

Days Lost by Sickness Certification

GUNNAR TELLNES

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Number of calendar days lost by sickness certification, according to cause, sex, and age, are reported. The basis of the study was 5 042 episodes of sickness certification among residents of Buskerud county in Norway in 1985. The number of days lost was estimated to be 19.8 per employed person per year (females 20.4, males 19.2). There was an increase with age, but the number of days lost was almost the same for persons between 20 and 50 years of age. Conditions classifiable to the diagnostic groups musculoskeletal/connective tissue diseases, respiratory system diseases, injuries, and mental disorders were responsible for 70.4% of the total number of days lost. Among "single diagnoses" the most dominating were "back pain without radiating symptoms", "other nonarticular rheumatism", "influenza", "other bursitis, tendinitis & synovitis", and "depressive neurosis", and these accounted for 33.7% of the total number of days lost. Cause-, sex-, and age-specific numbers of days lost reflect the socioeconomic importance of different health problems. Such information may be useful in setting priorities in preventive medicine.

Key words: sickness certification, epidemiology, family medicine, occupational health, community medicine, prevention, health promotion.

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"Sickness" is a term used to describe the social dysfunction or the role some people assume when they have a "disease" or an "illness" (1), and sickness certification can be used to measure sickness among employed persons (2). The estimated cost of sickness certification to the Norwegian National Insurance for 1988 was about 10 billion NOK (3), and sickness benefit costs to companies were probably of the same order. There are about two million employed persons in Norway, and the cost resulting from sickness certification represents some 10 000 NOK (1 600 American dollars) per employed person per year (3). Sickness certification, therefore, has substantial economic consequences, both to companies and for the National Insurance. Even small reductions in sickness certification may give great savings.

Programmes to reduce "absence from work" have traditionally emphasized organizational aspects in industry (2). In spite of considerable efforts in this direction, rising trends of sickness absence have

been reported (4, 5). At present, general practitioners are responsible for 81% of all initial certificates issued (6), and sickness certificates are issued at 11-35% of the consultations in general practice (2). This suggests that sickness certification is a major task in general practice and that there is a need for more systematic knowledge about this subject as a basis for preventive programmes.

Incidence and duration of episodes of sickness certification are reported elsewhere (6, 7). Those reports suggest that information on incidence can be used as a health status indicator, and that information on duration may offer a useful tool in selecting patients in need of close follow-up and early rehabilitation. The product of incidence and duration is "number of calendar days lost", which may be taken as a measure of the socioeconomic importance of different health problems. Furthermore, it gives useful information in setting priorities in preventive and community medicine.

The aim of the present paper is to provide esti-

Table 1. Number of days lost per 1000 employed persons per year by sickness certification according to diagnostic groups, sex, and age. *n* = number of "initial certificates" registered during four weeks. Buskerud county, Norway, 1985.

Diagnostic groups	ICD-8	n	Number of days lost					
			Females		Males		Total	
			16-39 years	40-69 years	16-39 years	40-69 years	16-69 years	%
Infective & parasitic diseases	I	(206)	437	258	583	429	443	2.2
Neoplasms	II	(53)	206	621	6	661	350	1.8
Endocrine, nutritional & metabolic diseases	III	(26)	172	147	159	111	147	0.7
Blood diseases	IV	(9)	43	4	36	3	22	0.1
Mental disorders	V	(311)	1422	2375	1398	1757	1694	8.6
Nervous system, sense organs diseases	VI	(96)	399	649	159	514	408	2.1
Circulatory system diseases	VII	(111)	270	1144	164	2279	947	4.8
Respiratory system diseases	VIII	(1408)	1931	3533	2161	3819	2822	14.3
Digestive system diseases	IX	(153)	325	502	995	997	739	3.7
Genitourinary system diseases	X	(200)	702	735	231	155	423	2.1
Pregnancy, childbirth, puerperium	XI	(114)	1649	83	-	-	406	2.1
Skin, subcutaneous tissue diseases	XII	(99)	314	180	377	251	289	1.5
Musculoskeletal, connective tissue diseases	XIII	(1264)	6373	9355	4994	8334	7079	35.8
Symptoms, signs, ill-defined conditions	XVI	(326)	1301	1759	730	2109	1437	7.3
Injuries & adverse effects	XVII	(611)	1278	2810	2906	2193	2313	11.7
Unknown		(55)	120	429	203	214	232	1.2
Total		(5042)	16942	24584	15102	23826	19751	100.0

mates of numbers of days lost by sickness certification by cause, sex, and age in a defined population. The paper is part of a broader study of doctors' sickness certification practice (6-8).

