

ORIGINAL ARTICLE

Sickness absence as a risk factor for job termination, unemployment, and disability pension among temporary and permanent employees

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Objectives: This study examined sickness absence as a risk factor for job termination, unemployment, and disability pension among temporary and permanent workers.**Methods:** Prospective cohort study with data on employment contract and sickness absence in 1996, job termination by 1997, and employment status in 1997 and 2000 for 19 093 temporary and 41 530 permanent public sector employees.**Results:** For women aged 40 years or less and for women over 40, a high sickness absence increased the risk of job termination among temporary employees (OR 1.52 (95% CI 1.36 to 1.71) and OR 1.70 (95% CI 1.36 to 2.13) respectively). High absence was not associated with job termination among men in temporary employment. Among permanent employees, high sickness absence predicted job termination among older, but not among younger employees. Temporary employees with high sickness absence were at the highest risk of immediate unemployment and unemployment three years later. Among older permanent employees, high sickness absence was associated with subsequent work disability pension.**Conclusions:** A high rate of sickness absenteeism increases the risk of job termination and unemployment among women in temporary public sector jobs. For permanent employees, secure employment provides protection against unemployment even in the case of high sickness absence.

One consequence of the move towards a more flexible economy has been the increased use of non-standard working arrangements, such as temporary and fixed term job contracts. Overall in the European Union the proportion of temporary workers was 7% in 1985 and 12% in 1996,¹ while in Finland the proportion of temporary employees was 11% in 1985 and 18% in 1997.² In 2001, temporary job contracts accounted for 13% of paid employment in Europe and 7% in North America—a total of 32 million people.¹ Insecurity and instability are associated with temporary work, and exposure to hazardous working conditions may be more common in this segment of the labour market.^{3–4} Research has found no consistent associations between temporary employment and health in either cross sectional or cohort studies,^{5–9} although there is some evidence that temporary employment is associated with excess mortality.¹⁰

Recently, it has been suggested that the health effects of temporary employment are generated by an unstable employment career.^{3–7,9} An unstable employment career is comprised of periods of unemployment between periods of short term temporary employment. A contributing factor in this process may be health related selection.^{11–13} Earlier studies have shown poor health to be associated with unemployment and economic inactivity.^{14–17} To date, this work has not differentiated workers by type of employment contract. In this study we prospectively examine whether sickness absence puts temporary workers at greater risk of job loss and subsequent unemployment than workers with a permanent contract.

METHODS**Study population**

Data were drawn from the Finnish Public Sector Study consisting of Finnish municipal and hospital personnel.

Approval of the Ethics Committee of the Finnish Institute of Occupational Health was obtained for this study.

We derived from the employers' registers all 60 623 employees aged 16–54 years (45 108 women, 15 515 men) having at least 30 days' temporary or permanent job contract in 1996. According to the Finnish regulations, social security for sick leave is similar for both temporary and permanent employees after one month's employment with the same employer. We included employees who were less than 55 years of age at the beginning of follow up. Older employees were excluded, as in Finland they are eligible for pensions other than disability pensions. In the present cohort, all temporary employees were directly hired and registered by the employers.

Measurements

For every period of employment for each subject, we obtained type of employment contract, date of commencement, and, where appropriate, termination of job contract between 1 January 1996 and 31 December 1996. Job contract was defined as terminated when an employee had no contracted days during 1997. All of the participants' sickness absences between 1 January 1996 and 31 December 1996 were obtained from the employers' registers. In accordance with existing regulations, each sick leave certificate, irrespective of the place of issue, must be forwarded to these registers documenting and listing the beginning and end dates. Maternity leaves and absences due to caring for a sick child are not included as sickness absences. Overlapping and duplicated sick leaves were corrected for. The number of contracted days represented "days at risk", which is the number of days an employee was supposed to be at work. From this measure the number of days absent from work for reasons other than sickness (holidays, maternity leave, and so on), was subtracted.¹⁸

Sickness absence days per person-year in 1996 for each employee were calculated as follows: [number of sickness absence days/number of contracted days worked]×365. The distribution of values was dichotomised: 0–15 days per annum representing low and more than 15 days representing high sickness absence. This threshold value has predicted mortality in earlier research.¹⁹

