Tidsskriftet Tidsskrift for Den norske legeforening

The regular general practitioner and sickness absence – a register-based study

ORIGINAL ARTICLE

LEE D. WINDE

Lee D. Winde (born 1982) is an MA in sociology and a PhD scholar. The author has completed the ICMJE form and declares the following conflict of interest: Her PhD scholarship is funded by the Research Council of Norway.

INGER HAUKENES

Inger Haukenes (born 1957) is a physiotherapist and Cand. Philol. with a thesis in philosophy. She is a PhD scholar at the University of Bergen.
The author has completed the ICMJE form and declares no conflicts of interest.

ØYSTEIN HETLEVIK

Øystein Hetlevik (born 1958) is a specialist in general practice and community medicine and a PhD scholar. He works as an RGP at Bønes Medical Centre in Bergen.
The author has completed the ICMJE form and declares the following conflict of interest: His PhD scholarship is funded by the Research Fund for General Practice.

STURLA GJESDAL

Sturla Gjesdal (born 1952) is an MD, PhD, Professor of General Practice, specialist in community medicine and general practice, and has a Master's in Public Health from the London School of Hygiene and Tropical Medicine. He works as an RGP at Eidsvåg Medical Centre in Bergen.
The author has completed the ICMJE form and declares the following conflict of interest: The department has received funding from the Research Fund for General Practice and the Research Council of

Norway.
Email: sturla.gjesdal@isf.uib.no
Research Group for Social Epidemiology
Department of Public Health and Primary Health Care
University of Bergen

BACKGROUND
Undertaking research on the role of regular GPs with regard to rates of sickness absence is methodologically challenging, and existing results show a wide divergence. We investigated how long-term sickness absence is affected by the characteristics of doctors and their patient lists.

MATERIAL AND METHODS
The study encompassed all those vocationally active residents of Oslo and Bergen in 2005 – 2006 who had the same regular GP throughout 2006 (N = 298 039). Encrypted data on sickness absence for each individual in 2006, as well their age, gender and level of education were merged with data on the regular GPs (N = 568) and their patient lists, and subsequently analysed with the aid of logistic regression. The outcome variable was at least one period of sickness absence which had been paid for by the Norwegian Labour and Welfare Administration (NLWA). The explanatory variables included the age, gender, list length and list status (open/closed) of the regular GPs, as well as variables that characterised the composition of the patient lists. The analyses were stratified by gender and controlled for individual age and education.

RESULTS
The age, gender and list length of the regular GPs were not associated with sickness absence paid for by the NLWA. The odds ratio for sickness absence > 16 days was *reduced* for both women and men when the list contained many highly educated patients, a high proportion of elderly people and few disability pensioners. Men on lists with a high proportion of men and lists with a high proportion of vocationally active patients also had *lower* odds rates for sickness absence > 16 days. Among women, the rate of sickness absence was lower for those on open lists than for those on closed lists.

INTERPRETATION
In addition to well-known individual factors, the study shows that the likelihood of sickness absence is affected by the socio-demographic composition of the patient list to which one belongs.

Issuing certifications of illness is an important task for doctors (1, 2). In Norway, the regular GPs (RGPs) account for approximately 70 % of all certifications of illness (3). In a survey of Norwegian RGPs in 2010, a total of 38 % reported to have more than 20 weekly consultations related to certification of illness, while 58 % had such consultations 6 – 20 times each

week (4). Studies have been undertaken in Norway as well as internationally to investigate how doctors address the task of writing certifications of illness (1, 5). Undertaking research on practices related to certification of illness is methodologically demanding and the knowledge base is weak (1).

