

Prevalence and incidence of chronic pelvic pain in primary care: evidence from a national general practice database

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Objectives To estimate the prevalence and incidence in primary care of chronic pelvic pain in women in the UK.

Design Cross-sectional analysis of MediPlus UK Primary Care Database.

Setting One hundred and thirty-six general practices in the UK.

Population From 284,162 women aged 12–70 who were registered on the database and who had a general practice contact in 1991, 24,053 chronic pelvic pain cases were identified between 1991 and 1995.

Methods Chronic pelvic pain was defined as pelvic pain lasting for at least six months, and cases were identified on the basis of contacts with general practice. Pain due to malignancy, chronic inflammatory bowel diseases or pregnancy, or which occurred only during menstruation or sexual intercourse, was excluded.

Main outcome measures Prevalence and incidence rates of chronic pelvic pain in primary care by age and region.

Results Monthly prevalence and incidence rates of chronic pelvic pain were 21.5/1000 and 1.58/1000, respectively, with an annual prevalence of 38.3/1000. Monthly prevalence rates increased significantly with age ($P < 0.001$) from 18.2/1000 in 15–20 year olds to 27.6/1000 in women older than 60, as symptoms persisted longer in older women. Prevalence and incidence rates varied significantly between regions ($P < 0.001$), with the lowest monthly prevalence in Scotland (16.0/1000) and the highest in Wales (29.4/1000).

Conclusions Chronic pelvic pain is a common condition in the UK, with a prevalence in primary care comparable to migraine, back pain, and asthma. Its prevalence in the general population is likely to be considerably higher.

INTRODUCTION

Chronic pelvic pain in women is thought to be a common condition that may affect millions of women worldwide. Though definitions vary, it is usually defined as pain in the lower abdominal region of at least six months duration, and is distinguished from cyclical pelvic pain (dysmenorrhoea) or pain associated with sexual intercourse (dyspareunia).

Clinical experience has indicated that chronic pelvic pain is a debilitating condition that can result in reduced quality of life, including emotional distress, relationship problems, and loss of time at work. However, the condition is still not well understood and therefore often

inadequately managed¹. Its epidemiological characteristics are particularly unclear. We recently reported the results of a systematic review in which we showed that there are no published UK data providing an estimate of the prevalence of chronic pelvic pain in the general population or in primary care². A single community-based American study was found that reported a prevalence of chronic pelvic pain of 15% over three months in 5000 women aged 18–50³.

The present paper reports the methodology and results of the first UK study into the prevalence and incidence of chronic pelvic pain in primary care, using data from the national general practice database MediPlus. Prevalence and incidence rates of chronic pelvic pain were calculated using cases identified from the database on the basis of contacts with general practice between January 1991 and December 1995.

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METHODS

MediPlus UK Primary Care Database (UKPCD) is a national database containing clinical and prescribing data on approximately 1,700,000 patients from 140 general practices in the UK from 1991 onwards. It contains anonymised information downloaded by IMS (Intercontinental Medical Statistics, UK and Ireland) from practices using AAH Meditel's System 5 software, and is representative of the general UK population regarding age, sex, and regional distribution, except that Scottish practices are under-represented (IMS Health, personal communication).

In 1997 an independent questionnaire survey of all practices contributing to MediPlus UKPCD found that 41% considered their computerised records as primary, 14% relied equally on computerised and written records, whereas 43% still considered written records as primary. However, all the less computerised practices stated they coded key diagnoses and prescriptions on the system⁴. More details about the database and its quality assurance methods have been published elsewhere⁵.

The data in MediPlus UKPCD are recorded individually by date, providing longitudinal records of patients for the period of time they remain within the practice. Each item of data can be a diagnosis, symptom, referral, procedure, or medication. The codes used for each item are selected from a comprehensive list, which includes codes from the ninth revised edition of International Classification of Diseases (ICD-9), Read codes⁶, and other codes built in by IMS. The study period used for our analyses was 1 January 1991 to 31 December 1995.

