Students’ school satisfaction as predictor of teachers’ sickness absence: a prospective cohort study

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Background: Although health is an important determinant of sickness absence, social relationships at the workplace may also affect levels of sick leaves. This study examined whether students’ self-assessed satisfaction with school predicted sickness absence among teachers in Finnish secondary schools. Methods: We measured school satisfaction of 17,033 students aged 14–16 years from 90 schools by a survey (the School Health Promotion Study) and aggregated school-specific scores of students’ school satisfaction. For analysis, we linked these school-level data to records of sickness absence in the survey year and the following year among 2,364 teachers working in the same schools (the 10-Town Study). For sickness absence longer than 9 days, we obtained diagnoses from national health registers. Results: Multilevel Poisson and logistic regression models adjusted for relevant baseline covariates showed a rate ratio of 1.2 [95% confidence interval (95% CI): 1.0–1.5] for long-term (>3 days) sickness absence among teachers working in schools with two lowest thirds of student satisfaction compared with teachers in schools with high student satisfaction. The corresponding odds ratio (OR) was higher for sickness absence with a psychiatric diagnosis (OR 1.9, 95% CI: 1.1–3.2), more specifically, neurotic and stress-related disorders (OR 2.6, 95% CI: 1.2–5.9). Students’ school satisfaction was not associated with teachers’ short-term (1–3 days) sick leaves. Conclusions: These data suggest a link between social relationships at school, as indexed by students’ school satisfaction, and teachers’ sick leaves, with the strongest associations seen for absences with mental health diagnoses.

Introduction

Students’ school satisfaction, an indicator of the emotional and affective aspects of quality of life in the school setting, and other positive attitudes towards school, have been found to be associated with students’ achievement at school, motivation and interest. School dissatisfaction, in turn, has been associated with various adverse outcomes, including truancy and depression, dropping out of school, adopting unhealthy behaviour, exhibiting psychosomatic symptoms and experiencing reduced quality of life. Recent studies suggest that such student misconduct is also likely to affect school teachers, increasing their stress levels.

Given that students’ school satisfaction is strongly linked with social relationships and psychosocial environment shared by both the students and teachers, and that such factors more generally predict sickness absence and ill health among employees, we hypothesize that student’s school satisfaction is associated with sickness absence levels among their teachers. Understanding the link between students’ school satisfaction and teachers’ sick leaves has potentially important practical implications as it may help in identifying targets to increase well-being at school and reduce sickness absence among teachers and thus indirectly affecting the quality of teaching and student achievement. Such a link is also plausible given that teachers’ sick leaves have previously been shown to be related to students’ absenteeism, lower levels of achievement, disadvantaged school neighbourhoods and students’ problem behaviour (J. Ervasti, submitted for publication). There is also evidence to suggest a link between psychosocial factors at work and employees’ musculoskeletal and psychiatric disorders. However, we are not aware of previous studies examining whether students’ school satisfaction contributes to teachers’ sickness absence due to mental or physical illness.

The aim of this study is, therefore, to examine the relationship between students’ school satisfaction and teachers’ sick leaves in a prospective study setting and, in addition, to determine whether the association is ubiquitous or driven by specific disease categories.

Methods

Study context

The Finnish school system requires 9 years of compulsory education, of which the last three are lower secondary school. Although the Finnish school system has been a success in academic comparisons, Finnish 15-year-olds (eighth or ninth graders) were among those who most disliked school in the 2005/2006 HBSC survey. A total of 11% of the girls and 9% of the boys in Finland reported liking school very much, whereas the percentages in the countries with most positive attitudes towards school were 30–50%.

Sample and procedure

Data were obtained from two independent data sources in Finland: the School Health Promotion Study and the 10-Town Study. The nationwide School Health Promotion Study is a classroom survey which covers virtually all eighth and ninth grades of lower secondary schools (14- to 16-year-old students) in Finland, and has been approved by the Ethics Committee of the Pirkanmaa Hospital District. The 10-Town study focuses on the health of local government personnel, including schools, and has been approved by the Ethics Committee of the Finnish Institute of Occupational Health.

The sample of the present study consisted of 90 schools which had more than 30 student respondents in the School Health Promotion Study.
and which had also participated in the 10-Town Study either in 2004 or 2005. Students’ survey responses (n = 17,033, response rate 84%) were aggregated to school-level means and linked to register data on all teachers that were working during the School Health Promotion Survey in 2004 or 2005 (n = 2,541). We excluded teachers with <0.5 years of service from the data (n = 177) resulting in the analytic sample of 2,364 teachers.