MATERIAL AND METHODS

Definitions

Employed persons in the present study include all employees, self-employed persons, farmers, fishermen, civil servants, military personnel, and unemployed persons seeking work. The definitions of concepts related to "sickness certification", e.g. "absence from work", "sickness absence", "leave", and "absenteeism", have been discussed in a previous paper (2). The three concepts illness, disease, and sickness were defined in the same paper.

The national sickness benefit scheme in Norway

The National Insurance Act in Norway covers all employed persons (including unemployed persons

seeking work) (9). To obtain sickness benefits a sickness certificate (National Insurance standard form) must be issued by a doctor. However, the first three calendar days of sickness absence may be declared by self-certification. All persons registered as employees are entitled to sickness benefits from the first day of sickness absence. Sickness benefits for the first 14 days are usually paid by the employer. However, self-employed persons and farmers receive sickness benefits for the first two weeks only when they take out supplementary insurance. From the 15th day to one year sickness benefits are paid by the National Insurance to all employed persons. After one year persons who are still incapable of work are entitled to rehabilitation benefit or disability pension.

Material

The material of the present study was obtained from Buskerud county, located in the middle of southern Norway. At the beginning of 1985, Buskerud had 21 municipalities and 219 257 inhabitants (106 019 em-

Table II. Number of days lost per 1 000 employed persons per year by sickness certification according to single diagnoses, sex, and age. *n* = number of "initial certificates" registered during four weeks. Buskerud county, Norway, 1985.

Single diagnoses	ICD-8	n	Number of days lost					%
			Females		Males		Total	
			16-39 years	40-69 years	16-39 years	40-69 years	16-69 years	
Influenza	4700	(612)	714	1 395	1 012	1 554	1 163	6.0
Back pain without radiating symptoms	7289	(493)	2 234	2 094	1 919	2 578	2 204	11.1
Acute upper respiratory tract infection	4600	(272)	380	474	377	501	430	2.2
Other nonarticular rheumatism	7179	(238)	1 596	2 147	1 325	718	1 391	7.0
Other bursitis, tendinitis & synovitis	7310	(180)	808	1 623	679	1 113	1 013	5.1
Sinusitis, acute & chronic	4610	(179)	357	335	155	129	231	1.2
Depressive neurosis	3004	(158)	903	1 682	403	831	891	4.5
Bronchitis & bronchiolitis, acute	4660	(127)	46	564	119	839	382	1.9
Neurosis, other/unspecified	3009	(101)	341	659	734	533	572	2.9
Acute tonsillitis & quinsy	4630	(97)	134	62	163	55	107	0.5
Other symptoms, signs, ill-defined conditions	7889	(88)	317	435	231	552	377	1.9
Back pain with radiating symptoms	7250	(84)	584	781	429	748	621	3.1
Shoulder syndromes	7170	(79)	250	415	107	1 015	444	2.3
Bruise, contusion, crushing	9290	(75)	53	190	318	250	212	1.1
Laceration/open wound/traum. amputation	8890	(72)	22	24	269	124	123	0.6
Sprain/strain ankle	8450	(69)	78	173	104	123	117	0.6
Cervical spine syndromes	7200	(57)	508	805	119	560	465	2.4
Viral infection, unspecified	0799	(53)	39	76	126	280	137	0.7
Presumed infectious intestinal diseases	0090	(48)	85	40	309	65	138	0.7
Other complications of pregnancy	6490	(48)	1 156	74	-	-	288	1.5
Other diagnoses		(1 912)	6 336	10 537	6 203	11 257	8 445	42.7
Total		(5 042)	16 941	24 585	15 101	23 825	19 751	100.0

ployed persons) (8). The distribution by sex, age, and branch of industry of employed persons in Buskerud was roughly similar to that of Norway as a whole, as was the number of residents per general practitioner.

