Room for everyone in working life?
10% of the employees – 82% of the sickness leave

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ABSTRACT

Aims: The aims of this project were to study the distribution of sickness leave in a population of Norwegian power company workers, and to characterise those with most sickness leave.
Method: A survey was done in 13 power companies during the autumn of 1999. 2435 employees participated, the response rate was 73%. The employees were asked to fill in questionnaires about sickness leave, physical work environment, stress, coping, psychological demands, control, and subjective health complaints.
Results: A group of 10% of the employees reported 82% of the sickness leave. They were characterised by heavy physical work, lower education, and high levels of many health risk factors, such as smoking, low job satisfaction, sleeping badly, job stress, and low levels of physical exercise. They also had more health complaints.
Conclusion: The person most at risk was the old-fashioned manual labourer with low education and heavy physical work. Interventions aiming to reduce sickness leave should target the interventions to the group in need of it.

Key words: cross-sectional study, employees, sickness leave, subjective health complaints, physical work factors, psychosocial work factors, health risk factors

INTRODUCTION

The rising costs of the increasing level of sickness leave (1) have raised a public discussion in Norway of whether the sickness compensation rights need to be changed. Norway has full compensation for employees on sickness leave up to one year (1). The employer covers the first 16 days, the social insurance the rest. In Norway there is a manifest shortage of labour, the unemployment is about 3-4% (2), and there is social and political consensus of the right to work. The increase in sickness leave, therefore, is a complex and controversial issue in the interface between health science and political decisions.

Subjective health complaints (SHC) refer to complaints without objective signs and symptoms (3,4). Subjective health complaints are very frequent in the normal population (4), and musculoskeletal pain and/or dysfunction, one group of subjective health complaints, is the most frequent reason given for sickness leave (5). In 1998 49% of all cases of sickness leave and 36% of all new cases of disability pension in Norway were due to musculoskeletal disorders (5).

There is an increasing concern that social inequalities in health are still present in European societies, in spite of the attempts to eliminate such differences. In fact, there is even concern that the differences may be increasing (6-9). A recent Norwegian Governmental report points out that a small group is responsible for most of the sickness leave (1).

The aim of this study was to see how sickness leave was distributed in the population, and to characterise those with most sickness leave.

METHOD

Participants and procedure

Employees in 13 power companies in Norway were surveyed during the autumn of 1999. The employees had a variety of work tasks and jobs, from heavy outdoor manual labour to sales people and administration. The power companies have been characterised by considerable change and reorganisation for the last 10 years (a common trend in the rest of the society as well). They have developed from more or less monopoly institutions to companies based on competition and market principles.

2435 employees, 81% men, mean age 44.5 years (SD = 10.3) and 19% women, mean age 42.5 years (SD = 10.1), completed a comprehensive questionnaire with questions about work organisation, health, and productivity. The response rate was 73%. The data represent part of a screening process of employees participating in a project called "Reorganisation in the power companies".

Instruments

All data were measured by Norwegian standardised versions of questionnaires, covering a broad range of factors, including demographic variables, information on leadership responsibilities, working hours, shift work, and level of physical activity.

Sickness leave was measured by asking how many times the employee had been away from work on sickness leave the last six months. In addition the employee was asked to register the length of each sick-

ness leave. There was no differentiation between sickness leave granted by a medical doctor and sickness leave taken based on the evaluation by the employees themselves. Norwegian employees have the right to take three days of sickness leave four times in twelve months without having to see a physician.

Physical work environment was measured by six questions about repeated and monotonous movements, working with constant load on the back, working with hands in shoulder height or higher, working sitting down, working with a personal computer, and outdoor work, scored on a six-point scale, from 1 (nearly all of the time) to 6 (no/never). One question about lifting heavier loads than 20 kg was scored on a four-point scale, from 1 (more than 20 times/day) to 4 (none).

Stress was measured by 24 questions from the Cooper job stress questionnaire (10), scored on a six-point scale from 1 (no stress) to 6 (much stress). This yielded four subscales, communication, leadership, relocation, and workload. High scores represent high levels of perceived stress.

Coping was measured by the Instrumental Mastery Oriented Coping Factor from the CODE (11), based on the Utrecht Coping List (UCL) (12,13). Instrumental mastery oriented coping (active problem solving, avoidance and passive expectancy, and depressive reaction pattern) implies an instrumental, active, goal-oriented coping style, with strategies like direct intervention, considering different solutions to the problem, and considering the problem a challenge (11). To get a high score on this factor, the score on active problem solving must be high, and the score on avoidance and passive expectancy, and depressive reaction pattern must be low.

