

ORIGINAL ARTICLE

No physician gender difference in prescription of sick-leave certification: A retrospective study of the Skaraborg Primary Care Database

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Abstract

Objective. The primary objective was to investigate how physicians' gender and level of experience affects the rate and length of sick-leave certificate prescription. The secondary objective was to study the physicians' gender and professional experience in relation to the diagnoses on the certificates. **Design.** Retrospective, cross-sectional study of computerized medical records from 24 health care centres in 2005. **Setting.** Primary care in Sweden. **Subjects.** Primary care physicians (n = 589) and patients (n = 88 780) aged 18–64 years. **Main outcome measures.** Rate and duration of sick leave certified by different categories of physicians and for different diagnoses and gender of patients. **Results.** Sick leave was certified in 9.0% (musculoskeletal (3%) and psychiatric (2.3%) diagnoses were most common) of all contacts and the mean duration was 32.2 days. Overall there was no difference between male and female physicians in the sick-leave certification prescription rate (9.1% vs. 9.0%) or duration of sick leave (32.1 vs. 32.6 days). The duration of sick leave was associated with the physician's level of professional experience in general practice (GPs (Distriktläkare) 37, GP trainees (ST-läkare) 26, interns (AT-läkare) 20 and locum (vikarier) 19 days, $p < 0.001$). **Conclusion.** Contrary to earlier studies we found no difference in sick-leave certification prescription rate and length between male and female physicians.

Key Words: Family practice, gender, physicians, registries, sick leave

Introduction

In an international perspective Sweden has had a high proportion of sick leave despite the good health and high life expectancy of the Swedish population [1] and the increase in sick leave during the last decade of the twentieth century has been debated [2]. The attitudes towards sick leave changed in the first years of the twenty-first century, reflected in a decrease in sick-leave rate [3] and from 2007 changes were made in the Swedish social insurance system to reduce the variation in sick-leave rate and length throughout the country. The most important reforms were national guidelines for physicians from the National Board of Health and Welfare and a duration limit for sick leave. As a consequence, between 2005 and 2009, there was a sharp decline in the number of days of sick-leave benefit, from 82.9 to 43.7 million/year [3].

Sick leave reflects both occurrence of disease and perceived health or illness. The process leading to sick-leave certification involves many parties including the patients, the physicians, employers, and social insurance officers. The role of the physician has been debated in this context and there is insufficient knowledge of physicians' attitudes and pattern of sick-leave certification prescription [4,5]. Studies on whether the gender of the physicians influences the sick-leave certifications have yielded contradictory results. In Western societies women are regarded as more prone to care-giving [6] and it would be plausible to think that female physicians would be more prone to prescribe sick leave to their patients. Significant differences in practice-style behaviours have been observed between female and male physicians, where female physicians for

It is insufficiently studied how the physicians' gender and level of experience affects the rate and length of sick-leave certificate prescription. A retrospective study of patients' records from all public primary health care centres in Skaraborg showed:

- There was no difference between male and female physicians in the overall rate and duration of the prescribed sick-leave certificates.
- A higher level of experience of the physicians was associated with increased duration of prescribed sick leave certificates.
- Diagnoses of musculoskeletal and psychiatric disorders were most common on the certificates.

example provide more preventive services and psychosocial counselling than male physicians [7,8] When physicians were presented with case vignettes and asked to fill in a sick-leave certificate, women prescribed more certifications compared with men [9] and an audit on sick-leave certification among GPs also showed that women prescribed in a larger proportion than men [10]. On the other hand, attitudes to sick-leave certification among Norwegian GPs did not differ between men and women [11] and in a small study using questionnaires the proportion was similar between male and female physicians [12]. This study also showed that physicians with long experience in family medicine had a higher sick leave certification frequency compared with those with less experience.

We therefore wanted to study the sick-leave certification using data from computerized automatically retrieved records from a large primary care area, the Skaraborg Primary Care Database (SPCD). The primary objective of this study was to investigate the effects of gender and professional experience of the physicians on rate and duration of sick-leave certification prescription. The secondary objective was to study the physicians' gender and professional experience in relation to the diagnoses on the certificates.