Qualitative studies (6) – (8) and surveys among doctors (4, 9) – (11) have reported a number of problems related to the work with sickness certification (4, 6, 11). In vignette studies using hypothetical cases or video recordings in which doctors assess the need for a certification of illness (8, 12) there is widespread agreement when the cases are well-defined (12), but disagreement when the symptoms are vague (8). This applies in particular to comparisons of doctors from different countries (12, 13). The frequency of sickness certification has been studied on the basis of practice data associated with diagnoses or groups of patients (5, 13, 14). Definitions of the concept of sickness certification rates vary, and comparisons of studies are hence complicated (2). Moreover, the doctors have an unequal number of daily consultations, varying availability for emergencies and varying patient populations. Other studies have found that the doctors tend to make accurate predictions of the length of the sickness absence period (15).

Norwegian national social benefits registries provide good opportunities for epidemiological studies of sickness absence. The RGPs' sickness certification practices can be studied by merging the social benefits registries with the RGP registry, which contains data on the doctors and the length and composition of their lists. In research on sickness absence, two registries are used: The sickness absence registry and the sickness benefits registry, both operated by the NLWA.

The sickness absence registry comprises all absence based on certifications submitted by doctors. Altogether 65 % of the certifications apply to periods of absence of less than 17 days, which are commonly paid for by the employers (16). The NLWA identifies the diagnosis and also the identity of the certifying doctor. No distinction is made between the RGPs' certifications of their own patients and those of others, or whether the certification was made while on emergency duty (3).

Two key studies of Norwegian RGPs' sickness certification practices have made use of the sickness absence registry merged with the RGP registry. Brage & Kann found that older RGPs issued certificates more frequently than their younger colleagues, specialists more frequently than non-specialists, and that the frequency increased with growing list lengths. Male doctors issued more certificates to their patients than women RGPs did. However, people on the lists of women doctors were more frequently on sick leave than those on the lists of male doctors, when adjusted for the patients' gender and age (3). Markussen and collaborators (17) found that patients with a woman RGP, a young RGP or an RGP with a short list were on sick leave least frequently, although the differences were minor.

NLWA's sickness benefits registry is part of the research database FD-Trygd, operated by Statistics Norway. The registry shows the amounts paid out by NLWA in sickness benefits, mainly for periods of absence longer than 16 days, related to the diagnosis and the socio-demographic characteristics of the

patients. The identity of the certifying doctor is not included in this registry, but the patients' chosen regular RGP appears after merging with the RGP registry. Since the registry only includes sickness absence for which sickness benefit has actually been paid, its validity is considered to be high (16, 18). Aakvik and collaborators used the sickness benefits registry merged with the RGP registry to construct a multi-level model. They found that factors related to the doctors had a marginal effect as a cause for variations in the rates of sickness absence when compared to individual factors (19).

In a previous study, in which two of the authors participated, we included data from the sickness benefits registry to describe how the number of sickness days varied in different population groups according to the patients' age, gender and level of education, according to the RGPs' gender and age, as well as according to varying gender distributions and the proportion of disability pensioners on the lists. On the whole, the number of sickness days did not vary in proportion to characteristics of the RGPs, but the average number of certified sickness days increased in groups with a higher proportion of disability pensioners on the RGP list to which the patients belonged (20). In the study presented here we are using the same data material, but we include further variables that characterise the composition of the lists. We use logistic regression to analyse whether characteristics of the RGPs and the composition of the lists affect the likelihood that the doctor's list patients will be certified sick for a period of more than 16 days.

Material and method

Data

The study comprises all those who were vocationally active (wage income > 1 basic amount; calculation unit used by the Social Insurance System, equal to NOK 82 122 or EUR 10 993 in 2012) in the age group 20 – 66 years, resident in Oslo or Bergen in 2005 – 06 and who had the same RGP on 1 January 2006 and 31 December 2006, altogether 143 624 women and 154 415 men. Data on these individuals' age, gender, employment, level of education and sickness absence paid for by the NLWA in 2006 were retrieved from the FD-Trygd database. From the RGP registry we retrieved information on the individuals' chosen RGP and data on the RGPs' gender, age, specialist status, list length and whether the list was open or closed. Statistics Norway merged the two data sets, which were delivered to us in encrypted form. Altogether 568 RGPs were included in the study. Socio-demographic data from FD-Trygd were also aggregated at the list level and used to characterise the composition of the list populations. Use and merge of data sets had been approved by the registry owners and The Norwegian Data Protection Authority.