**Students’ school satisfaction**

School satisfaction was measured with students’ questionnaire, and aggregated to school-level percentages. The question was: ‘How do you feel about going to school at the moment? I like going to school . . . ’. The scale was from 1 to 4, where 1 = very much, 4 = not at all. The aggregate variable represented the school mean. We divided the schools into three groups by the aggregate variable of school level mean of students’ school satisfaction. The first group consisted of 30 schools with the most satisfied students (mean score range 2.12–2.42). The second group consisted of 29 schools with the average level of student satisfaction (range 2.42–2.52). The third group consisted of 31 schools with the lowest level of student satisfaction (range 2.52–2.74).

**Teacher sick leaves**

Data on sick leave spells over a time frame of 3 years (from 1 year before to 1 year after the 2004 or 2005 student survey) were obtained from employers’ registers (self-certified absences of 1–3 days and medically certified absences of more than 3 days). In the target organizations, all sick-leave certificates, irrespective of where they were issued, had to be forwarded for recording. We calculated the number of contracted days for each teacher, representing ‘days at risk’, from which the number of days absent from work for reasons other than sickness was subtracted. The register data from the Social Insurance Institution of Finland was also available, which covers sick leaves lasting ≥9 days of absence with associated diagnosis according to the International Classification of Diseases (ICD-10). In addition to sick leaves from all causes, we examined sick leaves with diagnoses of mental and musculoskeletal disorders as these are the two most common causes for sick leave and for early retirement in Finland. ICD-10 diagnosis codes for mental disorders are F00–F99 and those for musculoskeletal disorders are M00–M99. Because both mental and musculoskeletal disorders are broad diagnostic categories including heterogeneous disorders with different etiologies, we divided mental disorders into sub-categories of the most common disorders, i.e. affective disorders (F30–F39) and neurotic and stress-related disorders (F40–48) and musculoskeletal disorders into sub-categories of arthropathies and systemic connective tissue disorders (M00–M36) and dorsopathies (M40–M54).

To determine the baseline absence level, we used the data on sick leaves from 1 year prior to the student survey as a covariate. As the outcome, we used the absences during the survey year and the following year. We considered this as a robust study design because the student surveys were carried out at the beginning of the year (in April).

**Other covariates**

Several background factors potentially affecting sickness absence levels were assessed as covariates. Teacher-related covariates, the age and sex of teachers, job type (general/special education) and job contract (permanent/fixed term), were obtained from the employers’ registers. Students per person-years (number of student respondents in 2004/05 divided by employed person-years in 2004/05) was a proxy for student–teacher ratio. Parental socio-economic status at school was obtained from the students’ questionnaire by requesting the level of education of students’ parents(s). The school-level proportion of students with a parental status of no more than vocational education was derived from this information. Sex distribution of students at school was obtained from students’ questionnaires and expressed as a percentage of female students.

**Statistical analyses**

Differences in the baseline characteristics of the teachers and schools were analysed at the school-level according to students’ school satisfaction with the use of correlations and cross-tabulations. Because individual teachers were nested in schools, we used a multilevel data structure with students’ school satisfaction at the second level (GLIMMIX Procedure). We used Poisson regression models to examine the risk of sick leave and to estimate the rate ratios (RRs) with their 95% CIs, separately for short-term (1–3 days), long-term (≥4 days), sick leave spells. We used logistic regression models to study the association of students’ attitudes towards going to school and dichotomous outcomes (presence or absence of sick leave with M- and F-diagnoses). The results of logistic models were expressed as odds ratios (ORs) with their 95% CIs.

We calculated the variance components (random effects) of sick leave during the study period in all models to estimate the school level variance. The median mean ratio (MMR, also known as median rate ratio27 or median odds ratio, MOR)28 was calculated to translate the school level variance in the OR scale. MMR/MOR quantifies the variation between clusters (the second-level variation) by comparing two persons from two randomly chosen, different clusters. MMR/MOR is always ≥1. If it is 1, there is no second-level variation. All statistical analyses were performed using SAS 9.2.

**Results**

In the schools in which students had the lowest school satisfaction, the turnover rate of staff was highest, and the parental socioeconomic composition of students the lowest. School satisfaction was not associated with teachers’ sex, age, job contract, job type, school size or the proportion of female students at school. The descriptive statistics of the study variables are shown in table 1.

The overall rate of short-term sickness absences among teachers was 3.7 spells per person-year (range 0–39) during the 3-year follow-up. Students’ school satisfaction did not predict teachers’ short-term sickness absences. After the adjustments for both teacher- and school-level covariates, the RRs for average and low school satisfaction were 1.06 (95% CI: 0.89–1.26) and 0.96 (95% CI: 0.81–1.15), respectively. The short-term sickness absence’s school-level MMR of 1.51 was of moderate size. The variance of short-term sickness absence at school level decreased by 16% after including school satisfaction in the model (0.19 vs. 0.16). After adjustments for covariates, the school level variance decreased by 50% (0.19 vs. 0.09). MMR decreased to 1.34 in the model adjusted for prior short-term sickness absence, teacher- and school-level covariates along with school satisfaction.

