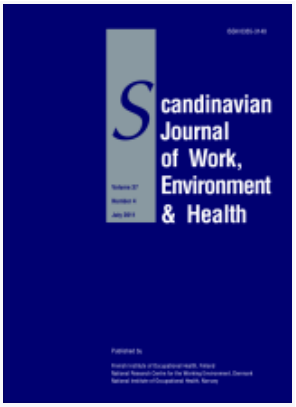
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Short communication

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Does evening work predict sickness absence among female carers of the elderly?

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Short communication

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Does evening work predict sickness absence among female carers of the elderly?

by Finn Tüchsen, MSc,[1] Karl Bang Christensen, PhD,[2] Kirsten Nabe-Nielsen, MSc,[1] Thomas Lund, PhD[3]

Tüchsen F, Christensen KB, Nabe-Nielsen K, Lund T. Does evening work predict sickness absence among female carers of the elderly?. *Scand J Work Environ Health* 2008;34(6):483–486.

Objectives The aim of the present study was to predict the risk ratio of sickness absence lasting ≥2 weeks due to shift work among Danish workers caring for the elderly during the evening and at night.

Methods A sample of Danish carers of the elderly were interviewed in 2005. The response rate was 78%. A cohort of 5627 shift and day workers was followed for sickness absence lasting ≥2 weeks and for sickness absence lasting ≥8 weeks in a sickness compensation register covering all social transfer payments in Denmark.

Results Among the evening workers, the rate ratio (RR) of sickness absence lasting ≥2 weeks was 1.29 (95% confidence interval (95% CI) 1.10–1.52). The rate ratio for sickness absence lasting ≥8 weeks was 1.24 (95% CI 0.99–1.56).

Conclusions Evening work may cause long-term sickness absence lasting ≥2 weeks.

Key terms care for the elderly; absenteeism; night work.

Female carers of the elderly are known to be a high-risk group for hospital treatment due to varicose veins, prolapsed cervical discs, and prolapsed lumbar discs (1). Occupational sickness absence is mainly due to disease or sickness, but psychosocial factors, uncomfortable work positions, and the handling of heavy loads are also important risk factors (2). Several specific risk factors, like working with arms lifted or hands twisted, stooping, bending of the back or neck, repetitive monotonous work, low skill discretion, low decision authority, and public employment, have been reported recently (3). There is conflicting evidence regarding the health consequences of shift work. A recent study of a representative sample of people in paid employment gave some indication that shift work may be associated with sickness absence although the power of the study was too low to draw firm conclusions (4). It is expected that long-time absence could be more prevalent among evening and night workers than among day workers, since evening and night work is not only suspected to cause short-term sickness, but also severe and chronic diseases, such as cardiovascular diseases, cancer, and metabolic disturbances, as well as an increased risk of trauma and severity of trauma due to accidents (5, 6). On the other hand, pioneer studies found that day workers had more sickness absence than shift workers in a chemical plant in Norway (7), and in 29 organizations in the United Kingdom (8, 9).

Some studies suggest that shift workers have either higher sickness absence rates or more or longer absences than day workers (10–13). A questionnaire survey of masters, mates, and pilots of state ferries on health, social, and performance indices relevant to shift work showed that the employees had significantly more sick days on one of the most erratic schedules than on any of the other schedules (13).

Studies from Singapore, Japan, Norway, France, the United States, and Australia either found no association between shift work and sickness absence or were inconclusive (14–18).

A few studies have compared sickness absence related to 12-hour shifts with traditional 8-hour shifts. In a review comparing 8-hour and 12-hour shifts, Smith et al (19) concluded that absenteeism and turnover did not increase with 12-hour shifts. Later on, an Australian study by Baker et al (20) confirmed this result. Workers

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on 12-hour shifts may, however, have longer absences than day workers (10), and a prolonged duration of disability has been linked to working long hours (21).

It has been suggested that short- and long-term sickness absence may have different determinants (22). However, since most studies report various forms of sickness absence rates (7, 10, 23, 24, 20) rather than the incidence of short-term (25) and long-term (15) sickness absence, it has not been possible to get a picture of this possible pattern in relation to shift work from the literature. Employers in Denmark are entitled to compensation if employees are sick for >14 days. The number of weeks in which the employer receives compensation is filed in a national register. After 8 weeks, the local community begins an evaluation of the prospects for return to work and, if necessary, makes contact with the absent person to discuss the possibilities of rehabilitation, modified work, and the like.