Statistical analysis

The outcome variable was whether an individual had at least one period of sickness absence paid for by NLWA in the period studied. This applies mainly to periods of absence lasting more than 16 days. In the article we are using the

designation «at least one sickness absence > 16 days».

The individuals' gender, age and level of education are well-known predictors of sickness absence and were included as explanatory variables in all analytical models. Age was subdivided into the categories 18 – 34 years, 35 – 49 years and ≥ 50 years (Table 1). The age categories reflect that the risk of sickness absence increases with age, and this categorisation had also been used in a previous study (20). The highest attained level of education was dichotomised according to whether the individual had completed a university college or university education or not (< 16 years and ≥ 16 years). We assumed that this would result in significant differences in the odds ratios for sickness absence.

Table 1:

Overview of the study population, vocationally active women and men aged 20 – 66 years, resident in Oslo and Bergen in 2005 – 06, and characteristics of their RGPs and the patient lists to which they belong

	Total (N = 298 039)	Women (n = 143 624)	Men (n = 154 415)
Individual data			
Average age in years (SD)	43 (0.02)	42 (0.03)	43 (0.03)
Education ≥ 16 years (%)	43	46	41
At least one period of sickness absence paid for by the NLWA in 2006 (%)	17.2	22.2	12.5
RGP gender and age			
Male RGP (%)	69	58	79
Average age of the RGP (SD)	51 (0.01)	50 (0.02)	51 (0.02)
RGP to whom the patient belongs			
Average number of patients on the list (SD)	1 427 (0.67)	1 424 (0.95)	1 430 (0.95)
Proportion entered on a closed list (%)	55	61	50
Proportion of male patients on the list (%)	49	46	52
Proportion of vocationally active people in the list population aged 20–67 years (%)	71	72	71
Proportion with education ≥ 16 years (%)	43	46	40
Proportion of disability pensioners in the list population 20–67 years (%)	8	8	8
Proportion aged ≥ 67 years on the list (%)	11	11	11

Other explanatory variables included the RGPs' age (ten-year age groups), gender, specialist status, list length (intervals of 250 patients) and whether the RGP's list was open or closed. The variables have also been used in previous studies (3, 17, 20).

Furthermore, we included the following variables that characterise the socio-demographic composition of the lists: Proportion of men, proportion of vocationally active, proportion with higher education, proportion of disability pensioners and proportion of elderly people aged over 67. The lists were categorised in quartiles in accordance with these variables.

All these explanatory variables had a statistically significant effect in univariate analyses, with the exception of specialist status, which was excluded from the subsequent analyses. The effect of the various explanatory variables was investigated with the aid of multivariate logistic regression with odds ratios (OR) and an appurtenant confidence interval of 95 % (95 % CI). The regression model assumes that the variables that describe the doctors and the composition of the lists have an effect on the odds ratio for sickness absence, and not vice versa. The analyses were undertaken for women and men separately, since previous research has shown major gender differences in rates of sickness absence (18).

We first analysed the effect of the individuals' age and gender (Table 2). In e-Table 3 we have also included the age and gender of the doctors, list length and whether the RGP's list was open or closed. In the final analysis (Table 4) we also included variables associated with the composition of the lists. *P* for trend is included, except for dichotomous variables.

Table 2:

Correlation between sickness absence > 16 days and the patient's age and level of education. Logistic-regression model with N = 143 624 vocationally active women and 154 415 vocationally active men resident in Oslo and Bergen in 2005 – 06. OR = odds ratio, CI = confidence interval.