Procedure

During a four week period (25 February to 24 March 1985), all initial certificates received at the 20 National Insurance Offices of the county of Buskerud were registered (8). Information on duration, up to one year, of "episodes of sickness certification" was obtained from the National Insurance and by questionnaires to employers (7). A more detailed description of the material and methods used in the study is reported elsewhere (6-8). Diagnoses written on the initial certificates were coded according to the International Classification of Health Problems in

Primary Care (ICHPPC-1) (6). Diagnostic groups are in accordance with WHO's International Classification of Diseases (ICD-8). Information on occupation was not written on initial certificates in Norway during 1985, and was not available for the present analysis.

Measurements and statistics

Days lost were measured by the "number of calendar days lost per employed person per year", or per 1 000 employed persons per year (Tables I and II). The procedure to estimate rates per year has been described previously (8). The three first calendar days of self-certification were not included in the number of days lost unless they were continued by an initial certificate issued by a doctor. Because the present study describes "sickness certification" and not "sickness absence", this fact does not influence

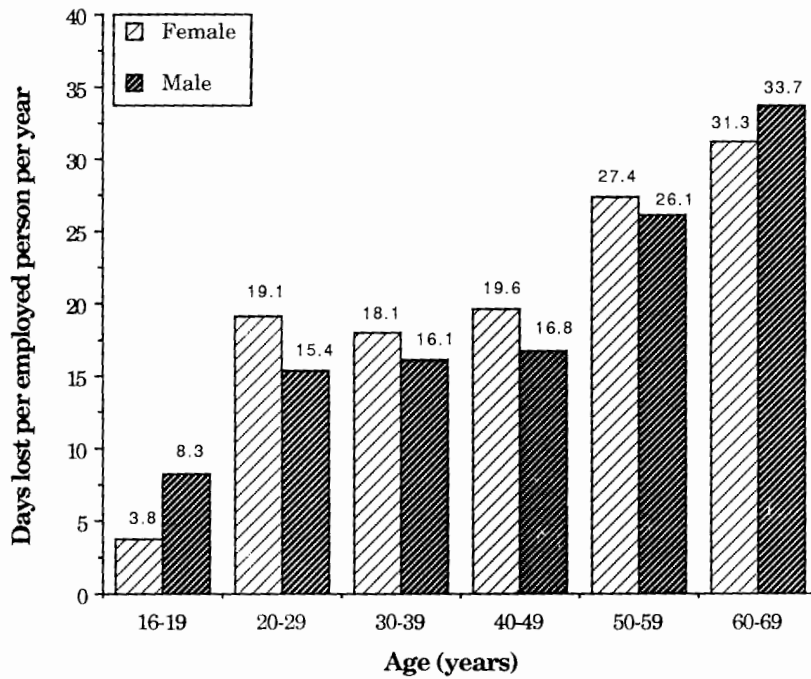


Fig. 1. The number of calendar days lost per employed person per year according to sex and age. Buskerud county, Norway, 1985.

