The association between daytime attendance and out-of-hours frequent attendance among adult patients in general practice

Peter Vedsted, Henrik Toft Sørensen, Jørgen Nørskov Nielsen, and Frede Olesen

SUMMARY

Background: *Frequent attenders (FAs) account for a large proportion of daytime consultations in general practice. However, no studies have so far been conducted to establish whether daytime FAs are also out-of-hours FAs.*

Aim: *To analyse the association between daytime attendance and out-of-hours frequent attendance.*

Design of study: *A registry-based study of individual face-to-face contacts with general practice during daytime and out of hours, based on National Health Insurance files.*

Setting: *General practices in Aarhus County, Denmark (630 000 inhabitants).*

Method: *A total of 416 172 adults, i.e. all adults registered with a general practice during a 12-month period from November 1997 to October 1998 were included. Odds ratios (OR) for frequent attendance out of hours were stratified for age, sex, and frequency of contacts during daytime were calculated.*

Results: *A strong association was observed between daytime level of attendance and out-of-hours level of attendance (OR = 2.9–6.3 among patients with low daytime attendance, OR = 33.7–99.8 among daytime FAs). Daytime FAs accounted for one-third of the daytime contacts, one-third of the out-of-hours contacts, and 42% of out-of-hours FAs. More than half of the daytime FAs did not attend out of hours. Two per cent of the out-of-hours FAs had no contacts during the daytime.*

Conclusion. *Frequent attendance in daytime was very strongly associated with frequent attendance out of hours, and daytime FAs accounted for a large proportion of all contacts with general practice.*

Keywords: *Denmark; frequent attenders; cross-sectional study; out of hours.*

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Introduction

DEPENDING on the definition of frequent attenders (FAs), they account for 21–67% of all consultations in daytime general practice.[1-5] In Denmark, out-of-hours FAs (the 10% most frequent attenders during 12 months) have been found to account for 40% of all contacts with the out-of-hours service.[6,7] However, no studies have so far been conducted to establish whether daytime FAs are also out-of-hours FAs.

The need to spare scarce resources in primary care and to optimise FA care has given rise to calls for intervention.[8-11] A few studies indicate that 20–60% of out-of-hours contacts are less necessary, or even unnecessary, as assessed by general practitioners (GPs).[12-16] Optimal care is probably best provided by the patient's own GP and good daytime care may ideally substitute or reduce out-of-hours attendance. However, the gap in our knowledge of a possible association between daytime and out-of-hours frequent attendance makes it impossible to quantify to what extent FAs in daytime general practice actually contribute to the out-of-hours workload.

To fill this gap we examined the association between adult patients' level of daytime attendance in Danish general practice and their out-of-hours attendance. For specific groups of daytime attenders we also examined their general contact with general practice.

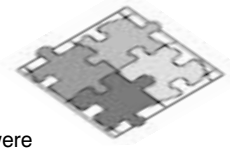
Method

The organisation of Danish general practice

The health care system in Denmark is based on GPs acting as gatekeepers.[17] More than 98% of the inhabitants are registered with their local GP and receive tax-supported free medical care. The rest (2%) are free to consult a GP of their own choice but they have to pay part of the fee themselves. General practitioners work as independent contractors to the National Health Insurance. During the daytime they are partly remunerated on the basis of the number of patients on their list and partly on a fee-for-service basis. Out of hours they are solely remunerated on a fee-for-service basis. During daytime (8.00 am to 4.00 pm) registered patients have to consult their own GP, who has a 24-hour responsibility for the care of all patients registered with the practice.

Out-of-hours care is arranged by GPs in county-based rota systems,[18] running from 4.00 pm to 8.00 am, Mondays to Fridays and throughout Saturdays, Sundays, and public holidays. During this time-period the patients must make a mandatory telephone call to a GP triage function where it is decided whether the patient needs a home visit, a consulta-

HOW THIS FITS IN



What do we know?
There has been some discussion about whether the frequent attenders (FAs) in daytime general practice also were the FAs out-of-hours and vice versa.

