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# Low medically certified sickness absence among employees with poor health status predicts future health improvement: the Whitehall II study

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## ABSTRACT

**Background:** High sickness absence is associated with poor health status, but it is not known whether low levels of sickness absence among people with poor health predict future health improvement.

**Objective:** To examine the association between medically certified sickness absence and subsequent change in health among initially unhealthy employees.

**Methods:** 5210 employees (3762 men, 1448 women) whose self-rated health status remained stable (either good or poor) between data phases 1 and 2 were divided into three groups according to their rate of medically certified absences during this period (0 vs >0–5 vs >5 absence spells longer than 7 days per 10 person-years). Subsequent change in health status was determined by self-rated health at follow-up (phase 3).

**Results:** After adjustment for age and sex, there was a strong contemporaneous association between lower sickness absence and better health status. Among participants reporting poor health, low absence was associated with subsequent improvement in health status (odds ratio 2.66, 95% CI 1.78 to 4.02 for no absence vs >5 certified spells per 10 years). This association was only partially explained by known existing morbidity, socioeconomic position and risk factors.

**Conclusions:** Low levels of medically certified sickness absence seem to be associated with positive change in health status among employees in poor health. Further research is needed to examine whether lower sickness absence also marks a more favourable prognosis for specific diseases.

environment.<sup>1–8</sup> We studied this hypothesis in a large occupational cohort, the Whitehall II study.

## METHODS

### Participants and design

The target population for the Whitehall II prospective cohort study was all London-based office staff, aged 35–55, working in 20 civil service departments, 6895 men and 3413 women at study entry.<sup>2</sup> Data on sickness absence between phase 1 (1985–88) and phase 2 (1989–90) and self-rated health status at phases 1, 2 and 3 (1991–93) were available for 6591 employees. The mean time interval between phase 1 and phase 2 was 3.0 years and that between phase 2 and phase 3 was 2.5 years. In this study, we included those 5210 employees (3762 men, 1448 women) whose self-rated health status (either good or poor) was stable across phases 1 and 2 (the baseline period), and determined changes in health based on self-rated health status at follow-up (phase 3). The 5062 excluded participants whose self-rated health status was either not stable or was missing had a significantly higher absence rate (2.4 spells >7 days per 10 person-years) than the included 4249 participants who had stable good health (0.9 spells >7 days per 10 person-years,  $p < 0.001$  in Poisson regression analysis) but a significantly lower absence rate than the 961 included participants who had stable poor health (3.3 spells >7 days per 10 person-years,  $p < 0.001$  in Poisson regression analysis).

### Exposure and covariates

Computerised records of medically certified absences (spells >7 days) were obtained from civil service pay centres.<sup>3</sup> Participants were divided into three groups according to their level of absence (0, >0–5, >5 medically certified spells per 10 years). Covariates in addition to age and sex included: (1) baseline health measures; (2) employment grade (administrative, professional, support); (3) behaviour-related risk factors; (4) psychosocial factors at work (footnotes in table 1).

### Outcome

At phases 1, 2 and 3, the participants rated their health during the past 12 months either as good (response options “very good” or “good”) or poor (response options “average”, “poor” or “very poor”). Change in health status was determined by comparing health status at phases 1 and 2 with

The future course of diseases and health is known to vary between individuals even when their health status is similar. In addition to determining factors that predict disease onset, identification of factors that mark a positive change in health status among people with pre-existing health problems is important. Previous studies show that high medically certified sickness absence is associated with poor and declining health status,<sup>1–5</sup> but it is unclear whether certified absence can be used to predict prognosis.

In this study, we hypothesised that low medically certified sickness absence would be a predictor of recovery among people whose health status is poor, because lower medically certified sickness absence indicates better day-to-day functioning in occupational settings, a smaller disease burden and lower risk factor levels—for example, less socioeconomic adversity, less risky health-related behaviour and a better psychosocial work

**Table 1** Logistic regression models for associations between medically certified absence spells (>7 days) and subsequent improvement in self-reported health status among male and female employees with poor self-reported health status at baseline

Sickness absence rate* (spells per 10 years)	No of participants (No of cases)	Odds ratio (95% CI) for good health at follow-up† adjusted for:				
		Age and sex (A)	A + baseline health measures‡ (B)	B + employment grade (C)	C + behaviour-related risk factors¶ (D)	D + psychosocial factors at work§
0	469 (164)	2.66 (1.75 to 4.02)	2.36 (1.54 to 3.62)	2.07 (1.34 to 3.21)	2.04 (1.31 to 3.18)	1.99 (1.28 to 3.10)
1–5	210 (64)	2.13 (1.34 to 3.40)	2.08 (1.54 to 3.62)	1.93 (1.19 to 3.11)	1.90 (1.17 to 3.07)	1.87 (1.15 to 3.03)
>5	211 (37)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)

\*The assessment period for sickness absence was between phase 1 and phase 2. Self-rated health was measured at phase 1 and phase 2 and only those with poor self-rated health at both times and data on all covariates were included.

