

Sickness Certification

**- an epidemiological study related to
community medicine and general practice**

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Department of Community Medicine
Oslo 1990

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PREFACE

Background. Experience from general practice, community medicine, and occupational health during the years 1979-84, when I was working on the islands of Værøy and Røst in Nordland county, inspired my interest to study doctors' sickness certification practice. One of the great challenges was the sometimes difficult decision that had to be taken in certifying a patient sick. Another question was the potential for prevention of health problems causing incapacity for work.

In 1984 when I came to work at the Department of General Practice, University of Oslo, the decision was taken to start a study of sickness certification. A part-time job as a Medical Officer in National Insurance Offices in Moss and Rygge, Østfold county, and work on relevant projects in the National Insurance Administration have broadened my experience in social insurance medicine. From 1 December 1988 my working place has been the Department of Preventive Medicine, University of Oslo.

The aim of the present study was to gain insight into sickness certification in a defined geographical area, and to analyse sickness certification according to occupational factors, potentials for prevention, and inter-doctor variation.

The thesis is based on seven articles which are combined in a general description called: "Sickness certification." The seven papers will be referred to by their Roman numerals in the text.

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LIST OF PAPERS

- I Tellnes G.
Sickness certification in general practice: a review.
Fam Pract 1989; 6: 58-65.
- II Tellnes G, Bjerkedal T.
Epidemiology of sickness certification.
Scand J Soc Med 1989; 17: 245-51.
- III Tellnes G, Svendsen K-OB, Bruusgaard D, Bjerkedal T.
Incidence of sickness certification.
Scand J Prim Health Care 1989; 7: 111-8.
- IV Tellnes G.
Duration of episodes of sickness certification.
Scand J Prim Health Care 1989; 7: 237-44.
- V Tellnes G.
Days lost by sickness certification.
Scand J Prim Health Care 1989; 7: 245-51.
- VI Tellnes G, Bruusgaard D, Sandvik L.
Occupational factors in sickness certification.
Scand J Prim Health Care 1990; 8: 37-44.
- VII Tellnes G, Sandvik L, Moum T.
Inter-doctor variation in sickness certification.
Scand J Prim Health Care 1990; 8: 45-52.

Sickness Certification

GENERAL INTRODUCTION

The amount of absence from work due to sickness is a growing social and economic concern in most western countries (1-5).

The topic includes theoretically at least three issues, i.e. sickness certification, sickness absence, and sickness benefits (Figure 1). The task of issuing sickness certificates should not be confused with "sickness absence" or "sickness benefits". "Sickness absence" and "sickness benefits" are of special concern to businesses because they disturb the personnel administration at the work place and increase the cost of production. "Sickness benefits" have been an issue of great interest to the governments in Scandinavia, because of the increasing cost to the social welfare system (1,6,7). "Sickness certification", on the other hand, is a medical task (8), placing with the doctor the responsibility of assessing the patient's health problem in relation to the demands of his occupation.

A general introduction to the subject "sickness certification" is given in Paper I. Because the task of issuing sickness certificates is usually performed in general practice (9-11), the review of the literature was done within this frame.

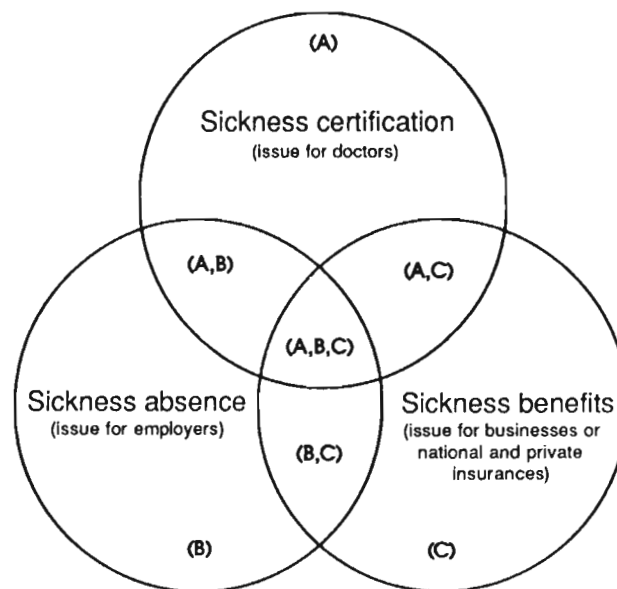


Fig. 1. Theoretical relations between sickness certification, sickness absence, and sickness benefits. The letters A - C refer to the different kinds of such relations.

AIMS

A review of the literature (Paper I) suggested a need for a broad epidemiological study of sickness certification related to community medicine and general practice. The present study addresses this need.

The aim was to gain insight into sickness certification in a defined geographical area, and to analyse sickness certification according to occupational factors, potentials for prevention, and inter-doctor variation. The study addresses the problem of estimating:

-the annual incidence of sickness certification according to cause, sex, age, and residence in a defined population (Papers II and III)

-the duration of episodes of sickness certification according to cause, sex, and age (Paper IV)

-the number of calendar days lost by sickness certification according to cause, sex, and age in a defined population (Paper V)

-the extent to which physical work load and psychological factors are assessed as contributory causes of health problems which result in sickness certification (Paper VI)

-the extent to which health problems underlying sickness certification are potentially preventable (Paper VI)

-the influence of doctor-related factors on the duration of sickness certification (Paper VII).

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MATERIALS AND METHODS

In a study of sickness certification relevant to community medicine and general practice, it was considered essential to obtain data from a total population, e.g. all employed persons of a county. A pilot study performed in November 1984 (Paper II) indicated that a registration period of four weeks in a county like Buskerud would be sufficient. A choice of Buskerud county would, according to the estimates, give a total number of initial certificates of about 5 000. Furthermore, to obtain good co-operation during the registration period, close contact with the National Insurance Offices was necessary. A county not too far from the University of Oslo, such as Buskerud, was therefore most convenient.

The studies of doctors' and patients' assessment of sickness certification, and of inter-doctor variation, are based on data from general practice, because the great majority of sickness certificates are issued in primary health care (9-11) (Paper I). One advantage of collecting data from a limited area was the increased possibility of motivating the many general practitioners to participate in the study. This was done through local medical association meetings and the local press.

Study area and population

Buskerud county, located in the middle of southern Norway (Figure 2), had 21 municipalities (Figure 3) and 219 257 inhabitants at the beginning of 1985 (12). The distribution of employees (aged ≥ 16 years) by branch of industry in Buskerud is compared with Norway as a whole in Table I. The distribution is roughly similar, and this is true also with respect to age and sex of the employees (13,14). In Buskerud, 379 physicians were economically active, and 142 (37 %) of these were working in general practice in 1985 (15). The number of residents per GP in Buskerud, 1 544, was similar to that for the whole country, 1502 (15).

Regulations for sickness certification

All employees in Norway are entitled to sickness benefits equal to 100 per cent of earned income from their first day of sickness absence (8,16).

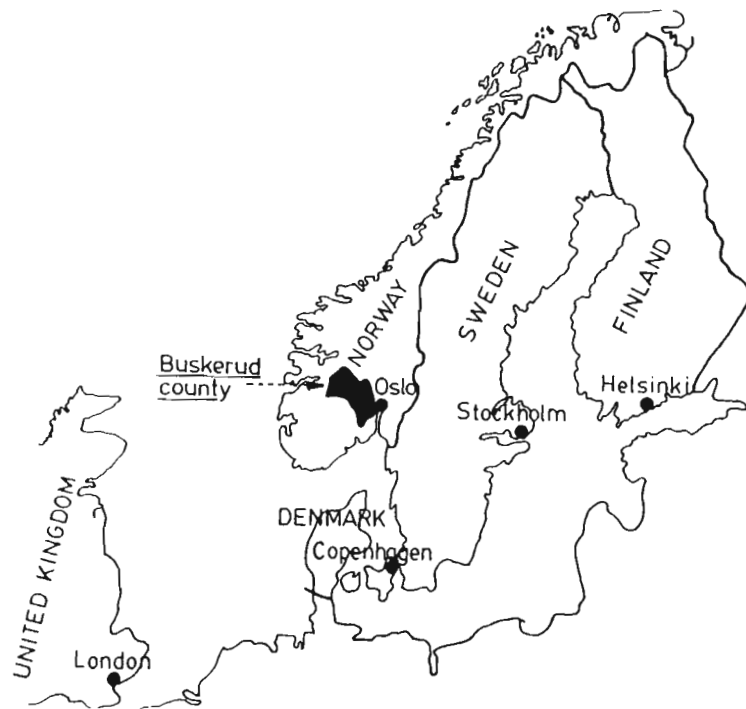


Fig. 2. The location of Buskerud county in the middle of southern Norway.