The aim of our present study was to estimate the relative risks of compensated sickness absence for ≥2 weeks due to various evening and night work schedules. Analyses considering sickness absence for ≥8 weeks were also carried out.

Study population and methods

Our present study was designed as a prospective cohort study. Baseline questionnaire data were collected from November 2004 until August 2005. The study population comprised all employees with >3 months of seniority working in the eldery care sector in 36 Danish municipalities (283 work units). The 36 municipalities were chosen with the purpose of reflecting the variation in a range of factors (organization of elderly care, productivity, frequency of elderly people needing care, economic status, labor market factors, and whether the municipality was facing a merge with other municipalities in the near future).

The questionnaires were distributed to the 12 746 employees through a formal network of local contacts at the participating workplaces. Therefore, in general, only the healthy employees would have been given a questionnaire, but we cannot rule out the possibility that some were sent to sickness absent workers by their colleagues. A total of 10 028 (78.7%) respondents filled out and returned the questionnaire.

The admissible cohort members in our present study were female carers of the elderly with the following job titles: social and health care assistants, social and health care helpers, nursing home assistants, nursing aides, and home care helpers. We, thereby, excluded registered nurses, administrative staff, leaders, cleaning personnel, kitchen staff, and therapists. Those 5627 with at least 3 months of seniority were eligible for inclusion in our study.

The following question was used to measure exposure to shift work: "At what time do you usually work? Fixed day, fixed evening, fixed night, intermittent day or evening, intermittent evening or night, intermittent day or evening or night." Evening work was usually somewhere between 1400 and 2300.

After the exclusion of questionnaires with missing answers to any of the questions, the cohort included 3243 day workers (57.6%), 1231 persons with fixed evening work (21.9%), 405 with fixed night work (7.2%), and 748 with various mixed day, evening, and night work (13.3%). The evening and night workers, as well as the mixed group, were compared with the permanent day workers.

We used the unique personal civil registration number to link this cohort with a national register on social transfer payments entitled the DREAM register (26). DREAM contains weekly information on granted sickness absence compensation for all citizens in Denmark but no information about diagnoses. The cohort was followed in DREAM for 52 weeks after the baseline questionnaire was filled out. People who died, emigrated, or retired were excluded. Absence due to pregnancy presented a special problem. Maternity leave was not included, and the follow-up was stopped 3 months before a delivery to minimize the risk of cases being related to pregnancy. The risk of the first sickness absence was analyzed, and the follow-up was stopped after a sickness absence had occurred.

A Poisson regression model was used to calculate the rate ratios (RR) and 95% confidence intervals (95% CI). Possible confounders were identified in the literature and the analyses were adjusted for age, family status, lifestyle, general health, and physical and psychosocial work environment factors.

The confounders were measured as follows. Age was known from the civil registration number, and family status was self-reported as a response to the question "Do you live together with a spouse/fiancé/partner?" The lifestyle adjustment had the following three components: (i) body-mass index (BMI) calculated from self-reported height and weight and categorized according to the standard classifications of the National Institute of Health, USA, (ii) smoking, and (iii) physical activity during leisure time (27). [For details see page 208 of the report by Nabe-Nielsen et al (28).] The physical factors of the work environment [for details see page 2 of the report by Nabe-Nielsen et al (29)] were collected using the Index of Physical Work Environment Factors. It included extreme bending and twisting of the neck or back, work with the arms lifted or hands twisted, working mainly standing or squatting, lifting or carrying loads, and pushing or pulling loads. The psychosocial work environment factors included decision authority, skill discretion, quantitative demands, demands related to tempo, emotional demands, demands for hiding emotions, and social support.

Results

Table 1 shows that carers of the elderly working in the evenings had an increased risk of sick leave lasting ≥2 weeks and more costly sick leaves lasting ≥8 weeks. The results for those working night shifts did not differ statistically significantly from those of day or evening shift workers.

Model 1 was adjusted for age, family status, lifestyle, and general health. For absence lasting ≥2 weeks, the rate ratio was 1.31 for the evening workers and 1.26 for the fraction for which the sickness absence lasted ≥8 weeks. In the fully adjusted model (model 2), we observed a reduction in the rate ratio. The rate ratio for absences lasting ≥2 weeks was 1.29. The rate ratio was 1.24 for absences lasting ≥8 weeks, and it was not statistically significant.