We derived information on participants' personal identification numbers (a unique number assigned to each Finnish citizen), age, sex, occupational title, and employer from the employers' registers. Occupational titles, expressed as five digit Statistics Finland codes, were used to link information on income to the data set. Occupational grade (manual, lower grade non-manual, and higher grade non-manual) was derived from occupational titles. Average monthly income figures, calculated separately for men and women by occupational title, were obtained from Statistics Finland. Urbanisation level of the place where the organisations were located, was defined as follows: urban towns (>40 000 inhabitants); rural towns (≤40 000 inhabitants).

Personal identification numbers were used to link into group-level information on employment status in December 1997 and December 2000 from Statistics Finland for those whose job had terminated by 1997 (16 groups based on sex, age group, and pre-termination type of employment contract and sickness absence rate). Employment status includes the following six categories: employed, unemployed (and seeking a job), receiving compensation for permanent illness (disability pension), economically inactive (homemakers, students, conscripts, and others not seeking a job), dead, and missing (emigrated or data not available). The number of participants with missing data was 63 in 1997 and 101 in 2000. As the focus of our study is on unemployment and disability pension, only figures for these outcomes are shown in table 4.

Statistical analyses

We used logistic regression models to study the risk of job termination by 1997. We defined four groups of participants according to their employment contract and health status: (1) temporary, low absence; (2) temporary, high absence; (3) permanent, low absence; (4) permanent, high absence. Age was dichotomised by the mean age, 40. Because a significant interaction between age group of below and above the mean age of 40 years, type of employment contract and sickness absence on job termination was found (p<0.001), the analyses were made separately for these age groups. The interaction terms were entered in the models to assess whether the association between sickness absence and job termination was dependent on the type of employment contract. We used the analyses of variance to test the mean difference in sickness absence days by type of employment for employees who lost or left their job by 1997.

The distribution of employment status in 1997 and 2000 was calculated by Statistics Finland, separately for employee categories defined by type of employment contract, sickness absence, age group, and sex. Exact confidence intervals for the binomial distribution were calculated for the unemployed and work disabled within these categories.²⁰ As we obtained only group-level data on employment status after job termination, we were not able to conduct multivariate statistical modeling in this part of the study.

RESULTS

Table 1 presents distributions of the study variables by type of employment contract. Of the 60 623 subjects, 31% had a temporary employment contract and 69% had a permanent contract. Temporary employment was more common in younger employees and in women. The number of workers

having more than 15 days' sickness absence per year was lower among temporary employees. We tested this difference by adjusting for all the characteristics shown in table 1, and found a rate ratio for absence days in temporary workers of 0.69 (95% CI 0.66 to 0.73) compared with permanent workers (not shown in the table). Differences in income and employer (municipal v hospital) between temporary and permanent employees were small.

By 1997, 3536 (19%) of temporary employees and 989 (2%) permanent employees had lost or left their jobs. Table 2 presents the predictors of job termination. As expected, the strongest predictor was a temporary employment contract, which was associated with a 7.7-fold probability of job termination. Job termination among employees with high sickness absence was 1.6 times higher than for those with low sickness absence. Age 16–30 was associated with a 2.5-fold risk of job termination and both being a man and working for a municipal employer with a 1.3-fold risk. The association between income and job termination was non-linear. The highest likelihood of job termination was found among employees in the lowest income group, but those in the highest income group also had an increased likelihood. Manual workers had a 1.3-fold risk of job termination when compared with higher grade non-manual workers.

