

SHORT REPORT

Headache and migraine in primary care: consultation, prescription, and referral rates in a large population

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Background/Aims: Headache is the most common new neurological symptom seen by general practitioners and neurologists. This study describes headache consultation, prescription, and referral rates in a large sample of UK general practices.

Methods: Analysis of data from patients ≥ 15 years registered at 253 UK general practices diagnosed with headache/migraine from 1992 to 2000. Rates were age standardised using the European standard population for reference.

Results: There were 13.2 million patient years of observation. Headache consultation rates were 6.4/100 patients/year in women and 2.5 in men. They were highest at 15–24 years (15.8/100 in women; 5.8/100 in men), decreasing with age. Antimigraine drugs were prescribed at 36.7% of consultations for women and 26.6% for men. Among referrals to specialists, 55% were to neurology and 30% to general medicine. The neurology referral rate in patients with headache was 2.1/100, and was higher in men (2.7/100) than women (1.9/100).

Conclusions: These results provide precise age specific and age standardised estimates for headache consulting in general practice, in addition to prescribing and referral to specialist care. Consultation rates are highest in young women; hospital referrals peak in middle aged men. Research is needed into reasons for referral, and on better ways of delivering headache services.

Headache, including migraine, is one of the top 10 reasons for consulting a general practitioner.¹ It is the most common new neurological symptom presented to general practitioners² and to neurologists.³ Most headache is self managed, and not presented to doctors.⁴ The lifetime prevalence of headache is over 90%;⁵ for young women it is the most common symptom reported in the community.⁶ Headache symptoms are associated with considerable impact/disability and account for about 20% of absence as a result of sickness.⁷ Headache, usually with other symptoms/signs, is associated with underlying space occupying conditions, such as brain tumours. Concerns about this often trigger the use of primary and secondary care.⁸

The neurologist workforce in the UK is proportionally one tenth the size of other Western countries.⁹ Given this lack of capacity, headache referrals compete with other conditions for scarce resources. New ways of managing services for longterm neurological conditions have been proposed¹⁰; these include providing additional training for general practitioners and nurses who will subsequently provide patients with enhanced care. In this context, we aimed to describe current patterns of headache care delivery in the UK, including: new and total consultation levels in general practice, prescribing

rates, investigation rates, and referral rates for headache to neurologists and other specialists using a large population database.

METHODS

The General Practice Research Database (GPRD) includes data from several hundred general practices in the UK. The database includes data for all registered patients, including medical diagnostic codes for consultations and referrals and details of prescriptions issued. The data are subject to quality checks and when the data are of high enough quality to be used in research, they are referred to as “up to standard”.¹¹ The study protocol was approved by the scientific and ethical advisory group of the GPRD.

We analysed data for all 253 practices that provided up to standard data continuously between 1 January 1992 and 31 December 2000. For each year of study, we calculated the number of registered patients by age, sex, and practice, as denominator. We excluded patients aged less than 15 years. Because patients might enter or leave the registered population during the year, the denominator was obtained by summing all time at risk contributed by patients who were registered with the sampled general practices during the study year. We obtained numerator data by searching the medical record of each registered subject for medical diagnostic codes for “headache”, “migraine”, or “cephalgia”. These will be referred to as “headache”. We counted the numbers of consultations for headache and we also estimated the proportion of patients who consulted with these conditions. We calculated the number of prescriptions for specific drugs used in the treatment of headache and migraine using codes for drugs in section 4.7.4 of the *British national formulary*,¹² including 5-hydroxytryptamine agonists (triptans), pizotofen, clonidine, and methysergide. We also calculated the number of referrals to hospital associated with consultations for headache or migraine. The last analysis was confined to 77 practices that exclusively used Vision computer software in which data for referrals were completely coded.

Numerator and denominator data were aggregated by sex and five year age group to estimate age and sex specific rates. Age and sex standardised rates were calculated by the direct method using the European Standard Population for reference. Confidence intervals for rates were estimated using the normal approximation to the binomial distribution.¹³ Confidence intervals were generally very precise (less than $\pm 1\%$ of the magnitude of the estimate) and are not presented in detail.