Psychological demands were measured by five questions from the short Swedish version (14) of the Psychological Demands dimension from the Demand/Control model (15). The questions were scored on a four-point scale from 1 (yes, often) to 4 (no, nearly never), yielding a sum score for psychological demands. High score on the sum score means high level of psychological demands. High demands are related to working hard and fast, excessive work, insufficient time to work, or conflicting demands.

Control (decision latitude) was measured by six questions from the short Swedish version (14) of the Decision Latitude dimension from the Demand/Control model (15). Four items refer to skill discretion and two items to decision authority, scored on a four point scale from 1 (yes, often) to 4 (no, nearly never), yielding a sum score for control. High score on the sum score means high level of control.

Subjective health complaints were measured by 29 items on subjective somatic and psychological complaints experienced during the last 30 days, using the Subjective Health Complaint Inventory (SHC) (4). Severity was scored on a four-point scale from 0 (no complaints) to 3 (severe complaints), yielding five subscales on allergy, flu, musculoskeletal pain (headache, neck pain, upper back pain, low back pain, arm pain, shoulder pain, migraine, and leg pain), "pseudo-neurology" (16) (palpitation, heat flushes, sleep problems, tiredness, dizziness, anxiety, and depression), and gastrointestinal problems (heartburn, epigastric discomfort, ulcer/non-ulcer dyspepsia, stomach pain, gas discomfort, diarrhoea, and constipation). Duration was measured by number of days. Severity multiplied by duration was used as a total score, indicating amount of health complaints (4).

Trait anxiety was measured by the Norwegian version of the "State-Trait Anxiety Inventory" (17). 10 questions from the trait anxiety scale were used, and was scored on a four-point scale from almost never (1) to almost always (4).

Analyses

SPSS 10.1 for Windows was used for the statistical analyses. Crosstables and ANOVA were used to test group differences. Crude risk ratios and adjusted odds ratios were reported. Logistic regression was used to calculate odds ratios in successive multivariate models. The 90%-group was assigned an odds ratio of 1, the 10%-group was compared to them. All the variables were adjusted for age. Gender was the first variable included in the models, followed by educational variables, job characteristics, life style, and psychological variables. Median scores were used to recode continuous and categorical variables with more than two categories into dichotomous variables.

RESULTS

Sickness leave

The respondents were split in two groups, one group with 0-10 days of sickness leave, one with more than 10 days. The more than 10 days group was small (10%, n = 245), but reported most of the sickness leave, 82% (95% CI 77–87) of the total number of days with sickness leave during the last six months. Their average sickness leave was 44 days (95% CI 39–49). The other 90% (n = 2.190) of the employees contributed 18% (95% CI 16–20) of the total number of days with sickness leave during the last six months. The average sickness leave of this group was 1 day (95% CI 0.97–1.14).

Differences between the 10%-group and the 90%-group

There were no differences between the groups concerning age and gender. There were significant differences between the 10%-group and the 90%-group on several variables describing personal characteristics of the employees, their lifestyle, complaints, and work (table 1). The 10%-group had a lower educational level, reported more job stress, less control, and scored lower on instrumental mastery-oriented coping compared to the 90%-group. The 10%-group reported a

more restrictive attitude to being absent from work when ill than the 90%-group. The 10%-group reported both less quantity of sleep and poor sleep quality compared to the 90%-group. There was a higher percentage of smokers in the 10%-group. When asked what they thought of their own health, more individuals in the 10%-group reported that their health was poor. There was no difference between the groups on the level of leisure time physical activity. The scores on subjective health complaints were higher in the 10%-group than in the 90%-group.

Prevalence of severe function-limiting coronary heart disease and cancer was higher in the 10%-group in comparison with the 90%-group, but did not make any major impact on the level of sickness leave. Together with chronic lung disease this concerned only 48 persons in the 90%-group and 15 persons in the 10%-group. These respondents contributed 3% of the total number of days of sickness leave in the 90%-group and less than 10% in the 10%-group.

There were significant differences between the two groups on several variables describing work tasks and aspects of the jobs they held. The employees in the 10%-group had more manual and physically hard work than their colleagues in the 90%-group.

Odds ratios for being in the 10%-group were calculated adjusting for other variables in a stepwise manner (table 2). After adjusting for education, job characteristics, life style, and psychological variables, only heavy physical work, smoking, and low job satisfaction remained as significant risk factors. Only adjusting for age, gave education, coping, trait anxiety, and control as additional risk factors. When analysing men separately, self-reported physical fitness became a significant factor for preventing men from being in the 10%-group (OR 0.45, 95% CI 0.24–0.84). On the other hand, exercise gave the males an increased risk for being in the 10%-group (OR 1.48, 95% CI 1.03–2.11), in addition to heavy physical work, smoking, and job satisfaction. There were too few women in the population to run a separate logistic regression on them.