Table 3 shows the mean sickness absence rates and odds ratios for job termination in temporary and permanent employees by sex and age groups in low and high absence groups. Within the high absence groups, temporary workers had lower rates of sickness absence than permanent workers (p values for difference ≤0.01), except in older men (p=0.157). Because we found three significant interaction effects between sickness absence and type of employment on job termination, the analyses were performed separately for temporary and permanent employees. High sickness absence increased the probability of job termination among temporary women, but not men, irrespective of age. Among older workers of both sexes, high sickness absence was a greater

Table 1 Characteristics of the study participants*

	Temporary employees, n (%)	Permanent employees, n (%)
Age (years)		
16 to 30	8550 (45)	3303 (8)
31 to 40	5786 (30)	13240 (32)
41 to 50	3969 (21)	18701 (45)
51 to 54	788 (4)	6286 (15)
Sex		
Women	14990 (79)	30118 (73)
Men	4103 (22)	11412 (28)
Income (quartiles)†		
Lowest	4758 (26)	9541 (23)
2nd	3888 (21)	11399 (28)
3rd	5622 (30)	10778 (26)
Highest	4253 (23)	9298 (23)
Occupational grade		
Manual	3268 (17)	10291 (25)
Lower grade non-manual	8694 (46)	19210 (47)
Higher grade non-manual	6782 (36)	11849 (29)
Employer		
Public hospital	3028 (16)	4970 (12)
Municipality	16062 (84)	36551 (88)
Urbanisation level		
Urban town	16981 (89)	36115 (87)
Rural town	2109 (11)	5406 (13)
Sickness absence days per person-year		
0–15	15770 (83)	31146 (75)
>15	3323 (17)	10384 (25)

*p for difference <0.001 for all variables (χ² test).
 †Cut off points for quartiles: 1397€, 1507€, and 1845€ for women; 1539€, 1829€, and 2181€ for men.

Table 2 Associations of demographics, type of employment contract, and sickness absence with job termination by 1997, expressed as odds ratios (ORs) and their 95% confidence intervals (CIs)

	OR*	(95% CI)
Age (years)		
51 to 54	1.00	
41 to 50	1.06	(0.91 to 1.24)
31 to 40	1.51	(1.29 to 1.75)
16 to 30	2.46	(2.11 to 2.87)
Sex		
Women	1.00	
Men	1.25	(1.15 to 1.35)
Income (quartiles)†		
Highest	1.00	
2nd	0.79	(0.71 to 0.88)
3rd	0.69	(0.61 to 0.79)
Lowest	1.08	(0.95 to 1.23)
Occupational grade		
Higher grade non-manual	1.00	
Lower grade non-manual	1.08	(0.97 to 1.19)
Manual	1.30	(1.15 to 1.47)
Employer		
Public hospital	1.00	
Municipality	1.30	(1.17 to 1.44)
Urbanisation level		
Urban town	1.00	
Rural town	1.03	(0.92 to 1.14)
Type of employment contract		
Permanent	1.00	
Temporary	7.68	(7.08 to 8.33)
Sickness absence per person-year		
0–15 days	1.00	
>15 days	1.62	(1.50 to 1.75)

*Fully adjusted model.

†Cut off points for quartiles: 1397€, 1507€, and 1845€ for women; 1539€, 1829€, and 2181€ for men.

risk factor for job termination among those with permanent contracts.

In order to assess whether there was an interaction between the effect of employment contract, sickness absence and size of town on job termination, we entered all two-way interactions and an interaction term “employment type × sickness absence × size of town” into the adjusted models.

No interaction was found (p value for interaction 0.573 in younger women; 0.271 in younger men; 0.592 in older women; 0.563 in older men).

Table 4 shows group level information on sickness absence in 1996 and employment status in 1997 and 2000 for employees whose job had terminated by 1997. Across both sexes and all age groups, pre-termination sickness absence days in the high absence groups was higher among those who lost or left a permanent job. Overall, 18.5% of temporary employees and 8.6% of permanent employees whose job had terminated by 1997 were unemployed in 1997 (not shown in table). In younger temporary women and men, the proportion of unemployed was significantly higher in the high absence group than in the low absence group. This was also true in 2000, although the overall unemployment rate had decreased. Among the former permanent employees, the difference in the percentage that was unemployed between low and high absence groups was not statistically significant. Disability pension was uncommon in the younger age group irrespective of their former type of employment contract.