What does this paper add?
There is a strong association between frequent attendance in daytime and out-of-hours. Moreover, patients being FAs in both daytime and out-of-hours constitute 10% of the daytime FAs and 40% of out-of-hours FAs.

tion at a local out-of-hours office or just telephone advice.[18,19]

Setting

The study was conducted in the Aarhus County, which is the largest county in Denmark (population 5.2 million) with approximately 630 000 inhabitants in 1998, of whom 478 000 were aged 20 years and over. For reasons of accounting, the National Health Insurance receives electronic information on all GP contacts during the daytime and out of hours. All contacts can be linked to individuals by a unique number (civil registration number).[17]

Study population

We included individuals aged 20 years and over who were alive and resident in the county throughout the 12 months from November 1997 to October 1998 and who had been registered with a general practice in the county throughout this period. This secured complete coverage of all individuals during the study period. Age was measured at the beginning of the study period. We excluded individuals under the age of 20 because children's attendance rates, especially, are influenced by their parents.

Contact counting

A contact with a GP during the daytime was registered as a telephone contact, a surgery consultation or a home visit. A contact with the out-of-hours services was registered as a telephone contact, a consultation at a local out-of-hours office, or a home visit. Only when an out-of-hours telephone call resulted solely in telephone advice was the call registered as a telephone contact.

In the daytime, consultations and home visits (face-to-face contacts) were counted. We excluded telephone contacts and administrative consultations, e.g. for a driver's license and other certificates, pregnancy controls, and vaccinations. During out of hours, telephone advice, surgery consultations and home visits were counted as contacts. We excluded telephone calls triaged to consultations and home visits.

Definition of FAs

For both daytime and out of hours, FAs were defined as the 10% most frequent attenders among all attenders during the 12 months.[6] However, the intersection points between individuals classified as FAs and non-FAs were integer numbers of contacts during the 12 months. Therefore, the intersection point between FAs and other attenders was moved to the integer number of contacts defining the FA group as close to the 10% of all attenders as possible.[6] This was done for either sex and for four age groups, for both daytime and out of hours. The age groups were 20–34, 35–49, 50–64, and 65 years and over. These age strata were selected because attendance rates were somewhat homogeneous. The resulting intersection points were 9 (20–34 years), 9 (35–49 years), 10 (50–64 years), and 12 (65 years and over) contacts per year for women's age groups in daytime. For men's age groups in daytime the intersection points were 6 (20–34 years), 7 (35–49 years), 9 (50–64 years), and 12 (65 years and over) contacts per year. For out-of-hours contacts the intersection points were four contacts per year for both men and women in all age groups. This method finally defined the FAs as the 9.6–10.4% of all attenders in the eight subgroups. Inclusion of the non-attenders lowered these percentages.

Statistical analysis

The study population was subdivided into five groups according to daytime attendance: the non-attenders (zero users), the infrequent attenders (50% with fewest contacts), the medium attending group (25%), the group next to the FAs (15%), and the FAs.

In this cross-sectional design, the five daytime attendance groups were regarded as levels of the predictor and the out-of-hours frequent attendance was regarded as the outcome. For each age and sex stratum the odds ratios (ORs) were calculated with 95% confidence intervals (95% CI) for each of the five attendance groups. The groups of zero users served as reference groups.[20] The OR in this study represents the prevalence proportion ratio. Data were processed and analysed in SPSS version 9.

Results

Study population and attenders

General practice was attended at least once by 339 009 out of the 416 172 (81.5%) registered adults (women 89.8%, men 72.5%) during the daytime and at least once by 84 225 (20.2%) of the participants out of hours (women 22.8%, men 17.4%). In the study population, 77 071 (18.2%) attended both during the daytime and out of hours, 34 428 (8.3%) were daytime FAs, 8154 (2.0%) were out-of-hours FAs, and 3429 (0.8%) were both daytime and out-of-hours FAs. Hence, 10% of all daytime FAs constituted 41.5% of the out-of-hours FAs.

Attendance

Figure 1 shows the study population's share of contacts during daytime and out of hours. The daytime FAs (Group IV) accounted for about one-third of all daytime contacts and for one-third of all out-of-hours contacts.

