Social environment and frequent attendance in Danish general practice

Peter Vedsted and Frede Olesen

ABSTRACT

Background
A lack of social support is associated with increased morbidity and mortality and a decreased effect of prevention. Frequent attenders to primary care are characterised by poorer social conditions than other patients in general practice, but we do not know whether this is due to social inequalities in health or whether social factors in themselves determine the use of general practice.

Aim
To examine if social factors are associated with frequent attendance in general practice after adjusting for physical and psychological health variables.

Design of study
Population-based cross-sectional survey.

Setting
Two hundred and twenty GPs in 132 practices in the county of Aarhus, Denmark, and the listed adult population (aged 20–64 years).

Method
A sample of frequent attenders and infrequent attenders was drawn. The study included only those resident in the county and who had consulted a GP during the period November 1997–October 1998. A questionnaire about physical, psychological and social factors was sent to the patients. The associations between social factors and frequent attendance were adjusted for physical and psychological health and tendency towards somatisation.

Results
A total of 1423 (73.7%) frequent attenders and 1103 (74.9%) infrequent attenders responded. Male frequent attendance was associated, with statistical significance, with living alone and being without work or on a disability pension. Among women, lack of professional education or being without work tended to increase the likelihood of frequent attendance.

Conclusion
This study shows that for men, social factors may in themselves determine the use of general practice. None of the investigated social factors seemed to restrict the use of general practice.

Keywords
community health services; cross-sectional studies; family practice; social environment.

INTRODUCTION

Social inequality in health is well-documented. Irrespective of modern society's intentions to ensure all citizens a healthy life, wealth still seems to buy health. With the British Black Report[1] in 1980 as a good example, modern society has been facing the increasing evidence of this and the need for intervention.[2] Unsurprisingly, studies have found that patients from lower social classes have higher consultation rates than other classes.[3–5] Unemployed, widowed or divorced adults, patients with poor social networks or rented accommodation consult more often than others[6,7] and they primarily attend general practice, whereas individuals from higher social classes more often attend specialists.[1] However, other studies have found no such associations[8,9] and with the use of statistical methods almost eliminating the social determinants in population-based studies, the role of social factors has been questioned.[10]

Knowledge of which factors are prompting patients to seek primary care may be gained by examining a small group of patients (the so-called frequent attenders). Studies show that at least 50–66% (control group 25–30%) had social problems.[11,12] The proportion of frequent attenders was highest among singles, and decreased with family size.[13,14] Frequent attenders were significantly more often unemployed (39% against 27%) and single (22% against 15%) than infrequent attenders.[15] Among female frequent attenders, 25% (control group 9%) were divorced.[11]

The fact that different attendance rates may be rooted in differences in social factors makes it

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urgent for family medicine to further elucidate this topic, in order to optimise the care for these patients. Accordingly, we questioned whether the higher level of social deprivation among frequent attenders is simply a matter of social inequality in health or whether social factors independently may determine the use of general practice.

The aim of this study was to examine social factors associated with frequent attendance in general practice after adjusting for physical and psychological health variables.

METHOD

The organisation of Danish general practice

Danish GPs work as independent contractors to the public health service, and are partly remunerated per capita (40%) and partly on a fee-for-service basis (60%). The GPs act as gatekeepers, and more than 98% of Danes are registered with a GP and receive free medical care.[16] For reasons of accounting, the public health service receives electronic information on all GP contacts. All contacts can be linked to individuals through a unique civil registration number assigned to all individuals at birth.[16] We conducted the study in Aarhus County, Denmark (approximately 630 000 inhabitants).

The GP population

The 423 GPs in the 270 county practices were randomised into two groups, one of which served as the study group for this project (220 GPs in 132 practices). The other group of practices served as controls in a larger intervention study.

Attender population

A random stratified sample (men and women, in the age groups 20–34, 35–49 and 50–64 years) was drawn from adults who resided in the county during the 12 months from November 1997–October 1998, who had been registered with an included practice during this period and who had attended at least once during the period. In a year, 85% of the Danish adult population see their GP face-to-face at least once. Frequent attenders were defined as the top 10% among all attenders in the county during the 12 months. As this study was part of an intervention study, an average of approximately 10 frequent attenders and six infrequent attenders were sampled per GP. The sample size calculation was made to measure a 10% decrease in risk of frequent attendance (intervention study) when the incidence of repeated frequent attendance was 33%, using an α of 0.05 with 90% power, and an intra-class correlation coefficient (ICC) of 0.05. The contacts counted were surgery consultations and home visits (face-to-face contacts) during daytime (08.00–16.00 hours). We did not include telephone contacts and administrative consultations (for example, about driver's licenses and other certificates, pregnancy controls and vaccinations). The age- and sex-stratified samples of frequent attenders and infrequent attenders were drawn from the register of the Danish NHS, using the following cut-off points between frequent attenders and other attenders for number of annual contacts per year: women 20–34 years n = 9, 35–49 years n = 9, and 50–64 years n = 10; men 20–34 years n = 6, 35–49 years n = 7, and 50–64 years n = 9.