	Women		Men	
	Number	**OR (95 % CI)**	**Number**	**OR (95 % CI)**
The patient's age				
20–34 years	39 456	1	41 556	1
35–49 years	59 920	0.98 (0.95–1.01)	65 152	1.29 (1.24–1.34)
≥ 50 years	44 248	1.06 (1.03–1.10)	47 707	1.59 (1.53–1.66)
P for trend		< 0.001		< 0.001
The patient's level of education				
< 16 years	78 249	1	91 142	1
≥ 16 years	65 375	0.84 (0.82–0.87)	63 273	0.48 (0.47–0.50)
P		< 0.001		< 0.001

Table 3:

Correlations between sickness absence > 16 days and characteristics of the patient's RGP. Logistic-regression model adjusted for the patient's age, gender and education. N = 143 624 vocationally active women and 154 415 vocationally active men resident in Oslo and Bergen in 2005 – 06. OR = odds ratio, CI = confidence interval.

	Women		Men	
	Number	**OR (95 % CI)**	**Number**	**OR (95 % CI)**
Variables that describe the RGP				
The RGP's gender				
Female	60 216	1	33 159	1
Male	83 408	1.05 (1.01–1.10)	121 256	1.06 (0.99–1.12)
P		0.027		0.088
The RGP's age				
< 40 years	10 972	1	12 179	1
40–49 years	47 160	1.06 (0.97–1.15)	49 436	1.02 (0.91–1.12)
50–59 years	72 292	1.06 (0.98–1.15)	75 034	1.07 (0.97–1.19)
≥ 60 years	13 200	1.05 (0.95–1.16)	17 766	1.11 (0.98–1.26)
P for trend		0.480		0.017
List length				
< 1 000	15 895	1	17 484	1
1 000–1 249	30 182	1.06 (0.99–1.13)	32 106	1.05 (0.97–1.15)
1 250–1 449	48 648	1.06 (0.99–1.13)	48 295	1.05 (1.96–1.14)
1 500–1 749	25 562	1.02 (0.95–1.10)	29 619	0.99 (0.90–1.09)
≥ 1 750	23 337	0.98 (0.91–1.07)	26 911	0.99 (0.90–1.10)
P for trend		0.841		0.958
List status				
Open	56 210	1	76 837	1
Closed	87 414	1.08 (1.03–1.13)	77 578	1.05 (0.99–1.11)
P		0.001		0.088

Table 4:

Correlations between sickness absence > 16 days, characteristics of the patient's RGP and characteristics of the patient list to which this person belongs. Results of logistic regression, adjusted for the patient's age, gender and level of education. N = 143 624 vocationally active women and 154 415 vocationally active men resident in Oslo and Bergen in 2005 – 06. OR = odds ratio, CI= confidence interval.

	Women		Men	
	Number	OR 95 % CI	Number	OR 95 % CI
Variables that describe the RGP				
The RGP's gender				
Female	60 216	1	33 159	1
Male	83 408	1.00 (0.92–1.07)	121 256	1.07 (0.97–1.18)
P		0.921		0.168
The RGP's age				
< 40 years	10 972	1	12 179	1
40–49 years	47 160	1.01 (0.94–1.08)	49 436	0.96 (0.87–1.05)
50–59 years	72 292	0.99 (0.92–1.06)	75 034	0.98 (0.89–1.07)
≥ 60 years	13 200	1.01 (0.92–1.11)	17 766	1.04 (0.93–1.16)
P for trend		0.578		0.156
List length				
< 1 000	15 895	1	17 484	1
1 000–1 249	30 182	1.01 (0.95–1.08)	32 106	1.01 (0.94–1.09)
1 250–1 499	48 648	1.04 (0.98–1.10)	48 295	1.03 (0.96–1.11)
1 500–1 749	25 562	1.03 (0.96–1.10)	29 619	1.03 (0.95–1.12)
≥ 1 750	23 337	1.01 (0.94–1.08)	26 911	1.04 (0.95–1.13)
P for trend		0.387		0.548
List status				
Open	56 210	1	76 837	1
Closed	87 414	1.05 (1.01–1.09)	77 578	1.03 (0.98–1.08)
P		0.021		0.241
List composition[1]				
Proportion of men on the list				
< 42 %	47 340	1	20 418	1
42–52 %	40 302	1.06 (0.99–1.14)	38 437	0.94 (0.86–1.03)
52–57 %	32 425	1.03 (0.94–1.12)	45 887	0.91 (0.81–1.02)
> 57 %	23 557	0.95 (0.86–1.04)	49 673	0.87 (0.77–0.98)
P for trend		0.013		< 0.001
Proportion with education ≥ 16 years				