Of all daytime FAs, 19 384 (56.3%) had no out-of-hours contacts. Only 157 out-of-hours FAs did not attend during the daytime. They comprised 1.9% of all out-of-hours FAs. A remarkable 108 (68.8%) of these were men. These patients were registered with 126 different practices with a maximum of three patients with one practice. There was a distinct

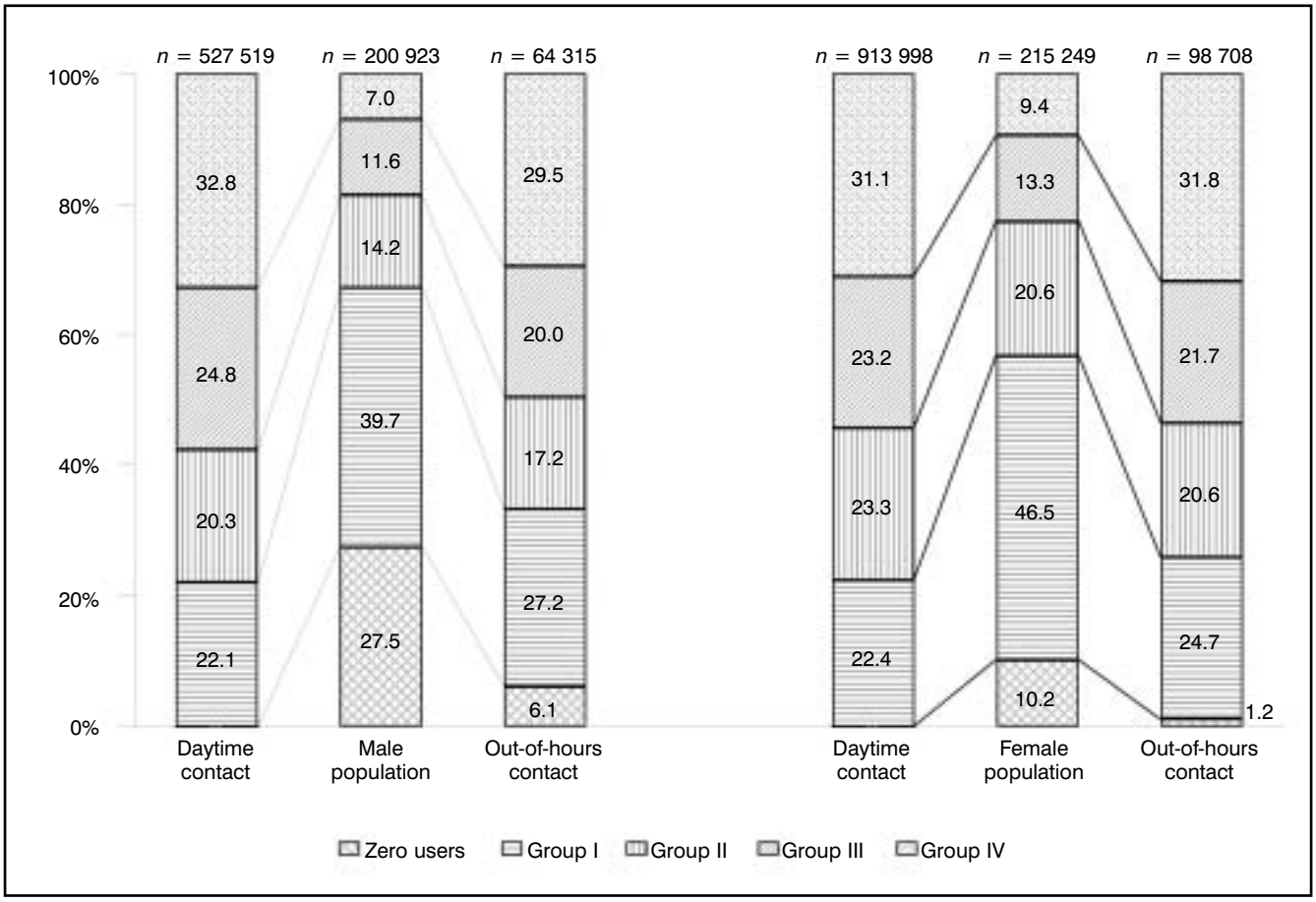


Figure 1. Number of daytime and out-of-hours contacts for men and women in the total study population. For either sex the middle bar depicts the proportions of the five attendance groups during the daytime (zero users, Group I = the 50% with fewest contacts, Group II = the 25% with a medium attendance rate, Group III = the 15% next to FAs, and Group IV = the FAs [10%]). For both sexes the first bar represents the proportion of daytime contacts and the third bar the proportion of out-of-hours contacts. Above each bar the number of individuals/contacts are shown. Note: The FAs are defined as the 10% most attending of all attenders. This proportion is less than 10% owing to inclusion of the zero users in whole study population.