The unadjusted and adjusted associations between students’ school satisfaction and teachers’ long-term sickness absence irrespective of cause are presented in table 2. The overall rate of long-term sickness absences was 1.3 spells/person-year (range 0–23) during the 3-year follow-up. Teachers in schools with average and low student satisfaction were at a 1.2-fold risk of long-term sick leaves. School-level MMR of long-term sickness absence, 1.39, was of moderate size. The variance of long-term sickness absence at school level decreased by 12% after including school satisfaction in the model (0.12 vs. 0.10). After all adjustments, the school-level variance decreased by 49% (0.12 vs. 0.06). MMR decreased to 1.26 in the model adjusted for prior long-term sick leaves, teacher- and school-level covariates and school satisfaction.

In the diagnosis-specific analysis of absences of ≥9 days, there were 104 sick-leave cases (4.4%) with a diagnosis of musculoskeletal disorder; 50 (2.1%) were arthropathies or systemic connective tissue disorders and 31 (1.3%) were dorsopathies. No association was found between students’ school satisfaction and teachers sickness absence due to musculoskeletal disorders. After adjustments for the relevant covariates, the ORs for musculoskeletal sickness absence were 1.25 (95% CI: 0.70–2.25) and 1.58 (95% CI: 0.89–2.78) for average and low school satisfaction, respectively. The school-level variance of musculoskeletal disorders decreased by 4% only after including school satisfaction in the model (0.25 vs. 0.24). Musculoskeletal disorders school-level MOR was 1.61 and statistically significant. MOR decreased to 1.52 in the model adjusted for
Random effects could not be fitted in the analyses shown in tables 3 and 4, respectively. The ORs for average and school-level variation with regard to sick leaves due to these disorders were 1.09 (95% CI: 0.54–2.21) and 1.40 (95% CI: 0.61–3.19), respectively. The final model showed a 2.4-fold risk (95% CI: 1.08–5.55) for neurotic and stress-related disorder diagnosis for teachers working in schools with low student satisfaction compared with those in schools with highly satisfied students.

**Discussion**

This prospective study of over 2300 Finnish lower secondary school teachers and 17,033 students showed a 1.2-fold increased risk of long-term sickness absence among teachers who worked in schools with students experiencing the lowest school satisfaction. Supporting the hypothesized temporal order, the effect of school satisfaction was robust to adjustment of all prior >9 days sick leaves, irrespective of the diagnosis. The final model showed a 2.4-fold risk (95% CI: 1.08–5.55) for neurotic and stress-related disorder diagnosis for teachers working in schools with low student satisfaction compared with teachers who worked in schools with highly satisfied students.

Low school satisfaction reflects negative attitudes towards going to school, and may manifest as pupil misconduct associated with teacher stress. Therefore, our data are in agreement with findings supporting the status of stress as an important predictor of psychiatric sickness absence. Teacher–student interactions are likely to be reciprocal, both influencing each other, and might result in a vicious circle in poor student mental health and increased teacher stress.
which students’ negative attitudes towards school induce feelings of unfairness and increases ill-health in vulnerable teachers. Indeed, feelings of injustice are a strong psychosocial predictor of employee sickness absence.29,30,31 Substitute teachers, while at best being brilliant lecturers, may have limited opportunities to implement regular teacher’s long-term instructional strategies and relationships with students.16,17 Substitute teachers may also lack detailed knowledge of students’ backgrounds and skills, reducing their opportunities to address the individual needs of students in the way a regular teacher ideally can. This may in turn decrease students’ motivation and school satisfaction—and finally academic achievement.16,17

Students’ school satisfaction did not predict teachers’ short-term sick leaves. Earlier research suggests that the link between actual ill health and short-term sick leaves is weaker than that for long-term sick leaves.52 Absence levels of Finnish teachers were rather low in general. We could not find comparable reliable register-based information on teachers’ sickness absence rates or diagnoses either in Finland or other countries. However, sickness absence rates and diagnostic distributions in the Finnish public sector employees are comparable to those reported in other well-characterized cohorts, such as the UK Whitehall II study of British civil servants.35,34

**Strengths and limitations**

With a large data set and predictor and outcome variables obtained from two independent data sets, we avoided the problem of common method bias. We were also able to control for prior sick leaves in the data from employers’ registers, making our models prospective for future short- and long-term sick leaves. However, the Social Insurance Institution data were available with associated ICD-10 diagnosis with only a 2-year time window from the time of the student survey (2004–05), thus we could not control for prior diagnosis-specific sick leaves in the analysis. We nonetheless consider this a minor limitation, since we were able to control for all sick leaves lasting over 9 days, which we consider a conservative adjustment for prior sickness absence.