	Women		Men	
	Number	OR 95 % CI	Number	OR 95 % CI
< 21 %	36 328	1	41 102	1
21–29 %	32 787	0.90 (0.85–0.95)	39 211	0.89 (0.83–0.95)
29–36 %	35 376	0.84 (0.80–0.90)	40 753	0.84 (0.78–0.90)
> 36 %	39 133	0.78 (0.78–0.83)	33 349	0.75 (0.69–0.81)
P for trend		< 0.001		< 0.001
List composition[1], continued				
Proportion vocationally active among those aged 20–67 years				
< 68 %	24 757	1	34 987	1
68–72 %	36 327	1.01 (0.95–1.06)	43 480	0.90 (0.84–0.96)
72–75 %	39 209	0.96 (0.91–1.02)	41 028	0.81 (0.75–0.87)
> 75 %	43 331	0.97 (0.91–1.03)	34 900	0.86 (0.80–0.93)
P for trend		0.107		< 0.001
Proportion of disability pensioners among those aged 20–67 years				
< 5 %	37 092	1	39 479	1
5–8 %	36 725	1.08 (1.02–1.14)	38 708	1.14 (1.06–1.23)
8–10 %	35 290	1.18 (1.10–1.26)	38 048	1.21 (1.11–1.31)
> 10 %	34 517	1.20 (1.11–1.30)	38 180	1.27 (1.15–1.40)
P for trend		< 0.001		< 0.001
Proportion ≥ 67 years				
< 6 %	36 088	1	37 102	1
6–11 %	36 033	0.98 (0.93–1.03)	37 191	0.95 (0.89–1.01)
11–15 %	38 112	0.91 (0.86–0.97)	39 330	0.90 (0.83–0.96)
> 15 %	33 391	0.85 (0.80–0.91)	40 792	0.82 (0.76–0.89)
P for trend		0.003		< 0.001
[i]				

[i] [1] The RGPs' lists have been grouped into quartiles for each variable used to describe the list population on the RGP list to which the patient belongs.

Characteristics of the doctors that are not captured by available variables, such as the standard of the surgery premises and accessibility by telephone, may also have an effect on the rates of sickness absence in the list population. All analyses have therefore been undertaken in a two-level model that corrects for this (clustering).

Results

Table 1 shows how the list population was distributed along socio-demographic variables, various types of RGPs and list characteristics. During the study period, altogether 22.2 % of the women and 12.5 % of the men had at least one sickness absence > 16 days.

Table 2 shows the correlation between education and age on the one hand and sickness absence > 16 days on the other, for women and men respectively. e-Table 3 shows that having a male RGP increased the likelihood of having at least one period of sickness absence > 16 days by 5 % for women. Women who belonged to a closed list had an 8 % higher likelihood of at least one period of sickness absence > 16 days when compared to those on an open list. Here, there were no significant differences for men. Men with an RGP older than 59 years had an 11 % higher odds ratio than men with an RGP who was younger than 40 years. The length of the patient list to which they belonged had no effect on their rates of sickness absence.

In Table 4, where we also investigate the effect of the composition of the lists, the significant findings related to the RGP's age and gender disappeared, although belonging to a closed list still resulted in a 5 % increase in the odds ratio for women.

The odds ratio of being certified with sickness > 16 days decreased for both women and men when the proportion with education > 16 years increased on the list to which the person belonged (10 – 22 % reduction for women, 11 – 25 % reduction for men). Belonging to a list with a medium or high proportion of elderly people over 66 years also resulted in lower odds ratios for sickness absence > 16 days for both genders.