Material and methods

Skaraborg council is a mainly rural area in the south-west of Sweden. All 24 public primary health care centres (PHCC) in the area that serve the majority (86% of visits to primary care physicians) of the

250 000 inhabitants use the same electronic patient record, Profdoc Journal III (PDIII, Profdoc AB, Uppsala). Data from the patient records are regularly extracted anonymously and compiled in a central database, the Skaraborgs Primary Care Database (SPCD) [13].

From SPCD all sick-leave certifications and all contacts between patients and physicians from 1 January 2005 to 31 December 2005 were extracted, including information regarding diagnoses (according to the International Classification of Diseases (ICD-10) [14]), duration, and degree of sick leave (25%, 50%, 75%, or full time). Only the main diagnosis on the certificate was used in the analyses. In certificates with missing diagnosis code most diagnoses could be retrieved from the text on the certificate or from the text in the medical record; if no diagnosis could be determined, the certificate was excluded. In total, 33 486 sick-leave certificates (13 834 patients and 516 physicians) and 372 451 contacts (88 780 patients and 589 physicians) were included in the analyses (see Figure 1).

The certifying physician's sex, age, and title; interns (AT-läkare), GP trainees (ST-läkare), locum (vikarier, physicians not specialized in general practice), and GP (distriktsläkare) were retrieved by the PHCC's local secretary and anonymously included in the database.

In some analyses the most common diagnoses in praxis were used; musculoskeletal diagnoses 33.3% (M06-P-M99.0), psychiatric diseases 25.4% (F03-P-F99-) and respiratory tract diseases 12.7% (as a proxy for infectious diseases J01-J98-P). Further, part-time sick leave was transformed to days of 100% sick leave (reported as net days). Data were linked from SCB (Statistics Sweden) on patients on long-term sick leave (since 2004) to explain differences in duration of sick-leave certificates between categories of physicians. Each certificate was analysed separately; combined sick leaves were not calculated.

Validation

In a random sample of 20 sick-leave certificates from each PHCC ($n = 480$) the complete medical record was investigated. Nine certificates were duplicates, thus the sample contained 471 patients. All certificates from 2005, for each patient during the period (ranging from 1 to 12 certificates, mean 2.2) were investigated ($n = 1047$). The diagnosis code on the certificates were compared with the diagnosis codes or diagnoses mentioned in the text of the medical record and only 10 instances of incongruence (0.1%) were recorded.