Fig. 3.

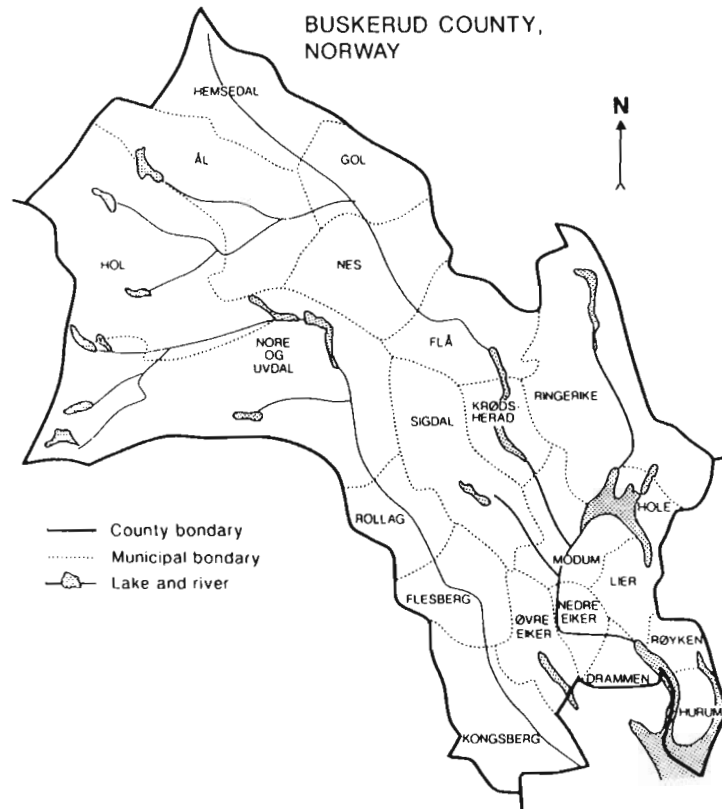


Fig. 3. The location of the 21 municipalities of Buskerud county, Norway.

Table I. *Employed persons ≥16 years of age in Buskerud county and Norway as a whole according to branch of industry, 1980 (13,14).*

Industry	Buskerud (n=109 645)		Norway (n=2 041 642)	
		%		%
Agriculture, forestry, fishing and hunting	6.7		8.0	
Manufacturing, oil extraction, mining and quarrying	26.8		20.7	
Gas and water supply	1.1		0.9	
Construction	8.3		7.7	
Wholesale and retail trade, hotels and restaurants	17.3		17.5	
Transport, storage and communication	7.5		8.7	
Financing, insurance, real estate and business services	4.3		5.1	
Community, social and personal services	27.4		30.4	
Unknown	0.6		1.0	
Total	100.0		100.0	

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Liability for financing sickness benefit is placed with the employer for the first 14 days, and with the National Insurance from the 15th day and up to one year.

The employee is obliged to give notice of his illness on his first day of sickness absence, and the employer may require a written declaration (self-certification) from the employee stating that his absence is due to sickness. Nevertheless, entitlement to sick pay on the basis of the employee's self-certification is restricted to four occasions in the course of twelve months.

A sickness certificate issued by a doctor is required only in the case of sickness absence exceeding three calendar days and if self-certification is no longer permitted. The present study includes sickness certificates issued by doctors, and not "sickness absence" due to self-certification only.

Other aspects of the regulations for sickness certification are described elsewhere (1,8) (Papers II and V). Definitions of concepts and terms related to sickness certification are discussed in Paper I.

Collection of data

The population based study

During the four weeks from 25 February to 24 March 1985, all initial certificates for persons aged 16-69 years (n=5 042) received at the 20 National Insurance Offices of Buskerud were registered (Papers II, III, IV, V and VII).

Duration of episodes of sickness certification was only partly registered during 1985-86 in the National Insurance's data base, and information on civil servants and on those certified sick for two weeks or less was not available. To determine the duration of all episodes of sickness certification, three different sources therefore had to be utilized. These procedures are described in Paper IV.

Studies from general practice

In April 1986 a study of patients certified sick (n=1 413) in general practice was performed (Paper VI). 118 of the 122 doctors working half time or more in general practice in Buskerud county participated in the study.

Among the 118 doctors, 107 had issued sickness certificates to residents of Buskerud during the four-week period 25 February - 24 March 1985 (the population based study). The findings published in Paper VII include those of the residents (n=2 999) who had been certified sick by one of the general practitioners who worked in the county (n=107) during the four-week period.

In November 1986, a questionnaire measuring doctors' attitude toward sickness certification was sent to the 107 practitioners. They were asked to indicate their agreement or disagreement with each of 12 statements (Paper VII).

Measurements

The measures used in the different papers of the study are described in Table II. The reliability and validity of the measures used are described in each of the papers (Papers II-VII). The validity of diagnoses is discussed in Papers III and IV and in the General discussion.

Statistical analysis

Statistical Analysis System was used in the analysis of the data (17). The analysis was performed in co-operation with statistician MSc. Leiv Sandvik, Medstat, N-2011 Strømmen.

Standardization by the indirect method was used to calculate the standardized incidence ratio of initial certificates issued (Paper II). To adjust for age when describing duration of episodes of sickness certification and number of days lost, the direct standardization method was used (Papers IV and V).

The statistical significance of a difference between two frequencies was calculated by using the Chi-square test (Papers II, III, IV, VI, and VII).

The Mantel-Haenszel method was used when comparing frequencies adjusted for age (Papers II, III, and VI).

Variance analysis was used to test differences of mean duration after adjustment for age by the direct method of standardization (Paper IV).

The log rank test was used to analyse differences in time until cessation of sickness certification (Paper IV).

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A two-sided Wilcoxon's rank sum test was used to assess the statistical significance of differences in days lost (Paper V), and to test the association between a binary and a continuous variable (Paper VII).

The Spearman correlation method was used when the association between two continuous variables was tested (Paper VII).

Factor analysis (principal component analysis) was used to investigate the dimensionality of attitude items (Paper VII).

The association between time until cessation of sickness certification and selected covariables was investigated by means of proportional-hazard models (Cox regression analysis) (Paper VII).

The kappa coefficient was used to estimate the agreement between doctors' and patients' assessments of physical work load and psychological factors as contributory causes of health problems resulting in sickness certification (Paper VI). The kappa coefficient was also used in their assessments of potentials for prevention.

The theta coefficient was used to estimate the reliability of the doctors' attitude index (Paper VII).

A significance level of 5% was chosen.

Table II. *Materials and measures used in the different papers of the study of sickness certification, Buskerud county, Norway, 1985-86.*

Paper	Material*	No. of patients included	No. of doctors included	Measure
II	Population based	5 042	562	-Incidence -Standardized incidence ratio
III	Population based	5 042	562	-Incidence
IV	Population based	5 042	562	-Mean duration (calendar days) -Percentage still certified sick
V	Population based	5 042	562	-Days lost (incidence x mean duration)
VI	General practice	1 413	118	-Assessment of physical work load as contributory cause of health problems resulting in sickness certification -Assessment of psychological factors as contributory causes of health problems resulting in sickness certification -Assessment of potentials for prevention of health problems underlying sickness certification
VII	General practice	2 999	107	-Percentage still certified sick \geq 8 weeks -Duration in number of calendar days -Doctors' attitudes toward sickness certification

* The population based study includes all employed persons being residents of Buskerud county, Norway, on 1 January 1985.