DISCUSSION

A small group of employees (10%) was responsible for most of the sickness leave (82%). This small group was characterised by high levels of many health risk factors. They also had more outdoor work in physically straining and heavy jobs, and less leadership responsibilities. The high risk person, therefore, may not be affected by positive consequences of an organisational change, but may be affected by negative consequences, like downsizing.

High levels of sickness leave are associated with high scores on subjective health complaints (18), in accordance with the fact that subjective health complaints are the main reason for sickness leave (5). The association between poor health and physical and psychological work loads is consistent with the literature (e.g. 6,15,19-21). Six percent of the 10%-group perceived their own health as bad, compared to only 2% in the 90%-group. A negative view of one's own health has been shown to predict survival (22), and it is reasonable to assume that it may also be associated with sickness leave.

Severe functional problems from cancer and cardiovascular disease were also much more common in the 10%-group. However, this affected only a few individuals and a small proportion of the days of sickness leave and cannot explain the difference between the groups regarding sickness leave.

Contrary to popular assumptions, the group with the highest level of sickness leave found it less acceptable to stay at home ill. This signals that too simple

Table 1a. Mean and 95% CI of the mean for some person, work and subjective health variables for the 90%-group (n = 2190) and the 10%-group (n = 245).

	Mean (95% CI of the mean)		
	90%-group	10%-group	
Person and work variables:			
Age	43.27 (42.84–43.71)	44.44 (43.03–45.85)	F(1,2382) = 2.76, p = .097
Years at school	12.96 (12.84–13.08)	11.92 (11.60–12.23)	F(1,2368) = 30.67, p < .001
Trait anxiety	16.61 (16.43–16.80)	17.87 (17.19–18.55)	F(1,2325) = 17.06, p < .001
Number of hours' sleep during the week	6.78 (6.74–6.81)	6.64 (6.52–6.76)	F(1,2392) = 5.69, p = .017
Number of hours' sleep in the week-end	7.97 (7.92–8.02)	7.80 (7.65–7.96)	F(1,2399) = 4.65, p = .031
Coping (imoc)	3.11 (3.10–3.12)	3.06 (3.02–3.10)	F(1,2380) = 8.00, p = .005
Perceived job stress	24.52 (23.82–25.23)	27.15 (24.69–29.60)	F(1,2378) = 5.23, p = .022
Working extra hours	3.15 (2.94–3.35)	1.81 (1.45–2.17)	F(1,2044) = 17.72, p < .001
Number of years in the same job	7.68 (7.37–7.99)	8.94 (7.97–9.91)	F(1,2357) = 6.28, p = .012
Subjective health complaints:			
Musculoskeletal complaints	2.71 (2.58–2.83)	4.46 (3.94–4.98)	F(1,2389) = 71.99, p < .001
Pseudoneurological complaints	1.27 (1.19–1.35)	2.18 (1.84–2.52)	F(1,2393) = 45.56, p <.001
Gastrointestinal complaints	1.09 (1.02–1.16)	1.48 (1.25–1.72)	F(1,2393) = 11.72, p = .001
Allergy	0.46 (0.42–0.50)	0.76 (0.57–0.96)	F(1,2393) = 17.00, p < .001
Flu	0.68 (0.64–0.73)	0.82 (0.67–0.96)	F(1,2392) = 3.54, p = .06

Table 1b. Percentage of person and work variables in the 90%-group (n = 2190) and the 10%-group (n = 245). Risk ratios and 95% CI for being in the 10%-group.