Precise definitions are used in this paper:

1. Contact: a date in the medical history of a patient, recorded on the database. This may be a visit to the surgery, telephone encounter, or repeat prescription.
2. Chronic pelvic pain: pain in the lower abdominal region persisting for at least six months. This excludes pain due to malignancy; chronic inflammatory and other defined bowel diseases such as Crohn's, coeliac disease, ulcerative colitis; acute conditions verified by having surgery such as appendectomy, cholecystectomy; or pregnancy. Women with pelvic pain occurring only during menstruation (dysmenorrhoea) or sexual intercourse (dyspareunia) were also excluded.
3. Episode of chronic pelvic pain: pelvic pain on two or more contacts, with at least six months (≥ 183 days) between the first and the last contact but with no period of more than one year (> 365 days) without a pelvic pain contact. An episode of chronic pelvic pain was defined as starting six months after the first contact and finishing at the contact preceding a pain-free, one-year interval (if any).

Figure 1 illustrates selection of the denominator (Step I); selection of potential chronic pelvic pain cases (Step II); exclusion of cases and contact (Step III); durational criteria (Step IV); and exclusion of episodes (Step V). These steps are described as follows:

Step I: from the 1991–1995 data, all women aged 12–70 in 1991 who were active (i.e. alive and permanently registered with the practice at the most recent update, June 1996) were selected using the MediPlus UKPCD software ($n = 385,183$). Women had to have complete data for the whole study period (1991–1995), to apply durational criteria. Four of the 140 practices had ceased using Meditel System 5 during the study period and were therefore excluded. Furthermore, the only way to ensure that all selected women had complete data was to select those who had contacted their GP in 1991, as no record was kept on the database of when patients joined a practice. This resulted in a selection of 284,162 women (74.6% of those registered with the 136 practices).

Step II: every episode of chronic pelvic pain could include a range of different symptom and diagnostic codes, depending on whether the pain was accompanied by other symptoms (e.g. genitourinary, gastrointestinal) and whether or not a diagnosis had been made. Therefore, we initially selected all codes ($n = 150$) that could possibly be relevant, but which varied in specificity to chronic pelvic pain. These codes were subsequently grouped into four categories (A to D), Group A containing the codes that were most specific to pelvic pain and Group D the least specific procedure or referral codes that could possibly be related to pelvic pain. From the denominator group, 28,184 women were identified with a code in group A; 73,987 in group B; 3,199 in group C, and 84,217 in group D.

Step III: groups A to D were merged, resulting in a selection of 135,069 cases. Women with cancer in the lower abdominal region or with inflammatory bowel disease, and contacts related to pregnancy or an operation for an acute condition (e.g. appendectomy) were excluded, leaving 130,987 cases. Less specific contacts were excluded if they were combined with codes indicating irrelevant location of symptoms (e.g. epigastric pain) or irrelevant medication (e.g. antiulcerants or antacids), reducing the number of cases to 128,008. Lastly, contacts with referral codes for conditions completely unrelated to chronic pelvic pain (e.g. general surgical referral for a breast lump) were excluded, leaving 92,219 cases.

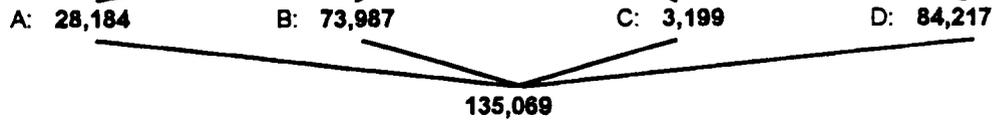
Step IV: out of the 92,219 cases, 28,455 were selected who had had one or more chronic pelvic pain episodes persisting for at least six months (30,314 episodes).

Step V: episodes consisting of procedures or referrals alone without evidence of chronic pelvic pain were excluded, as were episodes that only contained codes for

Step I: Denominator selection (Jan 1991 to Dec 1995)

Selection 1: 'active'* women, aged 12-70 in 1991: 385,183
Selection 2: 4 practices with incomplete data excluded: 381,076
Selection 3: women with data in 1991: 284,162 (=denominator)