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RESULTS

Main results

The annual incidence of sickness certification was estimated at 580 per 1 000 employed persons per year (Paper II). Though there was no overall sex difference, this was found in the age groups 30-39 and 40-49 years, where incidences were significantly higher in females than males. The incidence ratio for females 30-39 years old in urban municipalities was significantly higher than the average.

The most frequent causes of sickness certification, according to diagnostic groups, when measured by incidence, were diseases of the respiratory system, musculoskeletal/connective tissue diseases, mental disorders, and injuries (Paper III).

The mean duration of the 5 042 episodes of sickness certification was 34 calendar days for both sexes, increasing significantly with age (Paper IV). 39.7% were still certified sick after two weeks, 14.2% after eight weeks, and 1.3% at the end of one year. Patients with a high probability of long-term sickness certification (duration \geq 8 weeks) were those with circulatory system diseases, neoplasms, endocrine/nutritional/metabolic diseases, musculoskeletal/connective tissue diseases, and mental disorders.

The number of days lost was estimated to be 19.8 per employed person per year, and the sex difference was not statistically significant (Paper V). There was an increase with age, but the number of days lost was similar for persons between 20 and 50 years of age. Patients with musculoskeletal/connective tissue diseases, respiratory system diseases, injuries, and mental disorders accounted for 70.4% of the total number of days lost.

Physical work load was assessed as a contributory cause of health problems leading to sickness certification in 48.4% of 1 413 patients certified sick (Paper VI). Correspondingly, psychological factors were assessed as contributory causes in 32.1% of the patients. Potentials for prevention of health problems underlying sickness certificates was reported in 37.1%, and it was highest for patients with musculoskeletal/connective tissue diseases.

The duration of episodes of sickness certification was significantly longer in patients of the oldest doctors, while it was shorter in patients of specialists in general practice and of doctors working part-time as in-

-Percentage still certified sick \geq 8 weeks
-Duration in number of calendar days
-Doctors' attitudes toward sickness certification

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general practice

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* The population based study includes all employed persons being residents of Buskerud county, Norway, on 1 January 1985.

dustrial medical officers (Paper VII). The duration was, on the other hand, not associated with doctors' attitudes toward sickness certification.

Inter-relations between results

Sickness certification according to sex and age measured by incidence, mean duration, and number of days lost is shown in Figure 4. These data are described separately elsewhere (Papers II, IV, and V). Though the incidence of sickness certification was high for both sexes 20-29 years old, the relatively low mean duration of the episodes in this age group gave a number of days lost similar to that of persons 30-39 and 40-49 years of age. The mean duration increased for the two consecutive age groups (30-39 and 40-49) while incidence decreased. The significant increase of mean duration of the episodes in persons ≥ 50 years of age gave increasing numbers of days lost. The figure indicates a trend for higher numbers of days lost in females than males in all age groups between 20 and 60 years of age. These differences, however, were not statistically significant.

Figure 5 shows the seven most dominant diagnostic groups measured by incidence, mean duration, and number of days lost (Papers III, IV, and V). Musculoskeletal/connective tissue diseases had high figures with respect to all the three measures. Respiratory system diseases, though, had the highest incidence, while a low mean duration gave a number of days lost less than half of that for musculoskeletal/connective tissue diseases. On the other hand, circulatory system diseases had the highest mean duration, while a relatively low incidence gave a low number of days lost.

In addition to the high figures found when measuring sickness certification by incidence, duration, and days lost (Papers III, IV, and V), musculoskeletal/connective tissue diseases were the dominant diagnostic group when analysed for the influence of occupational factors and potentials for prevention (Paper VI). Physical work load was assessed as a contributory cause of health problems resulting in sickness certification in 78.3% of these patients. Furthermore, the health problems underlying sickness certification were assessed as potentially preventable in 47.4% of the patients with musculoskeletal/connective tissue diseases.

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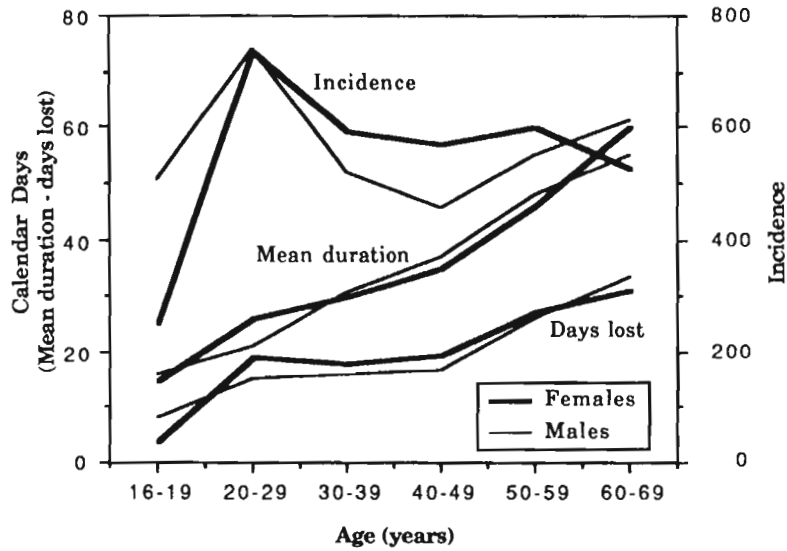


Fig. 4. Sickness certification according to sex and age measured by incidence per 1 000 employed persons per year (right y-axis), mean duration (calendar days) (left y-axis), and number of days lost per employed persons per year (left y-axis). Buskerud county, Norway, 1985-86.

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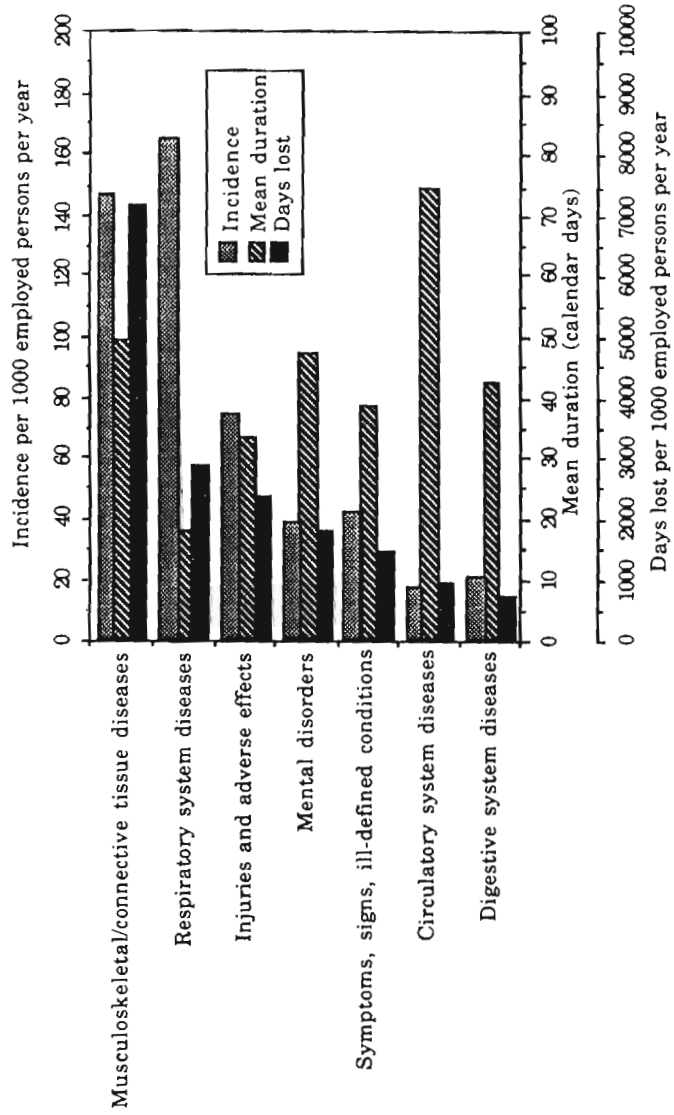


Fig. 5. The seven most dominating diagnostic groups measured by incidence, mean duration, and number of days lost. Buskerud county, Norway, 1985-86.