As for younger employees, the unemployment rate among older participants was higher for former temporary employees than former permanent employees (table 4). The association between sickness absence and unemployment was not statistically significant. Thirty five percent of the women and 48% of the men aged 41–54 years with a permanent contract and high sickness absence, and whose job had terminated by 1997, had received a disability pension by 1997 (statistically significant difference between low and high absence groups). Among younger employees and older temporary employees the granting of a disability pension was rare, although a greater proportion of temporary older women were on disability pension by the second follow up.

We also examined whether there was any difference between high absence temporary and high absence permanent terminees with regard to size of town and occupational grade. The χ^2 tests showed no association among younger women (p value 0.088 for size of town and 0.620 for occupational grade), younger men (p values 0.162 and 0.447), older women (p values 0.371 and 0.627), or in older men (p values 0.823 and 0.777). We also examined whether there was any difference in mean income between the high

Table 3 Type of employment and sickness absence as predictors of job termination, expressed as odds ratios (ORs) and their 95% confidence intervals (CIs)

	Number of temporary/permanent	Mean sickness absence days/person-year in temporary/permanent	Temporary		Permanent	
			OR*	(95% CI)	OR*	(95% CI)
16–40 year olds						
Women						
Low absence†	8750/9034	3.0/3.9	1.00		1.00	
High absence‡	2069/3062	45.1/51.8	1.53	(1.36 to 1.71)	1.08	(0.85 to 1.36)
p for interaction§			0.001			
Men						
Low absence†	2673/3317	1.8/3.3	1.00		1.00	
High absence‡	322/933	39.4/47.1	1.26	(0.97 to 1.64)	1.41	(0.93 to 2.15)
p for interaction§			0.437			
41–54 year olds						
Women						
Low absence†	3123/13124	2.7/3.4	1.00		1.00	
High absence‡	766/4816	47.9/56.4	1.70	(1.36 to 2.12)	3.19	(2.52 to 4.03)
p for interaction§			0.001			
Men						
Low absence†	702/5281	1.7/2.7	1.00		1.00	
High absence‡	109/1440	53.2/62.4	1.20	(0.74 to 1.96)	3.82	(2.73 to 5.33)
p for interaction§			0.002			

*Adjusted for age, income, occupational grade, urbanisation level, and employer.

†Low absence 0–15 days per person-year in 1996.

‡High absence: >15 days per person-year in 1996.

§p values for test of interaction between type of employment and sickness absence on job termination.

Table 4 Sickness absence at baseline and employment status in 1997 and 2000 among temporary and permanent employees whose job terminated by 1997 (n = 4525)*

	1997/ 2000, n	Mean sickness absence days/ person-year 1996	Employment status 1997						Employment status 2000					
			Unemployed			Disability pension			Unemployed			Disability pension		
			n	%	(95% CI)	n	%	(95% CI)	n	%	(95% CI)	n	%	(95% CI)
16-40 year olds														
Women														
Temporary														
Low absence†	1617/1595	2.3	222	14	(12-15)	0	0		126	8	(7-9)	0	0	
High absence‡	544/539	60.1	122	22	(19-26)	4	1	(0-2)	73	14	(11-17)	7	1	(1-3)
Permanent														
Low absence†	284/284	1.9	14	5	(3-8)	1	0	(0-2)	10	4	(2-6)	2	1	(0-3)
High absence‡	102/101	92.1	9	9	(4-16)	5	5	(2-11)	9	9	(4-16)	3	3	(1-8)
Men														
Temporary														
Low absence†	624/622	1.5	95	15	(13-18)	3	0	(0-1)	37	6	(4-8)	3	0	(0-1)
High absence‡	98/98	52.7	28	29	(20-38)	3	3	(1-9)	21	21	(14-31)	3	3	(1-9)
Permanent														
Low absence†	99/99	2.0	6	6	(2-13)	2	2	(0-7)	3	3	(1-9)	2	2	(0-7)
High absence‡	33/33	100.7	7	21	(9-39)	4	12	(3-28)	6	18	(7-35)	5	15	(5-32)
41-54 year olds														
Women														
Temporary														
Low absence†	319/319	2.2	74	23	(19-28)	5	2	(1-4)	56	18	(14-22)	5	2	(1-4)
High absence‡	131/128	78.4	41	31	(23-40)	7	5	(2-11)	31	24	(17-33)	13	10	(6-17)
Permanent														
Low absence†	143/140	3.0	11	8	(4-13)	5	3	(1-8)	6	4	(2-9)	6	4	(2-9)
High absence‡	156/154	189.7	17	11	(6-17)	54	35	(27-42)	14	9	(5-15)	56	36	(29-44)
Men														
Temporary														
Low absence†	125/124	1.9	48	38	(30-47)	2	2	(0-6)	27	22	(15-30)	3	2	(1-7)
High absence‡	31/31	73.8	17	55	(36-72)	3	10	(2-25)	6	19	(7-36)	4	13	(4-29)
Permanent														
Low absence†	79/79	1.3	10	13	(6-22)	8	10	(4-19)	5	6	(2-14)	9	11	(5-21)
High absence‡	77/77	210.2	10	13	(6-22)	37	48	(37-60)	8	10	(5-19)	36	47	(35-58)