Men and women who belonged to lists with > 10 % disability pensioners had 27 % and 20 % *higher* odds ratios respectively for being certified with sickness > 16 days when compared to those on lists with < 5 % disability pensioners, all other things being equal.

Men who belonged to lists with a preponderance of men had 13 % *lower* odds ratios for at least one period of sickness absence > 16 days when compared to men on lists with a majority of women. The same applied to men where there was a preponderance of vocationally active patients on the list to which they belonged.

Discussion

Main findings

Altogether 22 % of the women and 13 % of the men had at least one sickness certification > 16 days. The RGPs' age, gender and list length were not correlated with sickness absence paid for by NLWA. The likelihood of sickness absence > 16 days was reduced for both women and men if they were on lists with a high proportion of highly educated people, a high proportion of elderly people and few disability pensioners. Men who belonged to lists with a high proportion of men and lists with a high proportion of vocationally active people also had lower odds ratios for sickness absence > 16 days. In addition, women who belonged to an open list had lower odds ratios for sickness absence than those who were on a closed list.

Comparison to previous studies

Four previous studies (3, 17, 19) – (20) are particularly relevant, and some of their findings have been widely reported by the media (21). Our results regarding the simple variables that describe the doctors (age and gender) differ from these studies. Markussen and collaborators used data on sickness absence reported by doctors, while Brage & Kann studied a sample of sickness certifications that the RGPs had initiated and completed for their own patients in 2003 – 04. These accounted for half of all sickness certifications during the study period. Markussen's study was prospective, and included a data set of all sickness certifications received by NLWA in the period 2001 – 4, while we have used cross-sectional data from a sample which was smaller, but consisted of more recent data from the period 2005 – 06.

Our findings are more in line with those of Aakvik and collaborators, who used data from all parts of Norway and concluded that the variables describing the doctors are of little significance (19). Similar findings have been made in the UK as well (22).

The findings are also in line with results from our previous study from 2010, where identical data were used (20). Then as now, we found insignificant correlations between sickness absence and characteristics of the doctors, while the proportion of disability pensioners on the RGPs' lists was correlated to the number of sickness days. With the exception of gender composition and the proportion of disability pensioners, our variables pertaining to the composition of the lists have never previously been used for studies of sickness absence.

Methodological considerations

This study does not investigate variations in the RGP's sickness certification rates or how many certifications an RGP issues over a specified period of time. Such studies have been undertaken previously, in Norway as well as internationally (2, 13) – (14). In addition to the fact that the number of sickness certifications reflects the doctor's patient population, the number also depends

on productivity (the number of consultations per day) and accessibility (the proportion of consultations accounted for by acutely ill patients). The role played by the doctor thus cannot be easily determined, and the results from this type of study therefore tend to vary significantly.

We therefore chose to take an epidemiological approach, where focus is placed on the vocationally active population's risk of being certified as sick. Characteristics of the RGPs are used as one of several explanatory factors, although we do not know what proportion of the sickness certifications has been issued by the patient's own RGP. This investigative methodology has also been used on previous occasions (17, 19) – (20).

We only studied sickness absence > 16 days, which has the greatest significance for the social economy (16) and for exclusion from the labour market (23). This is a rough measure of sickness absence, and the frequency and duration of the periods of absence were not taken into account. Self-reported absence and absence reported by doctors but paid for by employers were not included (16, 18).

We chose to use the average level of education and the proportion of disability pensioners aged 20 – 67 as indicators of socio-economic status. Other variables could also have been used for this purpose.

The study is cross-sectional in nature, and causal relationships cannot be deduced with any certainty. However, we are using a data set containing complete data for the sickness absence which is paid for by the NLWA in Norway's two largest municipalities for an entire year.