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GENERAL DISCUSSION

Methodological considerations

One of the problems of studying sickness certification epidemiologically is to secure correspondence between patients certified sick and the population at risk. This problem is discussed in Paper II. The validity of the numerators, i.e. number of initial certificates, is judged to be high in the present material. The estimated number of employed persons in Buskerud (1985) used as denominator is, however, less exact, especially for persons 16-19 and 60-69 years old (Paper II). This problem influences the figures when measuring sickness certification by incidence and number of days lost (Papers II, III, and V).

The denominator used to estimate incidences of sickness certification (number of employed persons) was not adjusted according to the number of persons already certified sick. The reason was that the prevalence of sickness certification was not known. This fact gives slightly lower incidences (about 5%) than if an adjustment had been made.

The initial certificates registered did not give any information on whether the patients worked part time or full time. All persons working on average at least one hour per week were included in the numerators and denominators (Paper II). Information on the number of working days was not available in the present material. This explains why the number of calendar days was used when measuring duration or days lost (Table II). Accordingly, this study gives information on the duration and number of days lost due to "sickness certification" described by calendar days and not the amount of working time lost as used in studies measuring "sickness absence" (18). On the other hand, in studies of "sickness benefits" it is most natural to use costs as a measure rather than calendar days or working time lost.

Sickness absence due to self-certification not continued by a sickness certificate issued by a doctor was not included in the present study. Figure 1 in Paper I illustrates the theoretical relations between these concepts. Because the present study investigates "sickness certification" and not "sickness absence", incapacity for work due to self-certification only and uncertified sickness absence were by definition excluded.

A limitation of the method was the lack of adjustment for partial incapacity for work when describing number of days lost. However, the

proportion of patients partially incapable of work was low (8%) and had probably no significant influence on the conclusions.

Problems with validity of diagnoses

"Symptoms, signs and ill-defined conditions" was one of the diagnostic groups with highest incidence in the present study (Paper III). The most likely reason is that at the time the doctor issues the initial certificate, the nature of the patient's health problem may be uncertain and an exact diagnosis must await results of supplementary diagnostic procedures. On the other hand, some of the unverified diseases may have been given too specific diagnoses and will thus be included in other groups of diagnoses. The result of this may be that a wrong diagnosis is registered.

A more serious problem, reducing the validity of diagnoses, is the fact that diagnoses on initial certificates are required for administrative purposes and do not necessarily reflect medical reality. It is possible, therefore, that the diagnoses may not be the same as those noted in the doctors' records. This is particularly true for psycho-social problems at work or in the family, which may be under-reported. Accordingly, some doctors, to benefit and protect their patients, especially in small municipalities, write less exact or "false" diagnoses on the sickness certificates. However, discussions with GPs indicate that this problem concerns a low proportion of all persons certified sick.

The difference between a medically correct diagnosis and that noted on the initial certificate cannot be measured in the present study. A study from Sweden, however, compared diagnoses on sickness certificates with information noted in doctors' records (6). A concordance of 88% was found, though the validity was less certain for single diagnoses than for diagnostic groups. In spite of some validity problems, medical diagnoses noted on initial certificates probably give a realistic reflection of the "conglomerate of health problems" met by doctors, especially in general practice. Other aspects of the validity of diagnoses are discussed elsewhere (Papers III and IV).

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Implications of results

Figures 4 and 5 indicate that the use of different measures to describe sickness certification gives different results. The measures, therefore, have to be chosen in accordance with the purpose of the investigation. While incidence is a measure that gives high figures of the more acute health problems, e.g. respiratory system diseases, mean duration is a measure in favour of the more chronic health problems, e.g. circulatory system diseases (Figure 5). Incidence is a measure that could be used as an indicator of health (Paper III), while mean duration or percentage still certified sick could be used to select the patients to be given priority for active rehabilitation (Paper IV). Furthermore, number of days lost gives a total picture indicating the socioeconomic importance of sickness certification (Paper V). This measure should be used when setting priorities for prevention of health problems resulting in sickness certification.

The findings of the present study indicate similar total figures of incidence, mean duration, and days lost for both females and males. Significant differences were found, however, when analysing by age (Figure 4). Sickness benefit statistics from the National Insurance Administration report a more marked increase in the costs of sickness benefits for females than males during the last years (4). These figures, however, include only those persons certified sick longer than two weeks, i.e. 39.7% of all patients certified sick (Paper IV). Furthermore, statistics of sickness absence published by the Confederation of Norwegian Business and Industry report higher figures for females than males incapacitated for work for periods longer than three days (18). These figures, however, report lost working time for selected branches of industries, while the study from Buskerud includes all employed persons in the county (Paper II). These differences in the use of measures, populations included, and issues registered (Figure 1) make it difficult to compare the different materials. The consequences and problems of using different measures and methods when studying sickness absence have recently been analysed and discussed (19,20).

The relative increase in sickness benefits and sickness absence in the early 80s (21) has become a decreasing trend during the last years (22). This pattern is probably a result of increasing unemployment. It has been postulated that persons with more or less chronic health problems are the first ones to lose their jobs in such periods, while the more

healthy persons are still working, resulting in less sickness absence (19). Another explanation is that employed persons do not "certify themselves sick" due to "minor illnesses", being afraid of losing their jobs. The many psychological, social, legal, cultural, and economic factors that influence absence from work, though, were beyond the scope of the present study.

Sickness certification as an indicator of health

Sickness certification may be used as an indicator of health (23) (Paper III). The World Health Organization suggests that "all countries should make an extensive review of their health information systems and adapt them to the needs of their strategies for health for all (24). To avoid unnecessary expenditure, relevant data should be extracted as far as possible from existing population based surveys in the health and other sectors". Population based data are needed on "diseases" as reported by doctors, on "illness" as experienced by patients, and on "sickness" as the social consequence of health problems (25). The concepts illness, disease, and sickness are defined in Paper I. The health survey of Norway has registered "illness" which is analysed for each region of the country (26). Data describing "disease" or "sickness" in each county or municipality may be useful in health services planning and to improve community-oriented primary care. Systems providing health status indicators have been called for in Norway (27).

Publications of sickness absence statistics have been used as sources of health information in the United Kingdom (28). A report from Sweden, however, warns against using sickness certification statistics when planning health services (29), while more recent publications from Sweden and Canada recommend it (6,23). The question is, however, for what purpose the indicator is going to be used. If the purpose is to describe incapacity for work as a social consequence of health problems (the sick role or sickness), sickness certification is probably an appropriate source. The National Insurance Administration has been proposed as a future centre of statistics on sickness certification, sickness absence, and sickness benefits (30). This data base, including all employed persons in Norway, increases the potential for using sickness certification as an indicator of health.

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Long-term sickness certification and rehabilitation

Paper VI indicates that information on cause-, sex-, and age-specific duration of episodes of sickness certification offers a basis for selection of those patients who should be given priority for active rehabilitation. Such information is of special relevance with respect to the programme to follow-up persons with long-term sickness certification in Norway, introduced by the Government in 1988 (7,31). Initially, Medical Officers in the National Insurance Offices were found to be a keystone in this work (32). In Sweden, however, rehabilitation groups have been central "instruments" used to follow up patients with long-term sickness certification (33). In Norway, a similar system based on interprofessional co-operation groups in each municipality was introduced in 1988 (34). Supporting this, National Insurance introduced a special continuation certificate to be issued by the doctor when a patient had been incapacitated for work for eight weeks or longer (sickness certificate II) (35).