Statistically significant differences between absence categories at p level <0.05 shown in bold.
 *Group values for "others" (re-employed, homemakers, students, and dead) not shown. Missing data (n = 63 in 1997; n = 101 in 2000).
 †Low absence 0-15 sickness absence days per person-year in 1996.
 ‡High absence: >15 sickness absence days per person-year in 1996.

absence temporary and permanent terminees. In the younger women, we found no difference in income between high absence temporary and high absence permanent terminees (p = 0.946). However, in the corresponding groups of terminees among younger men, older women, and older men, those leaving temporary employment had a lower income than those leaving permanent employment (p = 0.038, 0.038, and 0.001, respectively).

DISCUSSION
Job termination

During the study period the Finnish public sector was still suffering from economic decline accompanied by personnel reductions and an increased unemployment rate (15% in 1996).²¹ Voluntary temporary employment was rare: 80% of men and 92% of women reported having a temporary job because few permanent posts were available.² In earlier research, sickness absenteeism has been found to be lower among temporary workers.⁷ A possible explanation for this has been a "presenteeism" response to the threat of job loss. Indeed, this study showed that high sickness absence predicts job termination among female temporary workers. This is a potential indicator of health related selection out of work, which is more likely in conditions when the supply of workers exceeds the demand, as during recession.^{13 14 22} Furthermore, job termination was more common in municipal employees than hospital employees due to tighter economic constraints the municipalities.

We found high rates of sickness absence to discriminate against women with temporary contracts regardless of age.

According to the Finnish contracts of employment act, acceptable reasons for the employer to terminate an employment contract are: (1) serious violation of the employee's responsibilities, (2) serious impairment of the personal capacity of the employee to work, and (3) a major and permanent decrease in available work. Notice of termination is irrelevant in temporary job contracts since the end date of job contact is determined in advance. Employee health may therefore be one of the factors associated with the potential renewal of a temporary job contract. In temporary men, high sickness absence was not significantly associated with job termination. However, job termination generally was more common among men than among women. The most common occupations for men in the municipal sector are technical professionals, doctors, teachers, and skilled labourers. Career prospects outside municipal sector in these occupations are better than for many female dominated municipal occupations (nurses, kindergarten teachers, and so on). The lack of an association between sickness absence and job termination among temporary men may be because a relatively high rate of voluntary turnover among healthy men masks the association.

Job termination was rare in permanent workers, a reflection of public sector policy in Finland, which guarantees continuous employment until the later years of the working career even when health is impaired. An indication of this can be found in the higher rates of sickness absence among permanent employees of all ages. Among older employees, high sickness absence strongly predicted job termination among those with permanent contracts. However, older

permanent workers were more likely to end up out of the active labour force on a disability pension.