Studies of Norwegian sickness absence have identified large geographical differences (24). By choosing two major cities, the effect of the varying coverage of doctors in rural and small municipalities is reduced, and the results more directly reflect the effects of characteristics of the doctors and their lists. Results from the metropolitan populations in Oslo and Bergen may also be more relevant with regard to international comparisons.

The fact that the study included only persons who were resident in the same municipality and had the same RGP over the entire period will make the results more precise, but will to some extent reduce their amenability to generalisation.

We undertook the analyses for women and men separately, since the genders have different patterns of sickness absence. In addition, we observed that women and men have considerable differences in their choice of an RGP. A total of 42 % of the women had a woman RGP, compared to 21 % for men, and there are more women who are entered on closed lists (61 %, compared to 50 % for men).

Implications and the need for further studies

In the RGP scheme, list composition is in principle unrelated to geography. There is nevertheless reason to assume that lists with a low socio-economic status belong to doctors who have their practices in less prosperous districts. Such a list composition may also indicate that over time, the RGP has followed liberal practices with regard to certification of sickness and social benefits, which may have attracted patients with a large need for such benefits.

The study shows that the socio-economic composition of the list has an impact on the odds ratio for sickness certification > 16 days also among those who have a higher socio-economic status, measured in terms of their level of education. Conversely, this means that people with little education belonging to RGP lists where the average social status is high are certified sick more rarely than equivalent patients on other lists. This could be perceived as differential treatment in relation to social insurance rights.

The finding that vocationally active people found on lists with many elderly patients (> 66 years) had a lower risk of being certified sick > 16 days was unexpected and merits further investigation. The segment of the population that changes to another RGP, with or without relocating, may constitute a risk group for sickness absence, and should therefore be studied in more detail. The use of other socio-economic variables, such as income and profession, and possibly including previous periods of unemployment, might have provided a more complete picture.

Conclusion

The role of the RGPs for rates of sickness absence is a controversial topic which has been extensively discussed, including in the media. Assertions that older and male doctors certify sickness more frequently than female and younger doctors have attracted large headlines, but are most likely due to confounding factors that disappear when the composition of the list populations is controlled for. Furthermore, it will make a large difference if one looks at the scope of the sickness certifications of RGPs, which will depend on their working hours, accessibility and participation in emergency duty, rather than choosing an epidemiological approach and studying the absence rates of the list populations. Results from this type of study should form the basis if one wishes to monitor and compare the activities of the RGPs with regard to sickness certification.

Main message

The gender, age and list length of regular GPs had no effect on the odds rate for sickness absence > 16 days among vocationally active persons in Oslo and Bergen.

Belonging to a patient list with a high average socio-economic status reduced the likelihood of sickness absence.

Women on open lists had lower odds rates for sickness absence than those on closed lists.

LITERATURE

1. Wahlström R, Alexanderson K. Swedish Council on Technology Assessment in Health Care (SBU). Chapter 11. Physicians' sick-listing practices. Scand J Public Health Suppl 2004; 63: 222 – 55. [PubMed]

2. Wynne-Jones G, Mallen CD, Welsh V et al. Rates of sickness certification in European primary care: A systematic review. Eur J Gen Pract 2008; 14: 99 – 108. [PubMed]

3. Brage S, Kann IC. Fastlegers sykemeldingspraksis I: Variasjoner: Rikstrygdeverket 2006.

4. Winde LD, Alexanderson K, Carlsen B et al. General practitioners' experiences with sickness certification: a comparison of survey data from Sweden and Norway. BMC Fam Pract 2012; 13: 10. [PubMed] [CrossRef]

5. Tellnes G. Sickness certification – an epidemiological study related to community medicine and general practice. Oslo: Department of Community Medicine, University of Oslo, 1990.