The sickness certificate II gives information to the National Insurance Offices in their selection of which patients should be handled in an interprofessional co-operation group after eight weeks of incapacity for work. However, some patients may benefit by starting vocational rehabilitation even before two months have passed. The information published in Paper IV is thought to be of special interest to the general practitioners and National Insurance Offices for this purpose. Evaluation studies are necessary, though, to find out which patients actually return to work as a result of such rehabilitation efforts. The motivation of the patients may be of great importance, in addition to the medical aspects, when initiating vocational rehabilitation (20,36,37). Unfortunately, it has been shown that, even in those cases where lighter work was available, only few of the patients with back pain accepted offers of changing jobs (38).

Occupational factors and working environment

Physical work load and psychological factors were assessed by doctors and patients as a contributory cause of health problems resulting in sickness certification in a high proportion of patients (Paper VI). The importance of working environment in relation to sickness absence has

been described by others (39-41). The present study shows that the influence of working environment as a contributory cause of sickness certification varied with the patients' occupation, diagnoses, and type of work. This information might be useful in occupational health services and community-oriented primary care in planning efforts to reduce incapacity for work.

Potentials for prevention

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 (Paper V). Among these, musculoskeletal/connective tissue diseases alone accounted for 35.8%. Furthermore, this diagnostic group was assessed as the most potentially preventable (Paper VI). Few studies have evaluated the benefits of introducing ergonomic efforts to reduce sickness absence in industry (42). The importance of systematic prevention programmes, however, is indisputable (43,44). The benefits are not only a medical concern improving the employees' quality of life, but also of importance in reducing cost of sickness benefits and cost of production.

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 should also be given priority. This task represents a great challenge to community-oriented primary health care and occupational health services.

Doctors' attitudes toward sickness certification

The hypothesis that doctors' attitudes are reflected in their sickness certification practice, indicated by others (45), was not verified in the present study (Paper VII). An investigation from Ireland, questionnaire-based and completed by 118 doctors, included 10 short case-descriptions, from which they had to decide whether they would certify the patients sick (45). The conclusion was that doctors' decisions are not uniform, but probably influenced by social and other factors related to the patients. In contrast to the present study, the report from Ireland

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analysed the doctors' opinions without relating their decisions to their real sickness certification practice.

The present study (Paper VII) indicates that the patient's illness and wish to be certified sick and the doctor's clinical assessment of the patient are the strongest factors that influence the outcome of the doctor-patient encounter. While a doctor may have a restrictive or liberal attitude toward sickness certification in principle, his decisions may be different when he is face to face with the patient (46).

Suggestions for future research

Comparisons with morbidity studies indicate that diagnoses stated on initial certificates give a reflection of a population's health problems. The validity of using sickness certification as a health status indicator should be tested in future clinical studies. Investigations should also address the problems underlying the high incidences of sickness certification in females and males aged 20-29, and the significant sex difference in 30-49 year-olds.

Information on cause-, sex-, and age-specific duration of episodes of sickness certification, such as provided by the present study, may help doctors and social workers to select those patients who should be given priority for active rehabilitation. Future studies should evaluate to what extent return to work is accomplished after intensified medical and vocational rehabilitation.

Cause-, sex-, and age-specific number of days lost reflect the socio-economic importance of various health problems. Such information may be useful in setting priorities in preventive medicine. More research is needed to elucidate the multifactorial aetiology of musculoskeletal/connective tissue diseases, respiratory system diseases, and mental disorders, and the prevention of these health problems.

In view of the complexity of the problems involved when aiming at prevention and rehabilitation, success of such programmes would seem to depend on the closest possible co-operation between health personnel, social workers, and other professions. Evaluation studies should analyse the effect of interprofessional co-operation and the importance of obtaining close co-operation with the patients as well.

The doctors' role in sickness certification in periods of increasing unemployment is under debate (47-49). The threshold of issuing sick-

ness certificates may be lowered in such periods, and the doctors' role as gatekeepers for the National Insurance may be misused. The present study indicates that general practitioners working part-time as industrial medical officers certify their patients sick for significantly shorter periods than other GPs. Whether these patients returned to work, started vocational rehabilitation, or became unemployed are problems outside the scope of this study. The sickness certification practice of industrial medical officers should therefore be analysed in a broader study.

The doctor-patient encounter may change the doctor's decision, resulting in another conclusion than the one preferred when not sitting face to face with the patients. The patient's influence on the outcome of a consultation concerning sickness certification has to be investigated in studies based on clinical and qualitative methods rather than epidemiological, as performed in Buskerud.

The present study provides basic information on sickness certification. This knowledge may be useful in subsequent research on the medical, sociological, psychological, legal, cultural, and economic problems related to absence from work.

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GENERAL CONCLUSION

The findings of the present study support the following general conclusions:

Musculoskeletal/connective tissue diseases were the dominant cause of sickness certification, whether measured by incidence, duration, or number of days lost.

The incidence of respiratory system diseases was slightly higher than that of musculoskeletal/connective tissue diseases. The short duration of episodes of sickness certification in cases of respiratory system diseases, however, gives a number of days lost less than half of that of musculoskeletal/connective tissue diseases.

Musculoskeletal/connective tissue diseases, respiratory system diseases, injuries, and mental disorders accounted for almost 3/4 of the number of days lost due to sickness certification.

Physical work load was assessed by doctors and patients as a contributory cause of health problems resulting in sickness certification in almost one half of patients certified sick in general practice. The frequency was particularly high in patients with musculoskeletal/connective tissue diseases whose work required much walking and lifting or was physically strenuous.

Psychological factors were assessed by doctors and patients as contributory causes of health problems resulting in sickness certification in one third of patients certified sick in general practice. Psychological factors were assessed as contributory in a high percentage of patients whose work was mostly sedentary.

Potential for prevention of health problems underlying sickness certificates was reported in slightly more than one third of patients certified sick in general practice. The frequency was significantly higher for patients with musculoskeletal/connective tissue diseases than for the other diagnostic groups.

Duration of episodes of sickness certification was significantly longer in patients of the oldest doctors, while it was shorter in patients of specialists in general practice and of GPs working part time as industrial medical officers. Duration was, however, not associated with doctors' attitudes toward sickness certification.

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Paper I

Sickness Certification in General Practice: A Review

GUNNAR TELLNES

Tellnes G. Sickness certification in general practice: a review. *Family Practice* 1989; 6: 58-65.

Sickness certification is one of the most common tasks performed in general practice. This review describes and discusses concepts and terms used in earlier studies. 'Sickness certification' is defined, and related to the issues of 'absence from work' and 'sickness absence'. The use of measurements and results reported are emphasized according to patient- and doctor-related variables. Great variations are found, and some of the reasons may be differences in morbidity patterns, diagnostic procedures or sickness benefit acts. However, in studies from general practice, the number of sickness certificates is related to different denominators without describing the real population at risk, that is those of the patients who were employed or entitled to sickness benefits. Further studies are needed on the epidemiology of sickness certification, and the duration of the episodes. Analysis of the basis for the doctors' decisions, the patients' viewpoint, inter-doctor variations and doctors' attitudes should also be emphasized in the future. There is a need to discuss the reliability and validity of the measurements used, and theoretical considerations of the doctor's sickness certification practice are called for.

Much of the workload in general practice is related to certification of incapacity for work.^{1,4} In addition, many of the health problems that cause absence from work exhibit few, if any, objective diagnostic signs.⁵ This makes it hard for the doctor to judge whether a person has a specific disease, and it is even more difficult to assess whether the patient is incapacitated for work.^{1,5-8} Reports on variations in the doctors' sickness certification practices have been published.^{4,9,10} Other studies report rising trends in sickness absence, lost working time, and increased expenditure for the industry, as well as for the whole community.^{3,5,11,12} A study from Norway reports that sickness certification is the single task in general practice that generates the highest expenditure for the community.¹³ These various reports indicate a need for more systematic knowledge about the doctors' sickness certification practices.

Reviews have been published on issues such as 'absence from work', 'absenteeism', and 'sickness absence'. Most of these studies have focused on problems from the industry's point of view.¹⁴⁻¹⁹ Others have studied the consequences of different kinds of sickness benefit acts, as seen from the point of view of National Insurance.^{20,21} Such topics are not reviewed in this paper, but they are referred to when necessary for the purpose of the article. A few earlier papers have considered sickness certification from the doctor's point of

view.^{1,3,5} The doctor's sickness certification practice has been a subject of remarkably little research as compared with studies that have focused on absence from work and sickness absence.