		90%-group	10%-group	RR (95%CI)
Gender – female		18.7%	22.4%	1.20 (0.94–1.54)
Diseases implying severe functional problems:				
Cardiovascular disease		1.3%	4.7%	3.62 (1.77–7.41)
Chronic lung disease		0.8%	1%	1.22 (0.28–5.25)
Cancer		0.3%	1.5%	4.86 (1.22–19.28)
Musculoskeletal disease		13%	37%	2.72 (2.21–3.34)
Psychological disease		1.5%	7.8%	5.14 (2.85–9.27)
Other disease		4.8%	12%	2.54 (1.72–3.74)
Person and work variables:				
Education	University/College	41%	24%	0.58 (0.46–0.73)
Smoking		32%	46%	1.42 (1.22–1.65)
Quality of sleep	Good	70%	52%	0.74 (0.66–0.84)
	Medium	23%	30%	1.28 (1.25–1.58)
	Bad	7%	18%	2.64 (1.94–3.60)
Perception of health	Good	74%	56%	0.76 (0.68–0.85)
	Medium	24%	38%	1.57 (1.31–1.87)
	Bad	2%	6%	3.36 (1.84–6.13)
Leadership responsibilities		36%	27%	0.74 (0.60–0.92)
Number of years in the organisation	0-5 years	24%	18%	0.72 (0.54–0.95)
	6-10 years	13%	14%	1.10 (0.79–1.54)
	11 years and more	63%	68%	1.09 (0.99–1.19)
Probability of loosing the job		11%	15%	1.34 (0.97–1.85)
Probability of applying for a new job		6%	12%	2.10 (1.43–3.07)
Staying at home with sick child is OK		87%	81%	0.94 (0.88–1.00)
Expectancy of presence at work when ill		21%	25%	1.19 (0.94–1.50)
Feeling bad when staying at home ill		18%	22%	1.24 (0.97–1.59)
Job characteristics:				
Repetitive/monotonous movements	Nearly never	50%	42%	0.82 (0.71–0.96)
	Some of the time	34%	35%	1.05 (0.88–1.26)
	Most of the time	16%	23%	1.46 (1.13–1.87)
Constant load on the back	Nearly never	62%	43%	0.69 (0.60–0.80)
	Some of the time	29%	38%	1.34 (1.13–1.59)
	Most of the time	9%	19%	2.00 (1.49–2.67)
Hands at shoulder height or higher	Nearly never	73%	53%	0.72 (0.64–0.81)
	Some of the time	23%	36%	1.57 (1.31–1.89)
	Most of the time	4%	11%	2.83 (1.89–4.24)
Working sitting down	Nearly never	32%	50%	1.57 (1.36–1.81)
	Some of the time	24%	20%	0.84 (0.65–1.09)
	Most of the time	44%	30%	0.68 (0.56–0.53)
Working with a personal computer	Nearly never	36%	55%	1.54 (1.36–1.75)
	Some of the time	28%	19%	0.67 (0.51–0.87)
	Most of the time	36%	26%	0.73 (0.58–0.90)
Working outdoors	Nearly never	61%	50%	0.82 (0.72–0.93)
	Some of the time	21%	20%	0.96 (0.74–1.25)
	Most of the time	18%	30%	1.65 (1.33–2.03)
Heavy lifts	Never	70%	56%	0.81 (0.72–0.90)
	1-5 times pr. day	22%	28%	1.27 (1.02–1.57)
	More than 5 times	8%	16%	1.99 (1.43–2.75)

"motivational" interventions aiming to reduce sickness leave may not be as effective as expected. The censorious attitudes may be a result of a high level of sickness leave; they may have felt attendance pressure from colleagues or leaders, regardless of whether this was real. It has been suggested that occasional absences from work may give employees a needed break from stressful work, and may be used as a coping strategy (23). Seen in this light, the restrictive attitudes of the group with the high level of sickness leave may prevent them from using this coping strategy to ease their burden, perhaps continuing to work until a longer sickness leave is needed to recover.

When only adjusting for age, education was among the strongest risk factors for being in the group with high level of sickness leave. This is in accordance with the results from the Whitehall II study (24), which reported from a more homogeneous working population with only civil servants and no manual labourers, whereas the population in this study was more heterogeneous. After adjusting for physical job characteristics, education no longer remained significant.

Table 2. Odds ratios and 95% CI for some relevant variables.

