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SICKNESS ABSENCE AND PSYCHOSOCIAL JOB QUALITY: AN ANALYSIS FROM
A LONGITUDINAL SURVEY OF WORKING AUSTRALIANS, 2005-2012.

RUNNING HEAD: SICKNESS ABSENCE AND PSYCHOSOCIAL JOB QUALITY

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ABSTRACT

Sickness absence is associated with adverse health, organizational and societal outcomes. The current paper examines changes in an individual's overall psychosocial job quality and variation in sickness absence using a longitudinal cohort study of working Australians. The outcome variables in this study were paid sickness absence (yes/no) and the number of days of paid sick absence in a year (2005-2012). The main exposure variable was a psychosocial job quality index (levels of job control, demands and complexity, insecurity, and perceptions of unfair pay). Analysis was conducted using longitudinal fixed effects logistic and negative binomial regression models. There was a dose-response relationship between the number of psychosocial job stressors reported by an individual and the odds ratio (OR) of paid sickness absence (1 adversity = OR 1.26, 95% Confidence Interval [CI] 1.09 to 1.45, $p=0.002$; 2 adversities = OR 1.28, 95% CI 1.09 to 1.51, $p=0.002$; 3 adversities = OR 1.58, 95% CI 1.29 to 1.94, $p<0.001$). The negative binomial regression models also indicated that individuals reported a greater number of days of sickness absence in response to worsening psychosocial job quality. These results suggest that workplace interventions aiming to improve the quality of work could help reduce sickness absence.

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Key words: sickness absence, psychosocial job stressors, job quality, cohort

Abbreviations: HILDA = The Household, Income and Labour Dynamics in Australia

(HILDA) Survey; OR = odds ratio; IRR = incidence rate ratio; 95% CI = confidence intervals at 95% significance.

Absence due to sickness results in millions of lost working days and high health and productivity-related expenditure each year (1), as well as being associated with greater risk of ill health and mortality (2, 3). The main predictors of sickness absence reflect both individual (e.g., relationship status, health conditions) and workplace factors (e.g., low job control, lack of perceived fairness at work) (4, 5). From a population health perspective, identifying the modifiable factors that contribute to sickness absence and intervening on these is likely to have flow on benefits for employers and wider society.

Despite a number of previous studies on sickness absence, there are still gaps in current knowledge, particularly in regard to the work environment. This is because previous studies have usually examined job stressors individually (e.g., 6, 7), rather than examining measures of the overall psychosocial quality of a job. Aside from this, past studies in this area have been based in specific occupational or organizational contexts (2, 6, 8) and may not be able to be generalisable across skill levels or occupational groups in different working populations. Further, we are not aware of other job stressor-sickness absence studies based on the experience of the same person over time using fixed effects regression models; a more causally robust approach than comparing people to one another than between persons analyses, which is more prone to confounding due to person stable characteristics (9).

The current paper seeks to examine the relationship between changes in an individual's overall psychosocial job quality and variation in sickness absence using a longitudinal cohort study of working Australians. The study uses the psychosocial job quality measure developed by Butterworth and colleagues (10, 11, 12) and extends one or two stressor models, such as job strain (the combination of high demands and low job control) by including other prominent psychosocial working conditions in contemporary jobs, such as job insecurity and perceptions of unfair pay relative to effort/contribution. The measure was developed and validated for use in the Australian context and has been studied in relation to mental health (10) and physical functioning (11). The current study represents an important and novel extension of this work by examining whether this scale of psychosocial job quality is also a predictor of sickness absence. The specific questions examined in this paper are: (a) Does the psychosocial quality of a job influence whether a person takes paid sickness leave? and; (b) Does the psychosocial quality of a job influence the amount of paid sickness leave a person takes? Further, as a number of studies have found different relationships between psychosocial job stressors and sickness absence for males and females (6, 13), we also

investigated whether the relationship between psychosocial job quality and sickness absence was modified by gender.

METHODS

Data source

The Household, Income and Labour Dynamics in Australia (HILDA) survey is a longitudinal, nationally representative study of Australian households established in 2001. It collects detailed information annually from over 13,000 individuals within over 7,000 households (14). The survey covers a range of dimensions including social, demographic, health and economic conditions using a combination of face-to-face interviews with trained interviewers and a self-completion questionnaire. Additional information on the HILDA cohort can be seen in (14) and in Web Appendix 1.