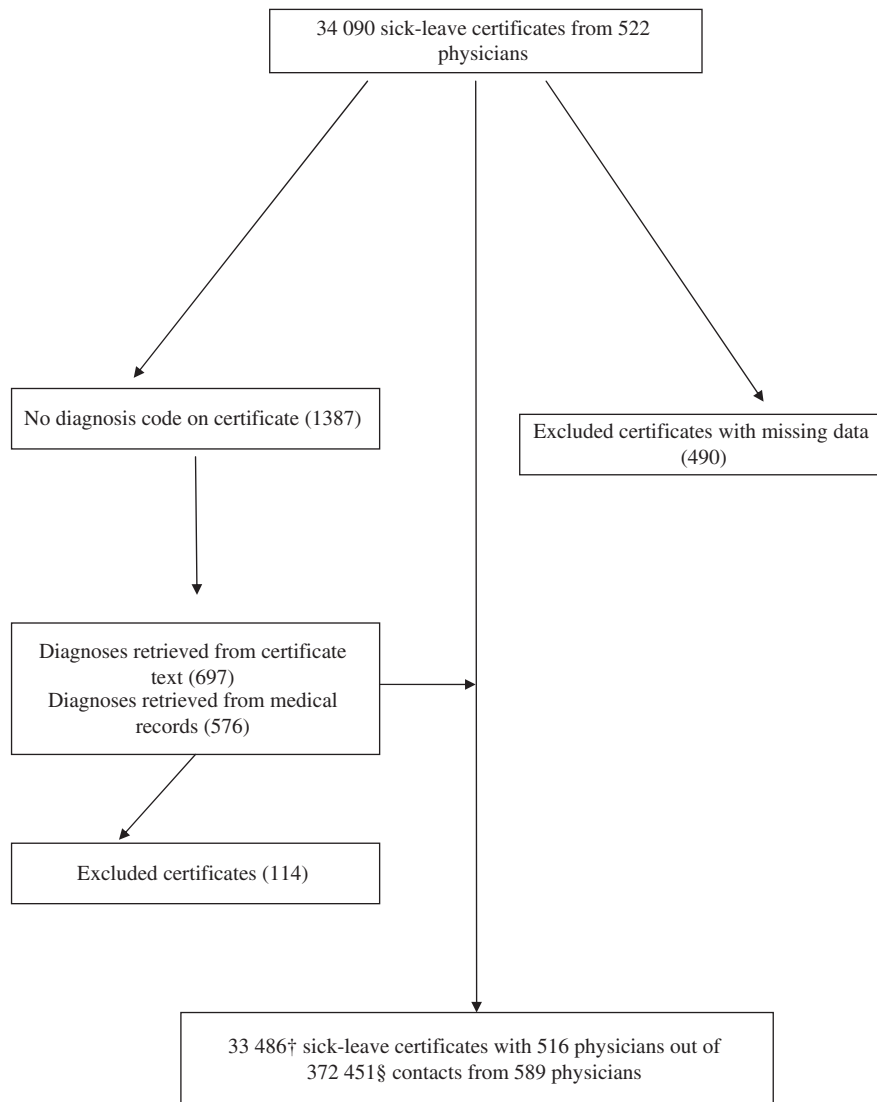


Figure 1. Flow-chart of sick-leave certificates prescribed for patients aged 18–64 years in Skaraborg primary care 2005.

Notes: The discrepancy between the number of physicians at top and bottom of the flow-chart was due to 67 physicians having prescribed no sick leaves and/or had missing data on sex, age, or title ($n = 28$) and were thus excluded from those analyses, but contributed to contacts in other analyses. Eight physicians were from other specialities (gynaecology, internal medicine, dermatology, paediatrics) and did not contribute with sick-leave certificates but contributed to contacts ($n = 1639$). Six physicians' sick-leave certificates were excluded because of missing diagnosis or because of errors in contact registration. The frequency of sick-leave certification was calculated using the number of sick-leave certificates (†) by the number of registered contacts (§).

Statistics

To account for the differences between the physicians' time in surgery the number of contacts was used as a proxy. ANOVA was used to compare means of continuous variables. The impact of the physicians' gender and professional experience on certification rate was calculated with logistic regression with repeated measurements using the SAS procedure GENMOD [15]. The same procedure, but for linear regression, was used to calculate the impact of gender on duration of sick leave. Analyses were performed using SAS (9.2, Inc., Cary, NC, USA).

P-values less than 0.05 were considered statistically significant.

Results

The number of contacts and sick-leave certificates registered in primary care in Skaraborg in 2005 are shown in Figure 1. Sick-leave certificates were prescribed in 9.0% of the contacts, for musculoskeletal diseases in 3.0% of the contacts, for psychiatric diseases 2.3%, and for respiratory diseases in 1.1%. The overall mean duration of sick leave per

certificate was 32 days (27 net days), and the mean duration was 42 days for psychiatric diseases, 36 days for musculoskeletal diseases, and nine days for respiratory diseases.

Characteristics of the physicians and patients

The characteristics of the physicians are presented in Table I. One-third were female and their mean age was lower compared with the male physicians. Interns and GP trainees usually worked for part of the year. The locum physicians constituted 41.4% of the physicians and they contributed 13% of the certificates. They usually worked during short and sometimes recurrent periods.

The patients with sick-leave certification were mainly women (61%) and the mean age was 43 ± 13 years for men and 44 ± 12 years for women, respectively. The mean age of the patients with sick-leave certification for musculoskeletal diseases ($n = 4504$) was 45 ± 12 , for psychiatric diseases ($n = 3106$) 42 ± 12 , and respiratory diseases ($n = 3146$) 43 ± 12 years.