Step II: Case selection †



Step III: Exclusions of cases and contacts

Exclusion of cases on basis of:	-1,135	
- Cancer in abdominal region		
- Chronic (inflammatory) bowel disorders (e.g. Crohn's/coeliac disease/ulcerative colitis)		133,934
Exclusion of A-D contacts because related to:	-2,947	
- Pregnancy		
- Irrelevant abdominal operations		130,987
Exclusion of B and D contacts because of:	-2,979	
- Irrelevant location symptoms		
- Irrelevant medication		128,008
Exclusion of D contacts:		
- Referrals irrelevant to CPP	-35,789	92,219
Step IV: Durational criteria - exclusions		
Only one contact for CPP in 1991-1995:	-41,794	50,425
Less than 6 months between first and last contact:	-21,970	28,455 (=30,314 episodes)
Step V: Diagnostic criteria: exclusions		
Exclude episodes with D codes only	-1,314	27,141 (=28,899 episodes)
Exclude episodes with		
- dysmenorrhoea or menstrual symptom codes only	-2,949	
- dyspareunia codes only	- 139	24,053 (=25,543 episodes)

* 'Active'= alive and permanently registered on 30 June 1996

† Group A included women with specific pelvic pain codes or diagnoses that implied pelvic pain (e.g. 'lower abdominal pain', 'pelvic inflammatory disease');
 Group B included women with less specific abdominal pain/symptom codes (e.g. 'abdominal pain', 'constipation');
 Group C included women with codes related to but not necessarily implying pelvic pain (e.g. 'endometriosis', 'ovarian cysts');
 Group D included women with the least specific procedure/referral codes that could be related to pelvic pain (e.g. 'laparoscopy', 'gynaecological referral').

Fig. 1. Numbers of women selected to estimate the prevalence and incidence of chronic pelvic pain in MediPlus UKPCD.

'dysmenorrhoea', 'menstrual symptoms' or 'dyspareunia'. However, since these latter codes are commonly part of the medical record of a chronic pelvic pain patient, episodes including any of these together with at least one other code were retained. This resulted in a chronic pelvic pain case selection of 24,053 women (25,543 episodes) from 1991 to 1995.

Monthly incidence was estimated as the number of new episodes in a given month as a proportion of the unaffected population at risk. Of the original cohort of 284,162 women, 5653 had a pelvic pain contact in 1991, leaving 278,509 unaffected women (i.e. with no pelvic pain contact in the previous 12 months) at the start of 1992. This group had a similar age distribution to all

women on the database and to the general UK population in 1991⁷, but women younger than 30 were slightly under-represented (32.4% in our selection vs 36.1% in the general population).

Within the period 1991–1995, complete incidence rates could only be determined from July 1992 to December 1994, because of the definition of a chronic pelvic pain episode previously described.

The criterion for selection of the original cohort of 284,162 women—a GP contact in 1991—was related to the definition of chronic pelvic pain. Thus the prevalence of chronic pelvic pain based on this cohort would have been over-estimated, because all cases of chronic pelvic pain would have been included in the numerator, but some women without chronic pelvic pain would have been excluded from the denominator. The prevalence of chronic pelvic pain was therefore estimated instead by following the accumulation of incident cases towards an approximate steady state, in which the number of new cases equals the number who stop having chronic pelvic pain (a complete steady state will only be reached after a time-period has elapsed that equals the maximum duration of disease)⁸.

The observed monthly increase in prevalence fell steadily over the period, so that the prevalence rate had almost stabilised by December 1994. A least squares regression line relating the monthly change in prevalence to time since July 1992 was used to approximate the monthly prevalence in the steady state. The resulting equation ($342.38 - 10.39 \times$ months since July 1992) predicted that the steady state would have been reached in April 1995.

Monthly prevalence and incidence by age and region were calculated using December 1994 data, as the prevalence in this month was only marginally lower than the predicted prevalence in the steady state. Three-monthly and annual prevalence rates in the steady state were estimated using monthly prevalence and incidence figures, to allow comparison with previously published consultation rates for chronic pelvic pain³ and other conditions⁹.

The minimum prevalence and incidence was calculated by only considering episodes that contained codes most strongly associated with chronic pelvic pain. For this purpose, all symptom and diagnostic codes used in the episodes prevalent in December 1994 were arranged into 17 clinically relevant groups (Table 1). Ten of these groups were considered most strongly associated with chronic pelvic pain: abdominal pain (lower); dysmenorrhoea; dyspareunia; ovulation pain; irritable bowel syndrome; cystitis; other gastrointestinal diagnoses (mainly diverticular disease); pelvic inflammatory disease; endometriosis; and other gynaecological diagnoses (mainly pelvic congestion). The minimum prevalence and incidence rates of chronic pelvic pain were estimated by counting the episodes prevalent (or incident) in December 1994 that contained at least one contact in

Table 1. Groups of symptoms and diagnoses and frequency of their use in 5939 chronic pelvic pain (CPP) episodes prevalent in December 1994. IBS = irritable bowel syndrome; PID = pelvic inflammatory disease; GIT = gastrointestinal tract; NOS = not otherwise specified; GU = genitourinary.