Data

The same questionnaire was sent to frequent attenders and infrequent attenders. A reminder with a new questionnaire was sent to non-responders after 3 weeks. After another 3 weeks those who still had not responded were telephoned and a short structured telephone interview was conducted for analysis of non-responders.

The questionnaire (see Box 1) included the validated Danish version of the 36-item self-rating scale (SF-36) measuring 'Physical Functioning' and 'Mental Health'.[17] The scoring followed the Danish manual from 1997. Tendencies towards somatisation, which have been shown to be a predictor of frequent attendance,[18] were measured with the 7-item Whiteley index.[19]

Social environment was measured as the patient's functional and structural social relations and vocational education and working status (Box 1). All questions had been used in former Danish surveys.[20–22]

Statistical analysis

Only responders who had answered all questions relevant to the analyses were included. We calculated the prevalence of adverse social factors and compared frequent attenders and infrequent attenders by calculating the prevalence difference and the prevalence ratio. The prevalence ratio was preferred to the odds ratio because the prevalences of the social factors were high (>20%); the odds

How this fits in

Social inequality in health is well-documented. The social conditions of frequent attenders in general practice are poorer than those of other patients. As for men, social conditions may in themselves determine frequent use of general practice after adjustment for social inequalities in health. The likelihood of female frequent attendance tends to increase with adverse social conditions. GPs should be aware of the role social factors may play as reasons for encounter and should try to show patients ways to improve their social conditions in order to prevent inappropriate attendance and iatrogenic illness.

Box 1. Social factors and health-related variables.

Primary stratification variables (used to adjust the association between attendance and each social factor)

- Physical functioning (SF-36), patients divided into four groups based on quartiles from the Danish norm population
- Mental health (SF-36), patients divided into four groups based on quartiles from the Danish norm population
- Whiteley-7 index, tendency towards somatisation, dichotomised with a cut-off between 0 and 1

Functional social relations

- Meet with friends: less than twice a month or never/Twice a month, twice a week or daily
- Cannot expect help from others if I get ill/Maybe or certainly expect help if I get ill
- I am sometimes or often alone although I would really like to be with others/Seldom or almost never alone
- Have no friends to confide in if I have problems/One or more friends to confide in

Structure of social relations

- Married or cohabiting/Single, divorced, separated or widowed
- No other adults in the household besides the patient/Other adults in the household besides the patient

Socioeconomic status

- Education: No vocational training/Vocational training or higher education
- Unemployment, disability pension or sick leave/Employment

ratio thus overestimated the associations.[23,24] For each social factor, the prevalence difference between frequent and infrequent attenders was calculated using a binomial generalised linear model with identity link, and the prevalence ratio was calculated using a binomial generalised linear model with log link.

To adjust the prevalence ratio for the patients' health status, each social factor was adjusted by means of scores on 'Physical Functioning' and 'Mental Health' and the Whiteley-7 index (that is, only a single social factor was included in each regression model). 'Physical Functioning' and 'Mental Health' scores were divided into quartiles based on data of the general Danish population.

Table 1. Sample sizes of frequent and infrequent attenders, censoring and response rates to questionnaire.

	Frequent attenders	Infrequent attenders
Primary sample	2152	1478
Died or changed address[a]	7	6
Eligible sample	1932[b]	1472
No address[c]	9	7
Questionnaires sent to patients	1923	1465
Responses from patients	1423 (74.0%)	1103 (74.3%)
Number of valid questionnaires	1222 (63.5%)	989 (67.5%)

[a]Just before or after the questionnaire was sent out. [b]For 103 frequent attenders the GP stated that the patient should not be sent a questionnaire. Thirteen GPs did not want to continue after the first round, and the 117 sampled frequent attenders were therefore excluded. [c]Unknown/incorrect address in the Centralised Civil Register.

The Whiteley index was dichotomised with a cut-off between 0 and 1. The adjusted prevalence ratio of a social factor was calculated using Poisson regression[25] with robust error estimate. Robust error estimate was used to correct for variance overestimation when applying Poisson regression to binary data.[26] The analyses were performed separately for women and men, but for all age strata collectively, adjusting for sampling probabilities within each age stratum.[24,27] To prevent incorrect claims of statistical significance due to multiple tests, the significance level was lowered according to the Bonferroni method (α divided by the number of outcome measures). Therefore, probabilities of ≤ 0.006 were regarded as statistically significant. STATA 8.0 was used for the analyses.