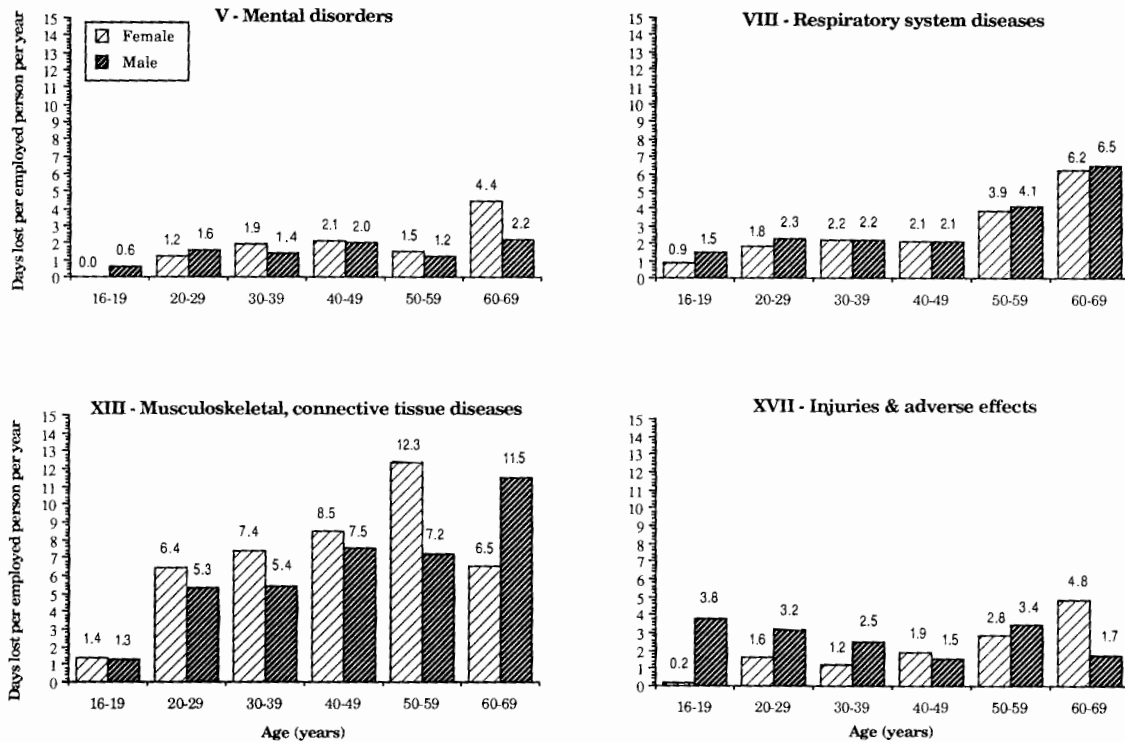


Fig. 2. The number of calendar days lost per employed person per year due to the four main "diagnostic groups" in sickness certification, according to sex and age (ICD-8, Chapter V, VIII, XIII, and XVII). Buskerud county, Norway, 1985.