The aim of the present paper is to review and comment on the literature on sickness certification in general practice. Special considerations are given to definitions of concepts and the use of terms, measurements, patient- and doctor-related variables, and suggestions for future research.

DEFINITIONS

Terms used in studies of absence from work, sickness absence and sickness certification have varied from author to author. The reason may be a lack of clear definitions of the concepts. Terms used in sickness insurance acts in different countries may also be different, though they refer to the same phenomenon. In research, however, it is an advantage if authors use the same terms, or at least give their definitions.

Health Problems

The question of sickness certification concerns the patients' subjective feelings of illness, the doctors' assessment of diseases, and the sick role patients assume when they feel unfit for work. Therefore, it may be useful to define three terms often used to refer to peoples' health problems.

Disease has been described as a physiological or psychological dysfunction.²² WONCA²³ define disease as 'the failure of the adaptive mechanisms of an organism

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to counteract adequately the stimuli or stresses to which it is subject, resulting in a disturbance in the function or structure of any part, organ, or system of that body'. Diagnoses used by doctors are terms to classify the patients' diseases or health problems. The *International Classification of Diseases (ICD)* and *International Classification of Health Problems in Primary Care (ICHPPC)* are examples of lists used to refer to diagnoses. Such diagnoses are most frequently used as 'labels' written on sickness certificates.^{24,25}

Illness is the patient's own feeling of disorders, symptoms or health problems. Illness, therefore, is a subjective state of the person who feels aware of not being well.^{22,26} WONCA²³ define illness as 'the patient's subjective perception of the disease process'. The *International Classification of Primary Care (ICPC)* reason for encounter classification, published for research purposes, is a list of terms which may refer to the patient's illness.²⁷ Such terms may also be written as 'labels' on sickness certificates.

Sickness is used to describe the sick role some people assume when they have a disease or an illness. Sickness is a state of social dysfunction.^{22,28} A person receiving a sickness certificate may assume a sick role by being absent from work. However, some people may assume no sick role, for example those who continue their work as usual without receiving a sickness certificate, even when they have a disease or an illness.

Absence from Work

A few authors have discussed the definitions of dif-

ferent concepts of absence from work or absenteeism.^{16,29,32} The need for a discussion of terms has been emphasized by others.^{15,17,33,34} One problem is that the terms have different meanings in different studies, and that they are sometimes not defined at all. In order to compare studies, it is important to define the terms used, or, preferably, to use the same terms for the same phenomena. Theoretical relations between terms used in studies of absence from work, sickness absence, and sickness certification are illustrated in Figure 1.

Absence from work. Absence has been defined as a state of being away or not present.³⁵ Most authors use absence as the general term.^{36,37} Behrend, however, has used 'absence from work' as synonymous with involuntary incapacity for work.³⁸

Sickness absence is most frequently used when absence from work is caused by disease, injuries or illness.^{1,3,39-43} Sick leave, sick absence, sickness absenteeism, and medical absence are synonymous terms.^{9,19,44-46}

Leave is used when an employee is allowed to be absent from work, for example maternity leave, absence due to children's sickness, and leave because of civic duties. Leave is 'permission to be absent from work or duty'.⁴⁷ Excused absence and authorized absence are synonymous terms.^{15,19}

Absenteeism. Behrend uses absenteeism as synonymous with voluntary unfitnes for work.³⁸ She describes absenteeism as the practice of workers failing

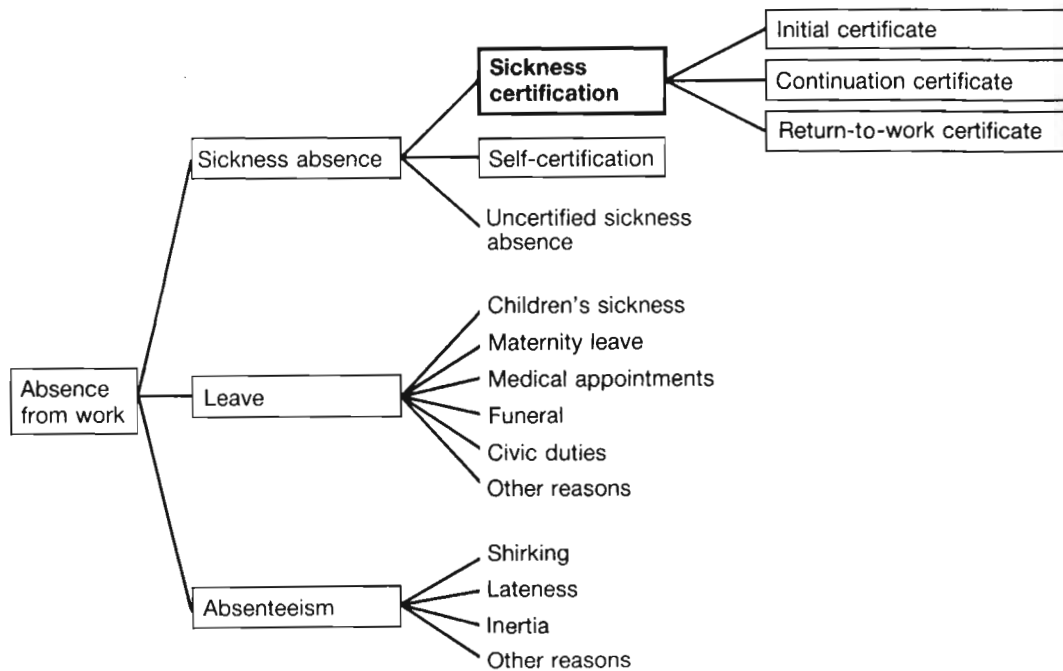


FIGURE 1 Theoretical relations between terms used in studies of absence from work, sickness absence, and sickness certification

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to report for work on some slight excuse or none at all. Webster's dictionary defines absenteeism as 'absence from duty, work or station, especially such absence when deliberate or habitual'.³⁵ Gadourec defines absenteeism as persistent, unjustified absence from work.³⁰ Though many authors have used absenteeism as 'shirking one's duty', others have used this word as a general term.²¹ Unexcused absence and unauthorized absence are synonymous terms.^{5,19}

Sickness Certification

Studies of the doctor's sickness certification practice have used different terms to describe this medical task. The terms defined below, however, are used in the present paper, even when other synonymous terms have been used in the papers reviewed.

Sickness certification is a declaration issued by a doctor to a person entitled to sickness benefits when this person is found to be temporarily incapacitated for work because of disease, injury or illness. Other synonymous terms are sick absence certification, certified ill-health, sick leave certification, and certification of unfitness for work.^{8,43,45,48}

Self-certification is a person's own declaration of sickness as a cause of absence from work. A similar term is self-declaration.⁴⁹

Episode of sickness certification is the period of consecutive calendar days in which a person is declared by a doctor to be incapacitated for work. The episode of sickness certification may include the first days of sickness absence declared by self-certification. Synonymous terms used are period or spell.⁴⁹

Long-term sickness certification is used when persons are incapable of work during several weeks. In Norway this term is used after eight weeks of sickness certification,⁵⁰ in Denmark after five weeks.⁵¹

Sickness certificate is a general term for several documents issued by doctors to declare a person's incapacity for work.

Initial certificate is the first document issued by a doctor to declare a person's incapacity for work.⁴⁵ A synonymous term is first certificate.^{2,8,48}

Continuation certificate is a document issued by a doctor to declare that a person, who earlier started an episode of sickness certification, is still incapable of work.⁴⁵ Synonymous terms are intermediate certificate and sickness allowance certificate.^{2,8,48,52} In some countries the standard form used as continuation certificate is the same as for initial certificate.