RESULTS

A total of 1222 (63.5%) frequent attenders and 989 (67.5%) infrequent attenders answered all relevant questions in the questionnaire, and were thus included in the analyses (Table 1).

Functional social relations

For both men and women, poor social relations were associated with frequent attendance (Tables 2 and 3), whereas for women only being alone against your will was associated with frequent attendance. Among men, three factors (no help, loneliness and no close friends) were associated with being a frequent attender. However, after adjusting for physical and psychological health and tendency towards somatisation, none of these social factors were statistically significantly associated with frequent attendance.

Structure of social relations

Frequent attendance was strongly associated with the structure of the social relations for men, but not for women (Tables 2 and 3). Even after adjustment for health, men living alone had a statistically significantly higher propensity for frequent attendance.

Professional education and working status

Having had no vocational training and being unemployed were associated with frequent attendance for both men and women. After adjustment for health, female frequent attendance had a statistically non-significant tendency to be associated with these factors. For men, unemployment was statistically significantly associated with frequent attendance, but professional education did not influence frequency of attendance.

Non-responders

The telephone interview revealed that a higher proportion of non-responders among frequent

Table 2. Male frequent attenders and infrequent attenders: functional social relations, structure of social relations and sociodemography.

	Infrequent (*n* = 487)		Frequent (*n* = 613)										
Men (*n* = 1100)	*n*	P (%)	*n*	P (%)	PD (%)[a]	CI	*P*-value	PR[b]	CI	*P*-value	Adjusted PR[c]	CI	*P*-value
Meet friends less than twice a month	175	35.9	227	37.0	1.8	-4.8 to 8.4	0.589	1.03	0.92 to 1.16	0.589	0.92	0.83 to 1.03	0.138
Cannot expect help from others if I get ill	128	26.3	211	34.4	**9.9**	**3.4 to 16.3**	**0.003**	**1.19**	**1.06 to 1.33**	**0.002**	1.02	0.92 to 1.14	0.689
I am sometimes/often alone	63	12.9	163	26.6	**21.0**	**14.2 to 27.9**	**<0.001**	**1.41**	**1.26 to 1.57**	**<0.001**	1.08	0.96 to 1.21	0.225
Have no friends to confide in if I have problems	114	23.4	194	31.6	**10.2**	**2.7 to 17.7**	**0.008**	**1.19**	**1.05 to 1.35**	**0.006**	1.03	0.92 to 1.14	0.639
Single, divorced or widowed	70	14.4	156	25.4	**16.2**	**9.0 to 23.4**	**<0.001**	**1.31**	**1.16 to 1.48**	**<0.001**	**1.17**	**1.05 to 1.30**	**0.005**
No adults in the household besides the patient	66	13.6	151	24.6	**17.1**	**9.4 to 24.8**	**<0.001**	**1.33**	**1.17 to 1.51**	**<0.001**	**1.19**	**1.07 to 1.33**	**0.001**
No professional education	72	14.8	100	16.3	3.3	-4.1 to 10.8	0.380	1.06	0.93 to 1.21	0.372	0.91	0.80 to 1.04	0.175
Unemployed, on disability pension or sick leave	69	14.2	217	35.4	**27.6**	**21.7 to 33.5**	**<0.001**	**1.56**	**1.41 to 1.73**	**<0.001**	**1.26**	**1.13 to 1.40**	**<0.001**

P = Prevalence. PD = Prevalence differences. PR = Prevalence rates. Statistically significant (P≤0.006) associations are highlighted. [a]Binomial Generalised Linear Model with identity link, modelling the risk differences, adjusted for patient clustering within general practice. [b]Binomial Generalised Linear Model with log link, modelling the risk ratios, adjusted for patient clustering within general practice. [c]Poisson regression with robust variance, modelling the risk ratios, adjusted for physical health, psychological health and somatisation.

Table 3. Female frequent attenders and infrequent attenders: functional social relations, structure of social relations and sociodemography.