Employment status after job termination

Temporary employment in 1996 was associated with unemployment in 1997 and 2000. Younger temporary women and men with high sickness absence were at an increased risk of subsequent unemployment and repeated unemployment. Among the older temporary employees the association between high sickness absence and unemployment was weaker and remained statistically non-significant. Previous studies suggest that health related selection out of the labour force is more pronounced in younger employees and has the greatest effect during the early years of employment.^{11 12} It is possible that the diagnoses behind sickness absence are different in the younger and older cohorts (for example, psychiatric disorders are relatively more prominent in the younger cohort) which may lead to different position in the labour market.²³

Temporary employment involves a significantly increased risk of unemployment. High absence among young temporary women puts them at an even greater risk of job loss and consequent unemployment. In this study we only examined the effect of type of employment contract and sickness absence on subsequent employment status. However, from previous research it seems likely that temporary employment takes its toll on health.^{7 10} Other research has indicated that those who end up in less favourable labour market positions, such as unemployment, are more likely to have accumulated risks to health and other material and psychosocial disadvantages over the life course.¹³ People with earlier experience of disadvantage may be more likely to have lower health potential, and may be more vulnerable to accumulation of disadvantage throughout their lives, which results in eroding health potential and excess morbidity. Therefore, increasing the use of temporary and other non-standard work arrangements may result in clustering of risks among people whose working career is characterised by transitions between periods of work and unemployment.

In the older age group, it is the permanent workers who are differentially selected out of the labour force on health grounds. However, they had significantly higher sickness absence rates than temporary employees in the high absence groups. This result indicates a wearing off of selection into the labour force among permanent workers, among whom job termination combined with high sickness absence was strongly associated with subsequent disability pension.

Disability pension was more common among men than among women. In the Finnish public sector men are more likely to end up on disability pension than women. Statistics from The Local Government Pensions Institution²⁴ show that men are overrepresented among new work disability pensioners (27.8% men among new disability pensioners; 25.5% men among all municipal workers). Higher and more severe morbidity from chronic diseases—for example, coronary heart disease—among men of working age may explain this difference.²⁵ Statistics Finland has also shown that a higher proportion of older women than men who lost or left their jobs became “economically inactive”, that is, homemakers, students, and so on (7% of women, 5% of men; not shown in the table). This may contribute to the greater proportion of disability pensioners in men.

Secure employment early in the career, and disability pension when work disability exceeds a certain limit, protect unhealthy permanent employees from unemployment. In contrast, temporary employees with high sickness absence are already at a greater risk of job termination and unemployment early in their career. However, further research is needed to evaluate the relative contributions of

health related selection and labour market disadvantage to public health.

Methodological considerations

The present data were based on registers, which allowed us to largely avoid sample attrition. Employers' registers provide information on job contracts and sickness absence for every working day of the total study period. Sickness absence has been proved to be a valid measurement of global health,^{19 26} and a sickness absence rate of more than 15 days per year has predicted mortality in earlier research.¹⁹ Our data on job contracts did not include information on the causes of job termination. The present results among temporary workers may be underestimates rather than overestimates, because voluntary turnover is likely to be more common in healthy than in unhealthy temporary employees.

As some of the temporary employees had lower income than permanent employees, confounding by socioeconomic position is possible. However, our findings on job termination based on the employers' registers remained highly significant even after adjustments for several confounding factors, including two indicators of socioeconomic position, age, and employer. Moreover, the effect of socioeconomic position on job termination was small and we found no difference in occupational grade between high absence temporary workers and high absence permanent workers who lost or left their jobs. In younger women, no difference was found for income either. Although socioeconomic position is unlikely fully to explain subsequent employment status, further investigation is needed to determine the contribution of socioeconomic position to this result. Finally, as our cohort was comprised predominantly of public sector employees, further research is needed to examine whether these findings can be extended to the private sector.

CONCLUSIONS

Among public sector employees, a high rate of sickness absenteeism significantly increases the risk of job termination and unemployment among women in temporary employment, indicating selection into unemployment on health grounds. Permanent workers with high rates of sickness absence appear to be protected against job termination and unemployment by job security and disability pensions.

Main messages

- Among public sector employees, a high rate of sickness absenteeism significantly increases the risk of job termination and unemployment among women in temporary employment.
- Permanent workers with a high rate of sickness absenteeism seem to be protected against job termination and unemployment by job security and disability pensions.

Policy implications

- The present study of public sector employees indicates that the consequences of ill health among temporary employees should be considered in order to prevent increasing social inequalities in the working age population.

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