Return-to-work certificate is the document issued by a doctor at the end of an episode of sickness certification to declare that a person is again capable of full-time work.⁵ In some countries the standard form of initial certificate or continuation certificate is used to declare that a person is again capable of full-time work. Synonymous terms are final certificate or return-to-work note.^{5,8}

Incapacity for work or unfitness for work are terms used when sickness certificates are issued. In the litera-

ture these terms seem to be interchangeable. The assessment of sickness certification is usually performed by a doctor. However, a person may also assess himself unfit for work. As with the difference between disease and illness, it may be appropriate to use two different terms to distinguish between the doctor's and the patient's point of view when assessing whether a person should be absent from work. In this context the term 'incapacity for work' (objective) may be suitable to describe a doctor's assessment, and 'unfitness for work' (subjective) to describe the patient's own judgement.

To be certified sick or to certify oneself sick. These two terms may be used to report an employed person's sickness and the need of a sickness certificate. 'I want to certify myself sick' may be expressed by a patient before consulting a doctor. The described differences between 'disease' and 'illness', 'incapacity for work' and 'unfitness for work', as well as 'to be certified sick' and 'to certify oneself sick', illustrate some of the tension between the doctors and their patients in sickness certification. In studies of this task it is, therefore, appropriate to define concepts describing the phenomenon sickness certification from these two different points of view. However, there is as yet no term to describe a special problem which may sometimes be a great professional challenge, that is when a person wants to be certified sick, but the doctor assesses him capable of work.

MEASUREMENTS

In the study of literature concerning absence from work a problem has been the different measurements used to describe incapacity for work.¹⁵ Gaudet reported that at least 41 different measurements of absence from work have been used in the past.⁵³ In the literature published on sickness certification in general practice, at least 11 different measurements have been used. These may be classified in two main groups which in the present paper are called rates and duration.

Rates

The number of sickness certificates per 100 encounters or consultations is the rate most often used to measure the frequency of sickness certification in general practice.^{2,4,7,8,45,54-57} The number of sickness certificates per 100 listed patients or people that belong to the practice register is another measurement.⁸ Carne has also used the number of sickness certificates issued per 100 episodes of sickness certification, and the number of episodes of sickness certification per patient per year.⁸ Per cent of all sickness certificates by defined variables has been used by Grossmark and Sharer,⁷ and includes certification for social security purposes, for absence from work, and for private insurance. Weingarten and Hart⁴⁵ include initial certificates and continuation certificates, while Lunn and colleagues⁴⁸ also include return-to-work certificates. Per cent of all the episodes of disease has been used by Fugelli⁵⁶ and Condren and

colleagues.¹⁰ Per cent of doctor-patient contact time spent in issuing sickness certificates in general practice has been used by Garraway,² and per cent of all costs generated in general practice is a measurement used by Fugelli and Harstad.¹³

Comments. The use of a great number of measurements may complicate the comparison of results from different studies. The choice of measurements should also be related to the aim of the study which sometimes is not sufficiently specified. The rates listed above measure the workload and some aspects of clinical evaluation in general practice, but they are not rates related to the population at risk. If the aim is to measure the morbidity pattern according to sickness certification, it is important to relate the numerators to the real population at risk. Therefore, only the patients who are employed or entitled to sickness benefits should be included in the denominator. From an epidemiological point of view, it is also preferable to use the employed persons in a defined geographical area as the denominator. Such measurements probably give more valid information on the frequency of sickness certification.

Duration

Mean duration of the episodes of sickness certification is a measurement frequently used.^{2,8,56} Per cent still certified sick after a specified length of time is another measurement used by Carne.⁸ The total duration in days by defined variables measures the total number of days lost by sickness certification.^{45,58}

Comments. One of the main problems when using mean duration as a measurement is that a few persons with long-term sickness certification may give high figures if the total number of sickness certificates is small. This is because most of the episodes of sickness certification have a duration of only one or two weeks. Therefore, 'per cent still certified sick after a specified length of time', may be a more valid measurement of the duration of episodes of sickness certification. When comparing the total number of days lost by

sickness certification, one must notice that this is not the same measurement as 'working time lost'. The last measurement, though, is often used in studies from companies.

Reliability and Validity

Reliability is the degree of stability exhibited when a measurement is repeated under identical conditions.²² Reliability refers to the degree to which the results obtained by a measure procedure can be replicated. Validity is an expression of the degree to which a measurement measures what it purports to measure.²² Muchinsky explored 70 investigations on 'absence from work', and found that only six studies had addressed the reliability of the measurements.¹⁵ There was no study that directly reported the validity.

None of the reviewed studies of 'sickness certification' have discussed the reliability or validity of the measurements used. Such information is necessary for the judgement of results presented, and it is of great importance when results from different studies are compared. Studies of sickness certification in which the aim is to measure the workload in general practice may obtain a high validity without distinguishing between patients employed and not employed. However, when the aim is to study the morbidity pattern according to sickness certification in general practice, a high validity will not be obtained unless only the patients employed or entitled to sickness benefits are included in the denominator. This problem has not been discussed to any extent in the reports reviewed (Table 1 and 2).

PATIENT-RELATED EXPLANATORY VARIABLES

The rate of patients certified sick in general practice shows great variation in different studies, with a range from 11 to 35%.^{2,6-8,45,48,54-58}

Sex and Age

Rates. Most studies report higher rates of sickness certification among men than women (Table 1).

TABLE 1 Studies of sickness certification in general practice showing patient-related explanatory variables

Investigator	Year of publication	Nation	Urban/rural	No. of sickness certificates	Age range (years)	Female/male ^a	Rate of patients certified sick (%)
Grossmark and Sharer ⁷	1967	England	Urban	1871	—	1.0	18
Carne ⁸	1969	England	Urban	1627	15-64	0.6	27
Lunn <i>et al</i> ⁴⁸	1970	England	Rural	1657	15-64	0.2	35
Bentsen ⁵⁵	1970	Norway	Rural	2468	20-69	0.4	—
Garraway ²	1973	England	Rural	465	—	—	27
Fugelli ⁵⁶	1978	Norway	Rural	430	17-69	0.3	12
Rutle ⁵⁴	1983	Norway	Urban/rural	6185	15-69	0.7	17
Weingarten and Hart ⁴⁵	1984	Israel	Rural	449	15-	0.5	11

^aThe proportions between females and males are calculated by dividing per cent of females by per cent of males among the patients certified sick

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Grossmark and Sharer⁷ found a mean duration of 14% for males and 14% for females. Hart⁴⁵ reported a number of lost working days. Comment: according to the rate of differer

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TABLE 2 Studies of sickness certification in general practice showing doctor-related explanatory variables

Investigators	Year of publication	Nation	Urban/rural	Variables	No. of doctors
Fortuin ⁹	1955	Netherlands	Urban	—	9
Rutle and Forsen ⁴	1984	Norway	Urban/rural	Sex Age Residence Education	371
Condren <i>et al.</i> ¹⁰	1984	Ireland	Urban/rural	Sex Age Attitude	118

Grossmark and Sharer,⁷ however, in a study in north-west London, found that an equal proportion of females and males requested certificates. In 1964–65, as part of a more extensive study,⁸ it was shown that certificates were issued at 17% of all consultations, and at 26% of the consultations with patients aged 15–64 years. Rutle,⁵⁴ in a multicentre study in Norway, reported a high rate of issue of sickness certificates in both sexes in the 30–59 year age group. Weingarten and Hart⁴⁵ studied sickness certification in an immigrant Yemenite working class town in Israel, and reported that the majority of sickness certificates were issued to women aged 15–24 years and men aged 24–64 years. Carne⁸ found 41 episodes of sickness certification per 100 patients in the practice register per year in males, and 32 in females. Carne⁸ also reported that 22% of females and 23% of males had two or more episodes of sickness certification per year. Among the younger male patients, 27% had more than one episode of sickness certification, compared with 21% of the older ones. In a fishing community in northern Norway, Fugelli⁵⁶ reported that females aged 40–49 years and males aged 50–59 years had the highest rates. *Duration.* Carne⁸ reported that the mean duration of each episode of sickness certification was 18.6 days for females and 18.3 days for males. He also found that the episodes of sickness certification lasted longer for males aged 45–64 years than for the younger ones. Garraway² reported a mean duration of 11 days for females and 13 days for males, and that 82% of the episodes of sickness certification were for less than 15 days. There was a significant trend towards longer mean duration with increasing age.^{2,56} Among females, 48% of the episodes of sickness certification lasted seven days or less, 38% lasted one to four weeks, and 14% more than a month.⁸ The corresponding figures for males were 52%, 37%, and 12%.⁸ Weingarten and Hart⁴⁵ reported that females accounted for 29% of the number of days lost, and males for 71%. Fugelli⁵⁶ found that more than 70% of the total number of days lost were in males aged 50 years and over. *Comments.* Differences in sickness certification according to sex and age may be due to differences in the rate of employed persons among the patients, or differences in the morbidity pattern. This underlines

the need when calculating rates to include in the denominator only employed persons or persons entitled to sickness benefits.