†Self-rated health at phase 3.

‡Presence of longstanding illness, disability or infirmity (1 = yes, 0 = no); minor psychiatric morbidity caseness based on the 30-item General Health Questionnaire (1 = yes, 0 = no); presence of 17 different symptoms in previous 14 days (range 0–15); number of recurring health problems (range 0–12); and a composite physical illness indicator (diabetes, diagnosed heart trouble, ECG abnormalities, hypertension and/or respiratory illness; 1 = yes, 0 = no).<sup>3</sup> Average levels at phase 1 and phase 2 were used for all measures (except for the physical illness indicator).

¶Smoking (current smoker vs other), physical activity (mild, moderate, vigorous), alcohol consumption (0, 1–21 and >21 units of alcohol per week), and body mass index (kg/m<sup>2</sup>) from phase 1.

§Job strain, effort–reward imbalance and organisational injustice. Average levels at phase 1 and phase 2 were used for all measures.

health status at phase 3. Self-rated health status is a widely used measure of global health, and poor self-rated health has been shown to predict mortality independently of numerous specific health status indicators and other relevant covariates known to predict mortality.<sup>3,9</sup>

### Data analysis

We used age- and sex-adjusted logistic regression analysis to examine: (a) the contemporaneous association between sickness absence and self-rated health status during the baseline period (phases 1 and 2); (b) the association between sickness absence and maintaining good health status (good health at phase 3) among those with good health at phases 1 and 2; (c) the association between sickness absence and subsequent health improvement (good health at phase 3) among those with stable poor health during the baseline period. In addition to age and sex, the latter association was adjusted for baseline health measures, behaviour-related risk factors and psychosocial factors at work to estimate the contribution of these factors to the association (higher reduction in the magnitude of the association indicates greater contribution).

### RESULTS

Confirming findings from previous studies,<sup>1–5</sup> a lower level of sickness absence was associated with a better health status during the baseline period (age- and sex-adjusted odds ratio 6.17, 95% CI 4.92 to 7.75 for no spells versus >5 spells per 10 person-years), with no evidence of age group or sex differences in the association (*p* for interaction >0.33). Among participants in good health, lower absence was associated with a higher likelihood of reporting a good health status in the future (odds ratio 2.22, 95% CI 1.49 to 3.30).

#### Main messages

- ▶ Increased rates of medically certified sickness absence are assumed to reflect increased rates of morbidity, but less is known about associations between sickness absence and a favourable change in health status.
- ▶ Among employees with good self-rated health, low rates of certified absence were predictive of maintaining a similar health status in the future.
- ▶ Among employees with poor self-rated health, low rates of certified absence predicted an improvement in health status.

For employees in poor health, a low absence rate was associated with subsequent improvement in health status (age- and sex- adjusted odds ratio 2.66, 95% CI 1.78 to 4.02; table 1). This association remained after adjustment for the baseline health measures, employment grade, behaviour-related risk factors and psychosocial factors at work. To control for potential residual confounding due to variation in baseline health status within the poor health category, we included the non-dichotomised health status scores at phases 1 and 2 as covariates in the fully adjusted model. The odds ratio for a favourable change in health status was 1.62 (95% CI 1.02 to 2.56) for low versus high sickness absence, suggesting that residual confounding due to dichotomisation of self-rated health at baseline is an unlikely source of major bias in this study.

### DISCUSSION

This appears to be the first time that the potential of routinely collected medically certified sickness absence data to predict positive change in health among unhealthy employees has been demonstrated. Among participants reporting poor health, low absence was associated with subsequent improvement in health status. This association was robust to adjustment for health measures and risk factors at baseline, suggesting that our findings are not completely explained by these measures. As the Whitehall II study is of office staff, further studies with other occupational cohorts are needed. Our follow-up period was less than 3 years; thus it remains unclear whether sickness absence predicts change in health over longer time periods.

Much research is available on sickness absence as a risk marker.<sup>1–8</sup> We believe that studying sickness absence as a prognostic factor would also be important. Our findings should stimulate further disease-specific studies to determine whether absence data predict favourable outcomes for objective measures of overall health and specific disease.

#### Policy implications

- ▶ Data on medically certified sickness absence may be a useful marker of future health status among both healthy and unhealthy employees.
- ▶ Further research is needed to determine whether sickness absence would also be a useful prognostic indicator for objective measures of overall health and specific disease.

## Short report

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**Competing interests:** None declared.

**Ethics approval:** Ethical approval for the Whitehall II study was obtained from the University College London Medical School and committee on the ethics of human research.

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