Outcome variable

The primary outcome was a self-reported measure of whether an individual had taken any paid sickness absence in the 12 months prior to their interview and previous to the last HILDA survey, as identified through the question “During the last 12 months, have you taken any paid sick leave?” The secondary outcome was a self-reported measure of the number of days a person took of paid sickness absence in the 12 months prior to their interview and previous to the last HILDA survey. This was ascertained through the question “How many days did you spend on paid sick leave (in the past 12 months)?” This variable was used to calculate an incidence rate ratio (number of sick days in a year/total number of days in a year). Information on paid sickness absence is available in the HILDA data set from 2005 onwards.

Exposure variable

Using the measures of psychosocial job characteristics available in the HILDA survey (control, demands and complexity, job insecurity, and unfair pay) we constructed a multidimensional indicator of overall job quality. Full details of the construction and validation of the job quality measure are presented elsewhere (10, 11, 12) and can be seen in Web Appendix 1.

Other variables

Variables controlled for in analytic models were selected based on past research (4, 5). Only variables identified as possible causes of both psychosocial job quality and sickness absence were included in analysis (confounders); possible mediators lying on the causal pathway were excluded (see Web Figure 1). The variables included in analysis were: age (measured continuously as a time varying factor) and household structure (couple or lone adult residing with dependents, couple without dependents, lone person without dependents, and a group or multiple person household). The later variable provided an indication of both relationship status and the presence of children within a household. We also included employment arrangement (permanent versus fixed term contract), occupational skill level (low, low-medium, medium-high, high according to the Australian and New Zealand Standard Classification of Occupations occupational groupings) (15), educational attainment (high school not completed, high school completed, certificate / diploma, bachelor degree or above), equivalised household income (split into the tertiles low, medium and high), and presence of a long term health condition, disability or impairment (yes/no).

Analytic sample

In HILDA, about 70% of permanent employees and 63.1% of fixed term contract employees reported taking paid sickness absence in a year (fixed-term contract workers tend to have similar conditions to permanents, with the exception of a specified end date) (16), compared to 7.2% of casual or temporary workers and 6.8% of self employed persons. This reflects the fact that most casual employees and self-employed persons in Australia do not have the same entitlements to paid employment benefits (such as paid sickness absence) as permanent employees (17). Because the main outcome in this study was paid sickness absence, casuals and self-employed persons were excluded from the analysis. A flow chart explaining the steps to select the final sample is presented in Figure 1. Information on missing data can be seen in Web Appendix 1.

--- Please insert Figure 1 ---

Analysis

The analysis includes 8 waves of (annual) data, between 2005 and 2012, as items assessing paid sickness absence were first introduced to the survey in 2005. Longitudinal logistic fixed-effects regression models were used to estimate the association between psychosocial job quality and the likelihood that an individual had taken paid sickness absence (yes or no) in the previous twelve months. Coefficients were transformed into odds ratios to aid

interpretability. Our analytic focus on within-person associations over time in the survey means each individual included in the HILDA data set acts as their own control (e.g., one, two and three of more adversities are compared to when a person had an optimal job) (see Web Table 1) and provide estimates that are not confounded by time-invariant personal, demographic and environmental factors, which are statistically removed from the model (9). Hence, to be included in the logistic regression analysis persons had to report at least one wave each of “yes” and “no” responses to the question “During the last 12 months, have you taken any paid sick leave?”. Time-variant factors were controlled for by including relevant covariates into the fixed-effects models.

The possibility that the relationship between psychosocial job stressors and sickness absence differed for males and females was tested by assessing the significance of the interaction terms and the results of the likelihood ratio test. We also assessed possible effect modification by age (assessed in ten year age groups) as well as whether a person worked full or part time in order to assess the robustness of the relationship between psychosocial job quality and sickness absence. We did this by including an interaction term in logistic regression models and comparing this against a model with main associations only. As above, we used the likelihood ratio and inspected individual interaction terms in assessing evidence of an interaction.

We then modelled the number of days of sickness absence during the year. Negative binominal regression was used to model the relationship between sickness absence and job quality, as there was evidence of over dispersion in the outcome variable. Because of problems in fitting fixed effects in negative binominal panel models in commercial statistical packages (such as STATA (18)), we generated the difference scores manually (i.e., deviation from each individuals’ mean score for all time-varying covariates (19)) and implemented the model as a random effects model. This produces estimates consistent with a fixed effects model, but avoids the incidental parameters problem as it does not require the estimation of individual-specific parameters (19). Coefficients were transformed into incident rate ratios (IRR) to ease interpretation. As a sensitivity analysis, we described the difference in the between persons (by including the mean of each variable into the regression analyse) and random effects models to the fixed effects within persons approach described above (Web Tables 2 and 3).