Discussion

We found a moderately increased rate ratio for sickness absence among the evening working carers of the elderly. The power was not sufficient to study night work as a predictor of sickness absence.

A complete history of shift exposure was lacking, as the respondents had only been asked what shifts they usually work. The study may have underestimated the true effect of evening and night shift work if, and only if, the lack of a complete history of shift exposure causes differential misclassification.

A strength of the study was its access to compensated sickness absence data, as these files are independent of the memory of the study participants (30). Another strength was that no participants were lost to follow-up. Data regarding emigration from Denmark and those who received any social benefit other than sickness absence compensation were excluded and were thus not under risk for sickness absence compensation for the relevant time interval. Age, education, body mass index, smoking status, leisure-time physical activity, general health, and factors of the psychosocial and physical work environment were adjusted for. These factors have shown associations with shift work or sickness absence or both in previous studies. If, as has been suggested, a high body mass index and (increased) smoking is caused by irregular and nightshift work, then the results may underestimate the true risk. Overadjustment may have occurred if any of the psychological or physical work factors were part of the shiftwork situation.

Evening work may influence the risk of sickness absence both directly, because it influences the risk of illness, and indirectly, because the evening shift has the most adverse social consequences. People working during late evenings often find it difficult to unwind and fall asleep. A permanent sleep deficit may follow permanent evening work. This situation may increase sickness absence and general well-being. Presenteeism may, on the other hand, be stronger in evening and night work due to obligations towards colleagues who may be called if an employee calls in sick (31).

We are, in this study, only dealing with sickness absence lasting ≥14 days. Such an absence usually requires a certificate from a general practitioner. This fact and the length of the absence make us believe that sickness was the dominant cause of absence in our study.

The authors of a Swedish study recently suggested that long-term sick-listing among women in the public sector should be reduced through the prevention of some work and lifestyle factors (32). The factors were strained financial circumstances, obesity, bullying, and physical and mental demands at work exceeding the workers' own capacity.

A recent study shows that carers of the elderly are more exposed to potential hazards, like bullying, threats, violence, and patient transfers when they work evening or night shifts (33). It is therefore possible that injured workers working evenings and nights are more hesitant to resume work, especially since they often have to

Table 1. Number of female carers of the elderly at the baseline, person-years at risk, and rate ratio (RR) due to sickness absence for ≥2 and ≥8 weeks for women working evening and night shifts in comparison with day workers, with 95% confidence intervals (95% CI).

Shift (N)	≥2 weeks								≥8 weeks							
	Model 1 [a]				Model 2 [b]				Model 1 [a]				Model 2 [b]			
	Person-years at risk	Cases	RR	95% CI	Person-years at risk	Cases	RR	95% CI	Person-years at risk	Cases	RR	95% CI	Person-years at risk	Cases	RR	95% CI
Night shift [c]	382.33	72	1.03	0.80–1.32	329.00	56	0.97	0.73–1.29	390.87	42	1.17	0.84–1.62	337.25	29	0.93	0.62–1.38
Evening shift [c]	1446.31	275	1.31	1.13–1.51	1007.06	239	1.29	1.10–1.52	1185.94	139	1.26	1.03–1.55	1040.56	120	1.24	0.99–1.56
Mixed shift [c]	707.00	125	0.97	0.80–1.18	629.00	109	0.93	0.76–1.15	730.71	59	0.91	0.69–1.20	650.06	51	0.85	0.63–1.16
Day shift [c]	3055.67	571	1.00	..	2678.62	506	1.00	..	3148.83	295	1.00	..	2760.67	260	1.00	..

[a] Model 1 was adjusted for age, family status, lifestyle, and general health.
[b] Model 2 was adjusted for age, family status, lifestyle, general health, and work environment factors.
[c] Night shift: N=405, evening shift: N=1231, mixed shift: N=748, day shift: N=3243.

rely on their own strength because they have fewer colleagues than day workers. Future studies should look into differences in return-to-work time in relation to workhours. Sick employees should be offered temporary worktime arrangements that may ease and speed up the return-to-work process but avoid health-threatening presenteeism (31).

The results of our present study are in line with those of a recent study of a representative sample of all adult Danes in paid employment that gave some indication that shift work may be associated with sickness absence although the results were not statistically significant (4).

In conclusion, evening work among women seems to be associated with an increased risk of sickness absence lasting ≥2 weeks and with more costly sickness absences lasting ≥8 weeks.

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