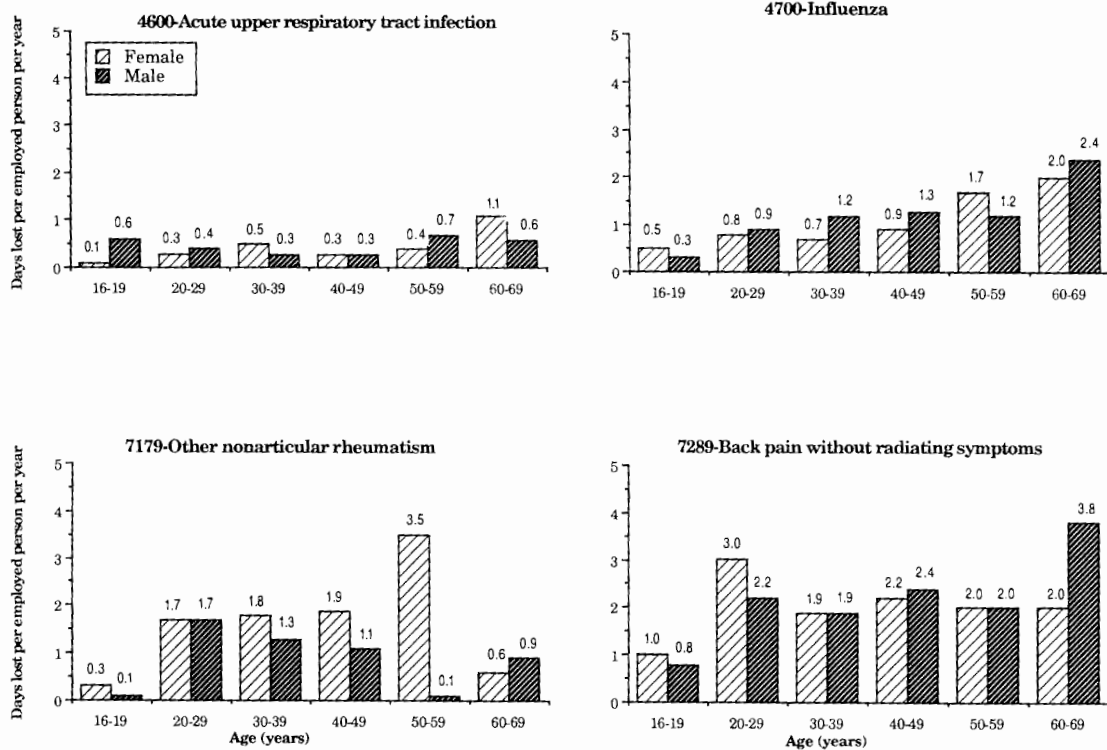


Fig. 3. The number of calendar days lost per employed person per year due to the four main "single diagnoses" in sickness certification, according to sex and age (ICHPCC-1 number 4600, 4700, 7179, and 7289). Buskerud county, Norway, 1985.

the validity of the data (6). "Statistical Analysis System" was used in the analysis. The data was not normally distributed, and a two-sided Wilcoxon rank sum test was used to assess the statistical significance of differences in days lost, with a 5% significance level (10).

RESULTS

The number of calendar days lost was estimated at 19.8 per employed person per year (females 20.4, males 19.2). The difference between sexes was small, even when adjusting for age by the direct method (20.7 and 19.1 respectively) (10). The number was similar for the three age groups 20-29, 30-39, and 40-49 years, increasing in the 50-59 year-group, and highest in the 60-69 year-olds (Figure 1). The differences in number of days lost between successive pairs of the three oldest age groups were statistically significant (all $p < 0.001$).

Musculoskeletal/connective tissue diseases were

the most dominating medical cause stated on the sickness certificates, and accounted for more than one-third of the total number of days lost (Table I). Respiratory system diseases, injuries, and mental disorders accounted for another one-third of the total. Among single diagnoses the most dominating were "back pain without radiating symptoms", "other nonarticular rheumatism", "influenza", "other bursitis, tendinitis & synovitis", and "depressive neurosis" (33.7% of the total) (Table II).

Musculoskeletal/connective tissue diseases caused the highest number of days lost in both sexes and all ages, except in the 16-19 year-old males (Table I and Figure 2). There was an increasing trend with age, with a peak in females aged 50-59 years. Females 50-59 years old lost significantly more days than males 50-59 years old, while the oldest males lost more days than females (both $p < 0.001$). Figure 3 shows that "other nonarticular rheumatism" accounted for the major part of the number of days lost because of musculoskeletal/connective tissue diseases in females 50-59 years old. The 50-59

year-old males, by contrast, lost only a few days from this cause. Among 60–69 year-old males, back pain without radiating symptoms accounted for the greater part of days lost due to musculoskeletal/connective tissue diseases (Figures 2 and 3).

Days lost due to respiratory system diseases were significantly higher for those 50 years and older ($p < 0.001$) (Figure 2). Influenza was the dominating single diagnosis in this diagnostic group, and the age pattern found for respiratory system diseases is a reflection of the age pattern for influenza (Figure 3).

The number of days lost because of injuries for those <40 years of age was significantly higher in males than in females ($p < 0.001$) (Figure 2). The number of days lost because of injuries decreased with age in males up to 50 years, while there was an increasing trend with age in females ≥ 40 years-old. The most dominating single diagnoses were "bruise/contusion/crushing" and "laceration/open wound/traumatic amputation" (Table II). "Bruise/contusion/crushing" in males <40 years old accounted for the highest number of days lost from injuries.

The highest number of days lost because of mental disorders was found in females ≥ 40 years old (Table I), and especially in females 60–69 years old (Figure 2). This sex and age pattern was due to depressive neurosis, which was the single diagnosis in the diagnostic group of mental disorders that accounted for the highest number of days lost (Table II).