	Infrequent (*n* = 487)		Frequent (*n* = 613)										
Women (*n* = 1111)	*n*	P (%)	*n*	P (%)	PD (%)[a]	CI	*P*-value	PR[b]	CI	*P*-value	Adjusted PR[c]	CI	*P*-value
Meet friends less than twice a month	203	40.4	240	39.4	-1.1	-6.8 to 4.6	0.695	0.98	0.88 to 1.09	0.696	0.92	0.82 to 1.02	0.116
Cannot expect help from others if I get ill	141	28.1	208	34.2	7.6	0.9 to 14.2	0.025	1.14	1.02 to 1.28	0.023	0.99	0.88 to 1.11	0.839
I am sometimes/often alone	82	16.3	186	30.5	**18.9**	**12.5 to 25.4**	**<0.001**	**1.37**	**1.23 to 1.53**	**<0.001**	1.10	0.98 to 1.24	0.096
Have no friends to confide in if I have problems	69	13.7	114	18.7	9.0	1.6 to 16.5	0.018	1.17	1.03 to 1.32	0.014	1.01	0.88 to 1.14	0.927
Single, divorced or widowed	111	22.1	150	24.6	3.8	-3.8 to 11.5	0.327	1.07	0.94 to 1.23	0.321	0.98	0.87 to 1.10	0.693
No adults in the household besides the patient	102	20.3	141	23.2	4.6	-3.1 to 12.2	0.242	1.08	0.95 to 1.24	0.237	0.99	0.88 to 1.12	0.875
No professional education	92	18.3	181	29.7	**14.4**	**7.8 to 20.9**	**<0.001**	**1.28**	**1.14 to 1.43**	**<0.001**	1.12	1.01 to 1.25	0.039
Unemployed, on disability pension or sick leave	95	18.9	226	37.1	**22.7**	**17.3 to 28.2**	**<0.001**	**1.46**	**1.32 to 1.62**	**<0.001**	1.14	1.02 to 1.29	0.024

For footnote explanations, see Table 2.

attenders than responders had experienced a worsening of their health during the past 12 months (prevalence difference: 17.6%, 95% confidence interval [CI] = 5.2 to 30.1), and the same was seen for non-responders among infrequent attenders compared with responders (prevalence difference: 37.9% [95% CI = 21.3 to 54.6]).

DISCUSSION

Summary of main findings

After adjusting for physical and psychological health, and for tendency towards somatisation, a poorer structure of social relations (living alone) and unemployment were statistically significantly associated with male frequent attendance in general practice. By contrast, none of the investigated social factors turned out to be statistically significantly associated with female frequent attendance. Women may compensate for poor social network in ways other than by attending general practice. Yet, there was a tendency for women with no professional education or without work to have a higher propensity of frequent attendance. It is important to note that none of the investigated social factors

seemed to restrict the use of general practice, which would indicate a social inequality in the use of general practice.

Comparison with existing literature

Other studies confirm our unadjusted results by showing that unemployment,[15,30,31] low income, lower social class,[15,31] living alone, and being divorced or lonely[30-34] were associated with frequent attendance. The sex differences have been recognised by other researchers, but our study may be the first to show clearly that only male frequent attendance is associated with social factors in themselves.

Earlier studies have acknowledged the higher concentration of socially disturbed patients among frequent attenders than among other attenders.[35] Some of these social problems are beyond the GP's control,[36] making it important for the GP to recognise that social factors are part of the attendance pattern, and to initiate and stimulate relevant care from, for example, the social authorities. This may also minimise the risk of iatrogenic illness.

Strengths and limitations of the study

We compared frequent attenders with infrequent attenders using a cross-sectional design that is convenient for examining associations. However, a weakness is the difficulty in establishing a causal relationship.[24] The response rates exceeded 70%, which is as high as could be expected. The analysis of non-responders showed that non-responders among both infrequent attenders and frequent attenders had experienced a worsening of health. The group of responders may therefore be biased towards a healthier sample, which, as this bias was seen for both groups, probably has only a minor influence on the estimated associations. The practice list system ensured a well-defined attender sample and the high validity of the public health service register allowed us to track all relevant contacts.[28] The statistical precision was relatively high within each stratum, implying a low risk of overlooking significant differences.

The social factors examined in this study were chosen partly from earlier studies on the subject, and partly adapted from the Behavioural Model of Health Services Use, initially developed and described by Andersen and Newman.[29] We included patients on a disability pension in the group of unemployed. The correctness of collapsing these two categories may, of course, be disputed and it could have led to an overestimation of the association between unemployment and frequent attendance. Other variables not included in this study may affect the individual's use of general practice. This could mean that our statistically significant associations may partly be rooted in residual confounding or unknown determinants of frequent attendance.

Implications for future research

Our study shows that while female frequent attendance seems unaffected by social factors, the propensity of men to be frequent attenders increases when loneliness or unemployment is present. This means that GPs must be particularly aware of the social dimension among men who frequently attend. This may affect the prognosis for male frequent attenders.

Ethics committee

The study was approved by the Danish Data Protection Agency (reference 1998-1200-116) and the Regional Scientific Ethics Committee (reference 1998-4248)

Competing interests

None

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