association between the number of contacts during the daytime and the risk of being an out-of-hours FA (Table 1).

Discussion

We found a strong association between daytime attendance and status as an out-of-hours FA. The most marked association was found between daytime and out-of-hours frequent attendance. We found that daytime FAs accounted for a substantial part of both daytime and out-of-hours contacts. Nevertheless, more than half of the FAs during the daytime had no out-of-hours contacts at all.

Ten per cent of the daytime FAs were also FAs out of hours and made up 42% of this group. These patients with consistent, frequent attendance both day and night could be the most diseased or ill patients, or those with a high demand for medical advice. Moreover, nearly all out-of-hours FAs were seen by their own GP during the daytime at least once a year.

Validity, potential biases, and statistical precision

The study size and the uniformly organised primary health care system allowed a population-based design and high statistical precision, thus avoiding the possible bias in studies based on other types of health care systems.

The database only included information on contacts to GPs and we were therefore unable to explore other reasons for the discovered association, e.g. physical, psychological, and social. In Denmark, many daytime telephone contacts are used for giving information on test results, etc, often by the secretary. By counting face-to-face daytime contacts only we excluded these 'administrative' contacts. We excluded the administrative consultations since, in Denmark, the majority of these contacts are mandatory by law.

Future research needs

Several studies report high levels of physical and psychological problems among FAs compared with other attenders.[21-26] However, this study did not provide information in respect of deciding which factors contribute to the association between daytime attendance and out-of-hours frequent attendance. We showed that more than half of the daytime FAs did not attend out of hours. A recent study indicated that GPs play an important role in planning the attendance pat-

Table 1. The association between daytime attendance rates and out-of-hours frequent attendance (FA). OR is the odds ratio to be an out-of-hours FA. Group IV is the daytime FAs (10%), group III the group next to FAs (15%), Group II the 25% with a medium attendance rate and Group I the 50% with fewest contacts. The group of zero users served as a reference group. ORs are given with 95% confidence intervals (95% CI).

	Group	Age groups							
		20–34		35–49		50–64		65+	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Men	IV	33.7	28.0–40.5	51.3	42.1–62.4	99.8	73.7–135.3	72.5	48.7–107.9
	III	11.1	8.7–14.2	12.1	9.2–16.0	31.2	20.7–47.0	30.9	18.9–50.3
	II	6.7	5.1–8.9	6.6	4.7–9.3	11.0	6.5–18.7	12.2	6.8–22.1
	I	3.3	2.5–4.3	3.5	2.5–4.9	6.3	3.6–11.2	3.4	1.6–7.0
	0	1	Reference	1	Reference	1	Reference	1	Reference
Women	IV	44.4	32.7–60.3	49.5	36.3–67.4	67.5	47.3–96.2	40.7	28.2–58.8
	III	17.8	12.2–25.8	15.3	10.2–22.9	18.1	11.0–29.6	17.6	11.3–27.3
	II	8.1	5.3–12.6	8.6	5.5–13.6	10.5	6.11–8.0	9.8	6.0–16.1
	I	3.3	2.1–5.4	2.9	1.7–4.9	3.5	1.8–6.6	3.3	1.9–5.9
	0	1	Reference	1	Reference	1	Reference	1	Reference

tern.[27] Our study therefore invites the hypothesis that intervention performed to optimise care among daytime FAs could have a positive effect on both daytime and out-of-hours attendance. Further studies should be designed to elucidate this hypothesis.

Implications and conclusion

Frequent attendance in daytime was very strongly associated with frequent attendance out of hours, and daytime FAs accounted for a large proportion of all contacts with general practice.

Acknowledgements

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