Patient, hospital, and general practitioner characteristics associated with non-attendance: a cohort study

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SUMMARY
Studies examining characteristics of non-attendance at hospital outpatients have given inconsistent results. We examined a cohort of 1972 referrals from 26 general practitioners, with complete follow-up. Five factors were found to be significantly associated with non-attendance: male sex, younger age, longer interval between referral and appointment, higher Jarman score and patients of a high-referring general practitioner. Targeting of strategies to reduce non-attendance is possible using these results.
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Introduction

NON-ATTENDANCE at hospital outpatient clinics is an important national problem but almost all research in this area has been hospital based. Reasons identified include illness and work commitments, forgetfulness[1,2] or hospital administrative error.[3] Studies examining associations between non-attendance and sex, age or socioeconomic status have yielded inconsistent results. Various strategies have been applied to reduce the problem[4] with reported reductions of 60% to 81%,[5,6] but they tend to be expensive.[5,6] It may be possible to reduce the expense by targeting efforts at those most likely to non-attend. However, this requires an understanding of the factors underlying non-attendance, including hospital, patient, and general practitioner (GP) factors.

Method

The study used a prospective cohort approach. It was run in parallel with a randomised controlled trial of an intervention aimed to reduce non-attendance.[7] Twenty-six GPs from 13 practices in Exeter, UK, enrolled all new referrals between January and May 1997 into the study.

The patients' age, sex, and referral specialty (surgery; obstetrics and gynaecology; medicine; orthopaedics; ophthalmology; ear, nose and throat or oral surgery; dermatology; psychiatry; or other) were extracted from the referral letter. The Jarman score, as a proxy measure of socioeconomic status,[8] was calculated from the postcode. The interval between referral and appointment was calculated from the referral and reply letters. GP details were obtained from the Health Authority. Referral rates were calculated from the number of referrals made during the study and the list size calculated from practice details.

Attendance data were obtained from routine hospital datasets, crosschecked by examination of the GP records. Cancellations were considered as attendances for analysis. Attendance rates between specialties were compared using a χ^2 test. All variables (sex, age, Jarman score, interval to appointment, specialty, fundholding status, referral rate, possession of Membership of the Royal College of General Practitioners, and year of qualification of GP) were entered into a univariable analysis. Logistic regression was performed using non-attendance versus cancellation or attendance as the outcome measure. Those variables with a probability of the null hypothesis of less than 0.2 were entered into a multivariable analysis.

Results

The study GPs enrolled 2078 patients; 1972 of these were

HOW THIS FITS IN

What do we know?

Previous studies on the factors associated with non-attendance have given inconsistent results. Only by elucidating them can strategies to reduce the problem be designed.

What does this paper add?

Significant associations with non-attendance were found for: males, younger patients, patients with a higher Jarman score, longer intervals between referral and appointment, and patients from a higher-referring GP. Outpatient departments should consider targeting those with appointments three months or more after referral

sent appointments. No patient was lost to follow-up. Of those sent appointments, 106 patients (5.4%) failed to attend. Demographic details of the patients and information about their GP are shown in Table 1. The mean (standard deviation) referral rate during the study was 13.7 (6.3) per hundred patients per year. There were no significant differences in non-attendance between specialties. Men aged 16 to 35 years had a non-attendance rate of 21%.

The univariable and multivariable results are shown in Table 2. Males, younger patients, those with a longer interval between referral and appointment, those with a higher Jarman score, and patients of a high-referring GP were all less likely to attend.

Discussion

This is the first prospective study of predictors of non-attendance at hospital outpatients. All referrals to all specialties were included. Furthermore, the complete follow-up means that our dataset is robust. The patient factors associated with non-attendance are: being male, being younger, and lower socioeconomic status. These findings may represent difficulties in missing work to attend hospital[1] or transport problems. Exeter is a compact city, so we did not measure distance from home to hospital — this may be a relevant factor in some areas. A relevant hospital factor was the interval between the referral and the date of the appointment. Some patients may improve and fail to attend, or they may simply forget.[1,3] The high non-attendance rates reported by some specialties may simply reflect increased waiting times, rather than being specific to the specialty. Long waiting times are a politically sensitive issue; our results show that they increase inefficiency too.

The only GP characteristic associated with non-attendance was being a high referrer. Variation in referral rates is usually explained in terms of patient need, with social class accounting for about a quarter of the variation.[9] A higher non-attendance rate raises the possibility that high referrers have a lower threshold for referral. Their patients may then fail to attend because they considered their referral unnecessary, or because their condition had improved.

It may be possible to target initiatives to reduce non-attendance. For instance, 520 patients (26.4% of appointments) had an appointment three months or more after referral, with 62 failing to attend (58.5% of non-attenders). Targeting these appointments only, and assuming the inter-

Table 1. Characteristics of non-attenders, compared with attenders and cancellations.

Characteristic	Attenders and cancellations ($n = 1866$)	Non-attenders ($n = 106$)	Statistical test applied and significance
Percentage male (95% CI)	40.2 (38.0–42.5)	50.9 (41.0–60.8)	$\chi^2 = 4.9$ $P = 0.03$
Mean age in years (95% CI)	49.2 (48.1–50.2)	38.2 (34.2–42.1)	t-test = 4.85 $P < 0.0001$
Median (interquartile range) interval between referral and appointment (days)	50.7 (26.3–89.1)	110 (56.6–157.0)	Rank sum test $P < 0.0001$
Percentage from a fundholding general practitioner (95% CI)	23.9 (22.0–25.9)	29.2 (20.8–38.9)	$\chi^2 = 1.6$ $P = 0.21$
Percentage from a general practitioner with MRCGP[a] (95% CI)	73.9 (71.7–75.8)	79.3 (70.3–86.5)	$\chi^2 = 1.5$ $P = 0.22$

[a]Membership of the Royal College of General Practitioners

Table 2. Multivariable analysis of characteristics of non-attendance.

Characteristic	Univariable analysis		Multivariable analysis	
	Odds ratio (CI)	Significance	Odds ratio (CI)	Significance
Male sex	1.60 (1.08–2.38)	0.02	1.65 (1.09–2.50)	0.02
Age	0.98[a] (0.97–0.99)	<0.001	0.98[a] (0.97–0.99)	<0.001
Jarman score	1.02 (1.01–1.03)	0.003	1.02 (1.00–1.03)	0.008
Interval to appointment	1.06[b] (1.05–1.08)	<0.001	1.07[b] (1.05–1.09)	<0.001
Referral rate of GP	1.03[c] (1.00–1.05)	0.06	1.03[c] (1.00–1.06)	0.05

[a]For a one-year increase in age. [b]For a one-week increase in interval. [c]For an increase of one referral per hundred patients per year.

vention is 60% effective,[5] might have prevented 37 non-attendances; the number needed to be contacted to prevent one non-attendance being 14. If the same intervention were applied to all appointments, the number to be contacted to prevent one non-attendance is 31.

The GP may have a role to play in preventing non-attendance. The decision to refer is complex.[10] The possibility of the patient failing to attend should perhaps be added to the list of factors for the GP to consider. At the very least, it would be reasonable for a GP to mention the problem of non-attendance to a young man who is being referred. The 'keep it or cancel it' campaign included advertising posters on the back of buses; a comment from one's GP may carry more weight.

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