RESULTS

Data were analysed for 253 practices between 1992 and 2000. There were 13 228 540 patient years at risk during this time (average registered population, 1.47 million). There were

Abbreviations: GPRD, General Practice Research Database

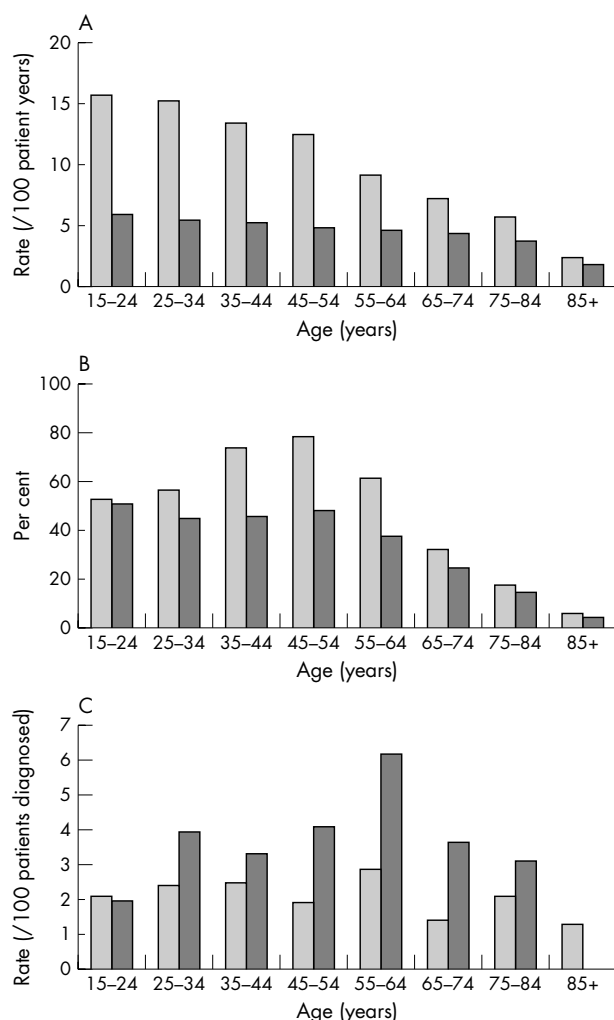


Figure 1 Age and sex specific rates for year 2000 data. Light bars represent data for women and dark bars represent data for men. (A) Consultations for headache for each 100 patient years. (B) Per cent of headache consultations with prescriptions for antimigraine drugs (section 4.7.4 of *British national formulary*, 2000).¹² (C) Neurology referrals for headache for each 100 patients diagnosed with headache.

570 793 consultations for headache made by 413 221 patients. There were 189 065 prescriptions for specific antimigraine drugs. In the analysis of hospital referrals, there were 94 796 patient years at risk among patients with headache and 3622 referrals to hospital clinical specialties.

Table 1 shows age standardised consultation rates for the period 1992 to 2000. In registered subjects aged more than 15

years there were 4.44 consultations/100 registered patients/year. The rate was more than twice as high in women at 6.39/100, when compared with men at 2.49/100. Figure 1A shows age and sex specific consultation rates for the year 2000. Consultation rates were highest in the 15 to 24 year age group and declined with age. The female to male ratio was 2.72 in the youngest age group and declined to 1.29 in the oldest age group. After allowing for multiple consultations by the same patients, the proportion of registered patients who consulted with headache each year was 3.21/100 patients. Thus, the consultation rate was approximately 35% higher than the rate of patients consulting with headache. This finding was generally consistent in men and women of all ages.

In 33.9% of headache consultations, specific antimigraine drugs in BNF section 4.7.4 were prescribed (table 1). Women who consulted with headache were more likely to receive a prescription than men. Prescribing was most frequent in women aged 45 to 54 years, in whom there were 78 prescriptions for each 100 consultations (fig 1B). In men, prescribing showed less variation with age and was similar in men aged 15 to 24 and for those aged 45 to 54 years.

