantial number of CFS-like employees at baseline went on to meet criteria for CFS four years later (40%), in most cases without receiving a CFS diagnosis in the course of time. Twelve participants (16.9%) developed a CFS-like status in the course of four years.

***Table 1**. Characteristics of 127 participants at baseline and 4-year follow-up, according to CFS-like caseness at baseline*

	CFS-like employees n=52	**Fatigued employees** N=75
demographics at baseline		
female sex *	31 (59.6)	40 (53.3)
age in years	43.9 (8.4)	44.2 (8)
education (1=low to 7=high)	3.2 (1.4)	4.2 (1.7)
CFS selection variables		
fatigue severity (CIS)		
baseline	50.1 (5)	46.7 (6.6)
follow-up	39.0 (13.8)	30.8 (13.5)
duration fatigue complaints (mths) at baseline	35.0 (31)	22.8 (26.6)
physical functioning (SF-36)		
baseline	45.1 (13.1)	77.0 (20.3)
follow-up	58.0 (25.1)	78.8 (20.8)
CFS-like cases at follow-up *	21 (40.4)	12 (16.9)
CFS diagnoses at follow-up *	4 (7.7)	3 (4.1)
work status at follow-up		
inactive work status * [1]	31 (59.6)	23 (30.7)
full work incapacity *	20 (38.5)	13 (17.3)
possible confounders		
duration of absenteeism (wks) at baseline	11.8 (3.5)	12.4 (5.3)
psychological problems (SCL-90)		
baseline	177.9 (50.2)	181.0 (49.1)
follow-up	160.6 (51.2)	139.7 (36.9)
self-rated health (SF-36)		
baseline	45.9 (16.5)	59.0 (17.1)
follow-up	47.2 (20.9)	62.6 (20.1)
somatic attributions (CAL) at baseline	10.5 (2.1)	8.1 (2.4)
psychological attributions (CAL) at baseline	18.5 (4.6)	19.3 (4.2)

Data are mean (SD) or *number of patients (%).
CFS-like employees= participants who met research criteria for CFS *at baseline*.
Fatigued employees= participants who did not meet research criteria for CFS *at baseline*.
[1] Including sick leave, full or partial work incapacity, unemployment and retirement pension

CFS as predictor of work status

In table 2, odds ratios for the association between CFS-like caseness at baseline and work status are presented. In a univariate analysis, CFS-like cases were three times more likely to be unable to work at follow-up than fatigued employees who did not meet CFS criteria at baseline. These associations grew even stronger when we controlled for demographic and clinical confounders, with an adjusted odds ratio of 4.4 for inactive work status and 3.9 for full work incapacity.

In an ancillary analysis, we extended the model and controlled for CFS selection variables at baseline (results not shown). Controlling for fatigue severity and fatigue duration did not alter the strong association between CFS-like caseness and work status (OR inactive work status 4.2 (CI 1.5-12.3); OR full work incapacity 4.5 (CI 1.4-14.6)), but the odds ratios decreased and lost their significance when we controlled for physical functioning in a final step (OR inactive work status 2.2 (CI 0.6-7.7); OR full work incapacity 2.3 (CI 0.6-8.4)).

Table 2. *CFS-like caseness at baseline as predictor of inactive work status and full work incapacity at 4-year follow-up*

work status	**odds ratio (95% CI)**
inactive work status	
odds ratio [1]	3.3 (1.6-7.0)
odds ratio [2]	3.6 (1.5-8.7)
odds ratio [3]	4.4 (1.6-12.2)
full work incapacity	
odds ratio [1]	3.0 (1.3-6.8)
odds ratio [2]	3.4 (1.3-8.7)
odds ratio [3]	3.9 (1.3-11.8)

[1] Crude association
[2] Adjusted for age, sex, education at baseline
[3] Adjusted for age, sex, education, duration of absenteeism, psychological problems, self-rated health, somatic attributions, psychological attributions at baseline

Discussion

We found that many fatigued employees were (still) unable to work four years later, in terms of inactive work status and full work incapacity. A CFS-like status at baseline proved to be a strong predictor of an inactive work status and full work incapacity in the long-term, despite the fact that fatigued employees without a such a status showed a less than favourable prognosis as well.

Furthermore, controlling for CFS selection variables only had impact when physical functioning was entered in the model. This ancillary analysis suggests that it is the component of physical dysfunctioning in CFS that leads to work incapacity, and not so much the component of fatigue, but these findings should be interpreted with some caution. Finally, a CFS-like status among the workers in our sample remained unrecognized in most cases, in line with findings from earlier studies. [3 13]

An obvious limitation of this study is that our CFS-like cases were not officially diagnosed with CFS, and may not represent CFS patients seen in clinical settings. Another limitation is that the use of research criteria for CFS and the fact that non-responders at follow-up displayed higher levels of fatigue and disability may have led to an underestimation of the association between CFS-like caseness and work status.

To date, little is known about effective interventions that prevent absenteeism and work incapacity or facilitate return to work in subjects with chronic fatigue. [4] In our own randomized trial, we compared brief cognitive-behavioural therapy by general practitioners with no treatment and found that our experimental intervention had no effect on fatigue or work status at any point in the course of 12 months [6] and did not prevent work incapacity in the long-term. [14] The findings in the present study seem to underline the need for powerful early interventions that restore or preserve the ability to work in chronic fatigue, especially for workers who meet criteria for CFS.

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Competing interests: none.

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main messages

Many fatigued employees on sick leave are (still) unable to work four years later.

A CFS-like status at baseline is a strong predictor of an inactive work status and full work incapacity in the long-term.

Many workers who meet criteria for CFS remain unrecognized as such.

policy implications

There is a great need for powerful early interventions that restore or preserve the ability to work in fatigued employees, especially for those who meet criteria for CFS.