Circulatory system diseases accounted for only 4.8% of the number of days lost by sickness certification (Table I). In males ≥ 40 years old, however, this was the diagnostic group with the third highest number of days lost.

DISCUSSION

Validity of diagnoses written on sickness certificates has been discussed elsewhere (6, 7). In spite of the fact that some reservations had to be made for single diagnoses, it was suggested that the medical information provided by sickness certification is sufficiently valid to be used as a "health status indicator" (6). However, the registration period of the present study was in the winter, and the cause-specific incidences of sickness certification may therefore be different from the annual average for certain diseases, e.g. for influenza and acute upper respiratory tract infection. It is probable that this seasonal variation to some extent influences the number of days lost presented in the present paper. There was no

routine registration system for the whole of 1985 that provided statistics about medical information stated on sickness certificates (8). There is a need to develop such systems in Norway.

Few epidemiological studies on sickness certification using the measure "number of days lost per employed persons per year" have been published (2). Studies from general practice have used days lost as a measurement, but those surveys, in contrast to the present, included both employed and non-employed persons. The same was done in a sickness benefit study from the National Insurance of Sweden, where even persons not working outside the home are entitled to sickness benefits (11). The Swedish survey differs also by including the first week of sickness absence documented by self-certification. In the present study the three first calendar days of self-certification were not included in the number of days lost unless they were continued by an initial certificate issued by a doctor. With these reservations, the present findings are in agreement with the Swedish study with respect to the four most dominating diagnostic groups.

Musculoskeletal/connective tissue diseases were responsible for the highest number of days lost, followed by respiratory system diseases. This order is the opposite of that observed for cause-specific incidences of sickness certification (6). The difference is accounted for by the longer duration of episodes of sickness certification for musculoskeletal/connective tissue diseases compared with respiratory system diseases (7). Episodes of sickness certification caused by circulatory system diseases also had a long duration (7). However, the number of days lost, except in males ≥ 40 years old, was relatively low because of the low incidence of these diagnoses (6).

It is difficult to account for the marked increase in number of days lost due to musculoskeletal/connective tissue diseases in the 50–59 year old females, followed by a sharp drop in those 60–69 years old (Figure 2). These findings cannot be explained by the data in the present survey. Nevertheless, it is tempting to speculate that menopause-related myalgia might account for some of the increase, and that the decrease might be due to the fact that the most sick females had already retired and received disability pension by the age of 60–69 years. Another possibility is that the birth-cohort of females in question was more healthy. The sharp decrease in the 60–69 years-olds may also have resulted from an overestimation of the number of employed persons

in that age group. This denominator problem, which is present also for the youngest age group, has been discussed elsewhere (8).

The age trend with respect to days lost because of injuries in the present study was similar to that reported in the Swedish study (11), in which the highest number of days lost was observed in persons ≥ 50 years. The incidence of injuries was relatively low in the oldest age groups, but the episodes of sickness certification were of long duration (6).

Four diagnostic groups, i.e. musculoskeletal/connective tissue diseases, respiratory system diseases, injuries, and mental disorders, accounted for 70.4% of the number of days lost due to sickness certification. The general experience is that medical treatment of these health problems is unsatisfactory, and few studies have documented effects of primary prevention (12–16). An exception are injuries, when community-based primary prevention are applied (17, 18). To achieve similar reductions in number of days lost due to musculoskeletal/connective tissue diseases, respiratory system diseases, and mental disorders, research should be directed towards elucidating the multifactorial aetiology of these health problems to provide a basis for prevention. Efforts to reduce the number of days lost by sickness certification are important not only to National Insurance and industry. Improved capacity for work will benefit the patients through increased social network and enlarged quality of life.

Cause, sex, and age-specific numbers of days lost reflect the socioeconomic importance of different health problems. Such information may be useful in setting priorities in preventive medicine. Previously, diseases with high mortality have been emphasized in preventive medicine, e.g. circulatory system diseases and neoplasms. In the years to come, prevention of health problems causing the majority of number of days lost by sickness certification should also be given priority. This task represents a great challenge to community-oriented primary health care and occupational health.

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