Among 3622 referrals to hospital clinical specialties, 2002 (55%) were to neurology; 1082 (30%) to general medicine; 140 (4%) to ophthalmology; 140 (4%) to ear, nose, and throat; and 258 to other specialties. The rate of neurology referrals in patients diagnosed with headache was 2.1/100; it was higher in men than in women (table 1; fig 1C), and highest at 55 to 64 years.

DISCUSSION

Limitations of our study

The intermittent and episodic nature of headache and migraine makes it difficult to obtain estimates of incidence or prevalence from specially designed epidemiological studies in the general population. Our report presents data for a large population sample based on a general practice database giving very precise estimates for rates. General practices in the GPRD are drawn from all parts of the UK and this increases the generalisability of the findings. The main limitation of our study is the analysis of clinical, rather than epidemiological, data. Patients vary in their use of health care, and it is well known that a considerable proportion of patients who are ill may not consult their doctor. Doctors also vary in their use of different diagnostic categories. There may be variation in case ascertainment across this general practice sample, which might vary according to both patient and practice characteristics. However, other studies have shown that diagnoses based on the GPRD show a high level of agreement with diagnoses confirmed through additional clinical investigation.^{14 15} It has also been shown that epidemiological analyses from the GPRD give findings which are consistent with equivalent analyses from the Fourth

Table 1 Age standardised data for consultations, diagnoses, prescriptions, and referrals for headache for 253 GPRD practices from 1992 to 2000

Measure	Definition	Age standardised rate		
		Total	Women	Men
Consultations	Rate of consultations for headache/100 registered patients/year	4.44	6.39	2.49
Registered patients diagnosed with headache during one year	Per cent of registered patients diagnosed with headache during one year	3.21	4.56	1.87
Prescriptions for migraine (BNF 4.7.4)	Rate of prescriptions for antimigraine drugs (BNF 4.7.4) ¹² for each 100 headache consultations	33.88	36.71	26.63
Neurology referrals for headache	Rate of neurology referrals/100 patients consulting with headache*	2.13	1.92	2.65

Data are for patients aged 15 years or older.

*Referral data were based on 77 practices that used Vision computer software.

BNF, *British national formulary*, 2000; GPRD, General Practice Research Database.

Morbidity Survey in General Practice, in which data were collected from a smaller number of practices.^{11–16}

The one year period prevalence of migraine is 6% in men and 16% in women; the one year period prevalence of tension-type headache is 63% and 80% in men and women, respectively.^{5–17} Given the frequency of headache in the population, consultation rates in the UK of 4.4 (3.2)/100 are modest. If treatments can reduce morbidity, and 20% of sickness absence is caused by headache,⁷ services may be underused. Prescribing rates for headache are relatively high for women of middle age. This only partially represents medicine taking, because patients buy over the counter medications, and do not necessarily take medicines as prescribed.

Six per cent of headache consultants are referred for tests or to specialists. Two per cent of patients are referred to neurologists, and 1% of patients are referred to general physicians. A small minority (0.15%) is referred to other specialties, such as ophthalmology; ear, nose, and throat; and geriatrics.

Newly trained physicians tend to subspecialise, and see fewer referrals for common neurological symptoms such as headache and loss of consciousness. This trend will increase capacity issues for neurology in the UK. General practitioners transferring 1% of headache referrals to neurologists will double the demand for new headache appointments. Increasing emphasis on consumer choice,¹⁸ and reliance on scanning to exclude space occupying lesions, could also increase demand for referral. This would decrease timely access to neurology advice for all problems during a period in which there is a plan to reduce the waiting time to see specialists.¹⁹

This evidence provides a context that may inform policy change. The Royal College of General Practitioners and the Department of Health have provided guidelines for training general practitioners with special interest in headache.²⁰ There is also debate about whether UK general practitioners should have open access to scanning facilities for headache, rather than using neurologists as gatekeepers to these investigations.²¹ Our results derived from a large population contribute to a baseline framework in which modernisation²² can be tested by means of health services research.

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