Since Finnish lower secondary school lasts for 3 years (Grades 7–9), it is not possible to evaluate the impact of students’ school satisfaction on teacher health over a longer time span. Our student cohort consisted of eighth and ninth grade students (second and third year of lower secondary school) with sick-leave data on a 3-year time window of 1 year before to 1 year after the student survey. This meant that eighth grade students prevailed at school during the whole time period, but ninth grade students had actually graduated at follow-up (1 year after) and there were new seventh grade students at the schools. Seventh grade students were not included in the student survey, but their assessment of the school environment may also impact teachers’ health. Lastly, teachers’ health risk behaviours, personality traits, coping strategies and self-efficacy beliefs which we were unable to control may have had an impact on the association between student satisfaction and teachers’ absenteeism, as suggested by other recent studies.6,7,45

**Conclusions**

This study has shown an association between student school dissatisfaction and teachers’ medically certified sickness absence, especially those with the broad diagnostic category of neurotic and stress-related disorders, most of which were reactions to severe stress or adjustment

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### Table 3 Associations between students’ school satisfaction and teachers’ long-term (>9 days) sick leaves due to mental disorders

<table>
<thead>
<tr>
<th>Student school satisfaction</th>
<th>Teachers’ sickness absence: all mental disorders (F00–F99)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Empty model</td>
</tr>
<tr>
<td></td>
<td>No. of cases OR (95% CI) P-value</td>
</tr>
<tr>
<td>High (n = 732 teachers)</td>
<td>25 Referent</td>
</tr>
<tr>
<td>Average (n = 855 teachers)</td>
<td>33</td>
</tr>
<tr>
<td>Low (n = 777 teachers)</td>
<td>44</td>
</tr>
<tr>
<td>Random effects</td>
<td>School variance (SE) 0.140 (0.134) 0.15</td>
</tr>
<tr>
<td></td>
<td>School MOR 1.43</td>
</tr>
</tbody>
</table>

a: Adjusted for teachers’ sex, age, employment contract, and teacher type
b: Adjusted as model I + school variables (parental socio-economic status, student–teacher ratio and student sex distribution)
c: Variable entered as continuous

### Table 4 Associations between students’ school satisfaction and teachers’ long-term (>9 days) sick leaves due to neurotic and stress-related disorders

<table>
<thead>
<tr>
<th>Student school satisfaction</th>
<th>Teachers’ sickness absence: neurotic and stress-related disorders (F40–F48)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Empty model</td>
</tr>
<tr>
<td></td>
<td>No. of cases OR (95% CI) P-value</td>
</tr>
<tr>
<td>High (n = 732 teachers)</td>
<td>9 Referent</td>
</tr>
<tr>
<td>Average (n = 855 teachers)</td>
<td>14</td>
</tr>
<tr>
<td>Low (n = 777 teachers)</td>
<td>22</td>
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<tr>
<td>Random effects</td>
<td>School variance (SE) 0.043 (0.305) 0.44</td>
</tr>
<tr>
<td></td>
<td>School MOR 1.22</td>
</tr>
</tbody>
</table>

a: Adjusted for teachers’ sex, age, employment contract, and teacher type
b: Adjusted as model I + school variables (parental socio-economic status, student–teacher ratio and student sex distribution)
c: Variable entered as continuous
disorders. The finding is plausible given the role of stress as a potential contributing factor to sickness absence.

These findings are important because medically certified sickness absence is not only a marker of contemporaneous health status but also a powerful predictor of subsequent health problems, such as sustained sub-optimal health resulting from a wide array of illnesses,36 and future depression, especially among employees with sickness absence due to psychiatric reasons.37 Intervention studies are needed to determine whether improving school satisfaction would not only benefit the students but also reduce the risk of sickness absence with mental health diagnosis among teachers.

Funding

Academy of Finland (grant numbers 133535, 124322, 124271 and 129262); the New and Emerging Risks in Occupational Safety and Health (the New OSH ERA) Research Programme, European Union; and the BUPA Foundation, UK.

Conflicts of interest: None declared.

Key points

- In addition to employee health status, psychosocial factors at work are important predictors of sickness absence. In the school setting, teachers’ sickness absenteeism has been associated to negative student outcomes.
- This prospective study found that students’ low school satisfaction is associated with an increased risk of medically certified sickness absence among their teachers.
- Increased risk of sick leaves was particularly clear with regard to psychiatric diagnoses, such as neurotic and stress related disorders.
- Intervention studies are needed to determine whether improving students’ school satisfaction reduces psychiatric sick leaves among teachers.

References

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