Sick leave certifications

There was no difference in the frequency or duration of sick leave certification prescriptions between male and female physicians (Table II). This was also true for the different groups of diagnoses. On the other hand, the duration (days or net days) of the sick leave was significantly different between the different levels of professional experience of the physicians (GPs 37 days, GP trainees 26 days, interns 20 days, and locums 19 days, $p < 0.001$). The difference was statistically significant for all combinations of experience except between interns and locums. Data on patients on current sick leave since 2004 showed that the GPs had a higher proportion (78%) of certificates on those patients ($n = 2252$) compared with patients of other physicians ($n = 624$).

Discussion

This study shows that mostly women were prescribed sick-leave certificates in primary care in line with reports from national registries [3] and an earlier study [16]. On the other hand, there was no difference in prescription rate of sick-leave certifications or duration of prescribed sick leave between male and female physicians. This result is in contrast to previous studies that demonstrated a higher prescription rate by female physicians [9], [10]. However, as one study [9] was based on fictitious case vignettes the results might reflect differences in attitudes towards sick leave rather than the actual practice. In the other study [10], based on audit from one-third of all GPs in an area, the sick-leave prescriptions by female GPs were more frequent, although the attitude towards sick leave suggested no difference between the sexes. A review [17] showed that conflicts between physicians, patients, and other stakeholders influenced the physicians' attitudes to sick leave. In another study [11] the attitude to sick-leave prescription did not matter for the actual rate of self-reported prescription, indicating that attitudes and prescriptions were not associated. The current study is large and comprises validated records from the sick-leave certificates without selection with sick-leave certification rates comparable to earlier, self-reported data from Sweden [10].

In our study the frequency of sick-leave prescriptions was similar in GPs compared with all other categories of physicians. This is in contrast to an earlier Swedish cross-sectional study using questionnaires [12] in a non-random sample of 10 patients per physician. This study showed that GPs with longer experience prescribed sick-leave certificates more frequently than less experienced GPs. In the current study the physicians with a high level of professional experience prescribed longer sick leave than the other physicians. The workload of more experienced physicians is usually greater, presumably leading to

Table I. Characteristics of physicians, number of contacts, and sick-leave certificates in primary care Skaraborg, Sweden in 2005.

	Male physicians			Female physicians		
	n, age (\pm SD)	contacts (n)	Sick leave certificate (n)	n, age (\pm SD)	contacts (n)	Sick leave certificate (n)
GP	100, 51 \pm 9 ns	168 176	15 323	53, 48 \pm 10 ns	77 040	6859
GP trainees	24, 39 \pm 8 ns	15 761	1364	47, 40 \pm 5 ns	36 171	3477
Interns	32, 32 \pm 6*	18 982	1417	21, 30 \pm 4*	7368	594
Locums	244, 46 \pm 12 ns	38 778	3841	40, 43 \pm 12 ns	7431	611

Notes: n = number; SD = standard deviation; ns = not significant. Missing data on 28 physicians and 2744 contacts. GP comprise both physicians employed in Skaraborg and locum physicians specialized in general practice; locums are physicians not specialized in general practice. * $p < 0.01$.

Table II. Comparison of rates and duration of sick-leave certificates between male and female physicians with regard to diagnoses as well as professional experience.