	Age-adjusted OR	Adjusted for educational var.	Adjusted for job char. 1	Adjusted for job char. 2	Adjusted for life style	Adjusted for psych. var. 1	Adjusted for psych. var. 2
Age							
Women	1.33 (0.96–1.83)	1.26 (0.91–1.75)	1.76 (1.21–2.54)	1.79 (1.21–2.65)	1.78 (1.20–2.65)	1.64 (1.09–2.48)	1.63 (1.07–2.48)
12 years or less at school	2.01 (1.51–2.67)	1.46 (1.01–2.09)	1.36 (0.92–2.01)	1.33 (0.90–1.97)	1.24 (0.84–1.84)	1.25 (0.84–1.88)	1.27 (0.85–1.90)
High school highest educ.	2.15 (1.58–2.93)	1.66 (1.12–2.47)	1.13 (0.72–1.76)	1.07 (0.68–1.67)	1.06 (0.68–1.67)	1.15 (0.72–1.82)	1.13 (0.71–1.80)
Blue collar type job	2.13 (1.60–2.84)		1.69 (1.14–2.50)	1.69 (1.14–2.51)	1.74 (1.17–2.59)	1.69 (1.13–2.54)	1.60 (1.06–2.40)
Heavy lifts	1.77 (1.35–2.33)		1.26 (0.87–1.84)	1.29 (0.89–1.88)	1.32 (0.90–1.93)	1.25 (0.85–1.83)	1.21 (0.82–1.79)
Customer contact	1.11 (0.84–1.47)		1.12 (0.83–1.50)	1.13 (0.84–1.52)	1.11 (0.83–1.50)	1.15 (0.84–1.57)	1.12 (0.82–1.53)
Normal working hours							
Working extra hours (ref. cat. < 2hs/week)	0.65 (0.50–0.85)			0.72 (0.54–0.97)	0.72 (0.54–0.96)	0.77 (0.57–1.04)	0.79 (0.58–1.08)
Shift work	0.79 (0.41–1.54)			1.12 (0.55–2.29)	1.12 (0.55–2.30)	1.16 (0.56–2.39)	1.09 (0.53–2.26)
Smoking	1.84 (1.41–2.41)				1.71 (1.26–2.33)	1.69 (1.23–2.32)	1.74 (1.26–2.39)
> 5 cups of coffee/day	1.39 (1.02–1.89)				1.01 (0.71–1.43)	0.98 (0.68–1.41)	0.96 (0.66–1.39)
> 3 units of alcohol/day	1.04 (0.79–1.36)				1.06 (0.79–1.43)	1.04 (0.77–1.42)	1.04 (0.77–1.42)
Exercise	0.99 (0.76–1.31)				1.22 (0.90–1.65)	1.21 (0.89–1.65)	1.20 (0.88–1.64)
Physical fitness	0.69 (0.40–1.17)				0.55 (0.31–0.99)	0.59 (0.32–1.07)	0.63 (0.35–1.15)
Low coping	1.34 (1.03–1.76)					1.14 (0.83–1.58)	1.05 (0.75–1.46)
High trait anxiety	1.43 (1.09–1.88)					1.23 (0.91–1.69)	1.08 (0.77–1.50)
Job stress	1.15 (0.88–1.5)						1.1 (0.79–1.54)
High psych. demands	1.08 (0.83–1.42)						1.05 (0.76–1.46)
Low control	1.73 (1.32–2.28)						1.31 (0.94–1.82)
Low social support	0.91 (0.69–1.19)						1.00 (0.73–1.38)
Low job satisfaction	1.75 (1.34–2.30)						1.61 (1.16–2.23)

The data on sickness leave were self-reported, and a valid question is whether self-reported data are reliable. However, earlier studies of sickness leave have demonstrated good correlation between self-reported sickness leave data and data obtained from employers or insurance authorities (25,26) for the previous six months. An advantage of self-reported data is information about sickness leave of short duration, this is usually not registered in data from insurance authorities.

Female gender became a risk factor for being in the 10%-group when job characteristics were included in the logistic regression model. This means that women in physically heavy work had an increased chance of a high level of sickness leave. The risk remained significant also when adjusting for life style factors and psychological variables. Political intentions have been to encourage more women to select traditionally male dominated jobs. Women may not have the necessary physical preconditions for some of these jobs, without a job redesign or an increase in individual physical condition and strength.

The results seem to link social inequality to a high level of sickness leave. The 10%-group belonged to a lower social class judged by education, low control (decision latitude), and description of their jobs. The 10%-group had a higher percentage of smokers than their colleagues. In Denmark smoking decreased during the 1980s, but only in the most educated groups, and this accounted for widening of an existing social difference in the total cardiovascular risk (8). Knowledge about effective health behaviours, for instance regarding low back pain, is lowest in less educated groups (27).

Since only 10% of this work force contributes so much to the sickness leave, and assuming that the present population is not very different from other Norwegian working populations, it is not surprising that it has been difficult to demonstrate effect of interventions aiming to reduce sickness leave when it is targeted to the whole workforce (28). If only 10% of the subjects have potential for improvement, the effect sizes have to be considerable and the population large to be able to show effect. This suggests that specific interventions aimed at specific high risk groups may be more cost effective than general interventions and reforms. Heavy physical work, smoking, and job satisfaction were the only significant risk factors left after controlling for age, gender, educational variables, job characteristics, life style, and psychological variables. This shows that the problems of the group with much sickness leave are multifactorial, and intervening may be complicated.

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