6. Wynne-Jones G, Mallen CD, Main CJ et al. What do GPs feel about sickness certification? A systematic search and narrative review. Scand J Prim Health Care 2010; 28: 67 – 75. [PubMed] [CrossRef]

7. Swartling MS, Alexanderson KA, Wahlstrom RA. Barriers to good sickness certification – an interview study with Swedish general practitioners. Scand J Public Health 2008; 36: 408 – 14. [PubMed] [CrossRef]

8. Nilsen S, Werner EL, Maeland S et al. Considerations made by the general practitioner when dealing with sick-listing of patients suffering from subjective and composite health complaints. Scand J Prim Health Care 2011; 29: 7 – 12. [PubMed]

9. Löfgren A, Hagberg J, Arrelöv B et al. Frequency and nature of problems associated with sickness certification tasks: a cross-sectional questionnaire study of 5455 physicians. Scand J Prim Health Care 2007; 25: 178 – 85. [PubMed] [CrossRef]

10. Gulbrandsen P, Hofoss D, Nylenna M et al. General practitioners' relationship to sickness certification. Scand J Prim Health Care 2007; 25: 20 – 6. [PubMed] [CrossRef]

11. Lindholm C, Arrelöv B, Nilsson G et al. Sickness-certification practice in different clinical settings; a survey of all physicians in a country. BMC Public Health 2010; 10: 752 – 9. [PubMed] [CrossRef]

12. Halvorsen PA, Wennevold K, Fleten N et al. Decisions on sick leave certifications for acute airways infections based on vignettes: a cross-sectional survey of GPs in Norway and Poland. Scand J Prim Health Care 2011; 29: 110 – 6. [PubMed] [CrossRef]

13. Godycki-Cwirko M, Nocun M, Butler CC et al. Sickness certification for patients with acute cough/LRTI in primary care in Poland and Norway. Scand J Prim Health Care 2011; 29: 13 – 8. [PubMed]

14. Wynne-Jones G, Mallen CD, Mottram S et al. Identification of UK sickness certification rates, standardised for age and sex. Br J Gen Pract 2009; 59: 510 – 6. [PubMed] [CrossRef]

15. Reiso H, Gulbrandsen P, Brage S. Doctors' prediction of certified sickness absence. Fam Pract 2004; 21: 192 – 8. [PubMed] [CrossRef]

16. Bjerkedal T, Thune O. Hva koster sykelønnsordningen? Tidsskr Nor Lægeforen 2003; 123: 662 – 3. [PubMed]

17. Markussen S, Røed K, Røgeberg OJ et al. The anatomy of absenteeism. J Health Econ 2011; 30: 277 – 92. [PubMed] [CrossRef]

18. Gjesdal S. Sykefraværets utvikling i Norge 1975 – 2002. Tidsskr Nor Lægeforen 2005; 125: 742 – 5. [PubMed]

19. Aakvik A, Holmås TH, Kamrul Islam M. Does variation in general practitioner (GP) practice matter for the length of sick leave? A multilevel analysis based on Norwegian GP-patient data. Soc Sci Med 2010; 70: 1590 – 8. [PubMed] [CrossRef]

20. Winde LD, Hansen HT, Gjesdal S. General practitioner characteristics and sickness absence–a register-based study of 348 054 employed Norwegians. Eur J Gen Pract 2011; 17: 210 – 6. [PubMed] [CrossRef]

21. Johansen PA. Snille leger gir økt sykefravær. Aftenposten 30.9.2010.

22. Gabbay M. Access to welfare benefits in primary care. BMJ 2010; 341: c3642. [PubMed] [CrossRef]

23. Gjesdal S, Bratberg E. Diagnosis and duration of sickness absence as predictors for disability pension: results from a three-year, multi-register based* and prospective study. Scand J Public Health 2003; 31: 246 – 54. [PubMed] [CrossRef]

24. Helde I, Kristoffersen P, Lysø, N. Kan næringsstruktur forklare fylkesvise forskjeller i sykefraværet? Arbeid og velferd 2011; nr. 3: 14 – 29.

Publisert: 8 January 2013. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.11.1340
Received 11 November 2011, first revision submitted 16 March 2012, approved 26 October 2012.
Medical editor: Siri Lunde.