Place of Residence

Rates. Rutle⁵⁴ reported that the rate of consultation resulting in a sickness certificate was lower in rural areas than in urban areas.

Occupation

Rates. Lunn and colleagues⁴⁸ reported that miners received certificates in 77% of all consultations, and non-miners in 67%. Among miners, 29% of the consultations were for certificates alone, and for non-miners 24%. Fugelli⁵⁶ reported that a sickness certificate was issued to 26% of the fishermen with an episode of disease, and to 32% among persons working in fish processing plants.

Comments. Differences in occupation may explain some of the differences between females and males. Compared with males, females are more often unskilled or blue-collar workers.⁵⁹ When comparing sex differences of sickness certification, this should be borne in mind.

Diagnoses

Rates. Rutle⁵⁴ gives the per cent of patients certified sick in certain diagnostic groups. High rates of patients with musculoskeletal or connective tissue diseases (40%), injuries (29%), infectious diseases (26%), and mental disorders (26%) were certified sick. Among low back pain and influenza patients, the rate of patients certified sick were 56% for both diagnoses. Fugelli⁵⁶ analysed all the episodes of disease, and found musculoskeletal/connective tissue diseases and injuries to have the highest rates of sickness certification. Grossmark and Sharer⁷ reported that 3% of the sickness certificates were issued for mental disorders, 48% for known classified diseases with physical signs, and 37% for symptomatic illness with no physical signs. Diseases of the respiratory system were the most frequent diagnoses for sickness certificates studied by Weingarten and Hart⁴⁵ (females 26%, males 30%). Musculoskeletal and connective tissue diseases, however, constituted 5% of the sickness certificates among

females and 20% among males, though these diagnoses were more prominent on continuation certificates.

Duration. Fugelli⁵⁶ reported that circulatory system diseases had the longest mean duration, and that 30% of the days lost were for these diseases.

Comments. Diagnoses written on sickness certificates are for administrative purposes, and the validity may be low, seen from a researcher's point of view. Differences in the distribution of diagnoses may be explained by dissimilar morbidity patterns in different populations. The diagnostic criteria, and the threshold for issuing sickness certificates according to different diseases, injuries or illnesses, may also show great variation. This underlines the importance of careful interpretation when comparing results from different countries. Mental problems may be underestimated in some studies because most of these patients have other diagnoses, for example diseases of the musculoskeletal and connective tissues. The psychiatric diagnoses, therefore, may not be written on the sickness certificates by the doctors initially. Another reason is that the doctor is bound to secrecy, and therefore does not always write the psychiatric diagnoses on the sickness certificates. Studies reporting the clinical diagnoses as judged by the doctors, therefore, are of interest.

Weekdays

Rates. Carne⁸ reported that the great majority of the episodes of sickness certification started on Mondays (42%), and for 66% of the patients it ended on Sundays. Lunn and colleagues⁴⁸ reported that the number of sickness certificates issued were similar for the five working days of the week for females, but that they were highest on Mondays for males (23%). Rutle⁵⁴ reported that new episodes of sickness certification usually started in the first days of the week, and that most of the return-to-work certificates were issued at the end of the week.

Comments. The reason for unequal distribution by weekdays may be that the doctor, for curative reasons, wants to give the patient a few extra days off during the weekend. This problem, which may imply economic consequences, should be emphasized in future studies.

Type of Consultations

Rates. Rutle⁵⁴ reported that 6% of surgery consultations resulted in a new episode of sickness certification, as did 7% of home visits. The rate was highest for consultations without appointment (15%). Lunn and colleagues⁴⁸ found that 20% of the certificates were issued in appointment surgeries, 75% in consultations without appointment, and 5% in home visits.

Type of Certificate

Rates. Lunn's group⁴⁸ reported that the rate of issue of continuation certificates increased steadily from 24% in the youngest age group to 57% in the oldest age

group. Weingarten and Hart⁴⁵ registered that 18% of all sickness certificates were continuation certificates.

Comments. Because of variations in sickness benefit acts and the duration of statutory self-certification periods, it is probable that great variations will be found between the different countries according to type of certificates issued, and also within individual countries across time as their own certification policies changes.

DOCTOR-RELATED EXPLANATORY VARIABLES

Sex and Age

Rates. Rutle and Forsén⁴ found no significant difference between female and male doctors in issuing sickness certificates. They showed, however, that doctors aged 60–69 years issued certificates more frequently than doctors aged 30–39 years.

Comments. Few studies have analysed inter-doctor variations. Because of the great economic consequences this may imply for the community, future studies are needed to elucidate these problems.

Attitude

Rates. Differences in the doctors' attitudes may explain some of the inter-doctor variations as indicated in a few earlier studies^{4,9,10} (Table 2).

Consultations per Hour

Rates. Rutle and Forsén⁴ showed that doctors with a high rate of consultations per hour also issued a high number of sickness certificates.

Postgraduate Training

Rates. Doctors with a high level of postgraduate education issued fewer sickness certificates than doctors with less education.⁴

Type of Practice

Rates. Rutle and Forsén⁴ found no difference between solo practices and group practices with respect to the rate of issue of sickness certificates.

Time Used to Issue Certificates

Rates. The general practitioner has been shown to spend 12.8% of his or her time in issuing sickness certificates.²

GENERAL COMMENTS AND SUGGESTIONS FOR FUTURE RESEARCH

Great variations are found in studies of sickness certification in general practice. Some of the reasons may be due to differences in morbidity pattern, diagnostic and issuing procedures, or sickness benefit acts between countries. Another problem when comparing results from different studies is the great variation in use of measurements. Yet another is that in studies from general practice, the number of sickness certifi-

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cates is not related to the real population at risk, that is those patients who are employed or entitled to sickness benefits. On the basis of the literature reviewed, several problems would appear to require further studies.

Studies that describe the incidence of sickness certification as rates of the number of employed persons in general practice or in a defined geographical area have not yet been published. This basic information is useful not only for doctors and their patients, but also for politicians, health services planners, and the national insurance administrations.

More knowledge of the duration of the episodes of sickness certification described by diagnoses may be of practical use for the doctors. Studies that describe by diagnoses the total duration of days lost may give important information when prevention and costs in health services and sickness benefits are under discussion.

Because sickness certification is a frequent task performed in general practice, with great economic consequences, it is of interest to study the doctor's basis for decisions when he issues sickness certificates. In this context it may be useful to compare the doctor's judgement with the patient's view.

Inter-doctor variation may be explained by differences related to their patients' sex, age, employment, and diagnoses. However, the doctors' attitudes may also explain some of the variations, underlining the need for studies into this factor.

Theoretical considerations of sickness certification may be useful for understanding the process of the doctor's assessments better. The description of reliability and validity of the research measurements is another aspect that should be emphasized in future studies.

Too many doctors have acquired their experience of sickness certification by trial and error. Reports of absence from work contain much valuable data seen from the points of view of industry and National Insurance, but they can hardly be considered as a sufficient guide for doctors who have to assess a patient's incapacity for work. This indicates the importance of promoting research on this issue for the creation of new guidelines for students and doctors.

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