Diagnoses/professional experience	Male physicians				Female physicians				Comparison between gender of physicians	
	Sick leave certificate rate (all contacts) % SD	Sick leave certificate duration (days)	Median duration (days)	Sick leave certificates (n)	Sick leave certificate rate (all contacts) % SD	Sick leave certificate duration (days)	Median duration (days)	Sick leave certificates (n)	p %	p days
All diagnoses										
GP	9.1 \pm 0.07	37 \pm 37	27	15,323	8.9 \pm 0.1	37 \pm 34	28	6,859	0.68	0.96
Other physicians	9.0 \pm 0.1	20 \pm 22	13	6,622	9.2 \pm 0.1	26 \pm 24	17	4,682	0.79 [†]	0.15 [†]
Respiratory dis										
GP	1.0 \pm 0.02	10 \pm 14	7	1,662	0.8 \pm 0.03	12 \pm 17	7	639	0.07	0.08
Other physicians	1.7 \pm 0.05	8 \pm 7	7	1,276	1.3 \pm 0.05	8 \pm 8	7	665	0.10 [†]	0.79 [†]
Musculoskeletal dis										
GP	3.2 \pm 0.04	42 \pm 38	30	5,325	2.9 \pm 0.06	40 \pm 34	30	2,216	0.21	0.58
Other physicians	2.9 \pm 0.06	23 \pm 23	15	2,169	2.8 \pm 0.07	28 \pm 24	19	1,446	0.98 [†]	0.19 [†]
Psychiatric dis										
GP	2.5 \pm 0.04	45 \pm 36	33	4,134	2.6 \pm 0.06	45 \pm 34	34	2,029	0.41	0.86
Other physicians	1.6 \pm 0.05	34 \pm 25	29	1,185	2.3 \pm 0.07	35 \pm 26	30	1,171	0.14 [†]	0.25 [†]

Notes: Data are numbers (n), percentage, and mean (SD). All contacts are within category and sex of physicians. Comparison between certification rates was analysed using logistic regression with repeated measurements. Comparison between all male and female physicians of frequency and duration of sick-leave certificates 9.1 vs. 9.0% (p = 0.87) and 32.1 vs. 32.6 (p = 0.77) days.

[†]Adjusted for physicians' experience. Dis = disease; GP = general practitioner; other physicians = GP trainees, interns, and locums.

longer duration between revisits resulting in longer sick-leave certificates. Another plausible explanation might be that more experienced physicians care for patients with chronic illnesses and thus prescribe sick leaves of longer duration. In line with this we found that the GPs cared for the largest proportion of patients on long-term sick leave.

One weakness of the study is that only single sick-leave certificates were studied. This, of course, can distort the results especially in chronic diseases such as musculoskeletal and psychiatric diseases. It is possible that for instance the duration of sick leave would differ even more between categories of physicians if combined episodes of sick leave had been studied. Several physicians are usually involved in long sick leaves making it difficult to assign a sick-leave period to a certain physician. Further, PHCCs have different staffing of physicians, which also might bias the results, for instance making the usual provider continuity index [18] difficult to apply. Therefore, the present study cannot address the issue of gender difference in physicians' prescription of long combined sick leaves. Another limitation is that comorbidity was not included in the analyses. Commonly, only one diagnosis was registered on the certificate. Therefore analyses of comorbidity would require the scrutinizing of patient records to identify important concomitant illnesses as a large variation in diagnosis coding frequency between physicians and PHCCs in Skaraborg council has been shown [13].

The sick-leave frequency had already started to decrease since 2003, maybe due to changes in the regulations, i.e. a lowering of reimbursement and an increased awareness of the high costs of social insurance. This makes it difficult to compare data over time on sick-leave length so we have not attempted to make such comparisons. Since this study was done there have been changes in the insurance system to decrease the variation in certification rate and length. This could be the scope of further studies in the SPCD.

To conclude, this study showed that there was no difference between male and female physicians' sick-leave certification rate and duration in primary care in Skaraborg but more experienced physicians prescribed sick leave of longer duration. This, in our opinion, does not call for special interventions to alter sick-leave prescription behaviour since it could be explained by the change in role with increasing experience of the physicians. We hypothesize that factors other than sex of physician decide the propensity to prescribe sick leave. The role of socioeconomic factors, unemployment, and family structures, which are known to contribute to sick leave, has not been addressed here but as the SPCD can be linked to

data from national registers this will be studied later, as well as the effect of the new regulations on frequency of sick-leave prescriptions.

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Ethical approval was given by the Regional Ethical Review Board in Gothenburg, 2008. The authors have no conflicts of interest.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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