	No. (%) of episodes with a contact in group
Symptoms	
1. Abdominal pain (lower)*	2541 (42.8)
2. Gastrointestinal symptoms**	1485 (25.0)
3. Dysmenorrhoea*	612 (10.3)
4. Menstrual symptoms†	488 (8.2)
5. Genitourinary symptoms‡	207 (3.5)
6. Dyspareunia*	190 (3.2)
7. Unspecified pelvic symptoms§	86 (1.4)
8. Ovulation pain*	83 (1.4)
Diagnoses	
9. IBS*	1871 (31.5)
10. Cystitis*	1665 (28.0)
11. Other gastrointestinal diagnoses**§§	580 (9.8)
12. PID*	548 (9.2)
13. Endometriosis*	295 (5.0)
14. Ovarian cysts	169 (2.8)
15. Uterine fibroids	159 (2.7)
16. Adhesions	44 (0.7)
17. Other gynaecological diagnoses*¶	25 (0.4)

*Groups used in the estimation of the minimum prevalence rate.

Minimum prevalence of CPP was estimated using only those episodes that contained at least one contact in one of these groups.

Episodes with dysmenorrhoea or dyspareunia codes always contained at least one more contact in another group (see Methods).

**Includes psychogenic GIT disorders, constipation, GIT disorders, gastrointestinal symptoms NOS.

†Includes menstruation disorders and menstrual disorders NOS.

‡Includes psychogenic GU symptoms and genitourinary symptoms NOS.

§Includes female genital symptoms NOS, abdomen/pelvis symptoms NOS, abdominal discomfort.

§§Includes diverticular disease, diverticulitis, and viral+ill-defined GIT infections.

¶Includes pelvic congestion syndrome and benign ovarian tumour.

one of these groups. As mentioned previously, episodes with dysmenorrhoea or dyspareunia always contained at least one further contact in another group.

Statistical methods

All analyses were performed using SAS (PC Version 6.12). Prevalence and incidence between age and regional groups were compared using Pearson χ^2 tests and Mantel-Haenszel χ^2 tests for trend. Prevalence rates between regional groups after adjusting for age were compared using the CATMOD procedure.

RESULTS

The monthly prevalence of chronic pelvic pain estimated in the steady state was 21.5 per thousand (95% CI 21.0

to 22.0), with an annual rate of 38.3 (95% CI 37.5 to 39.0). The last observable monthly prevalence per thousand, for December 1994, was 21.3 (95% CI 20.8 to 21.8). Three-month prevalence in women aged 18–50, calculated for comparison with the only published data on chronic pelvic pain³, was 23.6/1000 (95% CI 22.9 to 24.4).

The monthly incidence of chronic pelvic pain in unaffected women aged 12–70 in 1991 remained roughly stable from July 1992 to December 1994, around a mean of 1.58 (95% CI 1.43 to 1.73) with a low of 1.28 and a high of 1.74 per thousand per month. Had there been an increase in consultation rates for chronic pelvic pain or a change in recording practice over this time period, we would have observed rising incidence rates. These rates were derived from a denominator group of women who had a GP contact in 1991. Younger women were slightly under-represented in this group compared with all women on the database and in the general population. Adjustment of the results for this under-representation reduced the monthly and annual prevalence rates only slightly, to 20.4/1000 and 36.1/1000, respectively, and the mean monthly incidence rate to 1.49/1000.

The minimum prevalence of chronic pelvic pain was estimated from episodes prevalent in December 1994 that contained codes most indicative of chronic pelvic

pain (Table 1). Minimum monthly prevalence and incidence rates per thousand for December 1994 were 18.5 (95% CI 18.0 to 19.0) and 1.36 (95% CI 1.22 to 1.50), respectively. The reduction in rates was mainly due to the exclusion of episodes with codes for constipation or uterine fibroids alone.

Figures 2 and 3 show monthly prevalence rates for December 1994 by time of onset, for different age groups and regional health authorities. Prevalence rates per thousand increased significantly with age (χ^2_{trend} ; $P < 0.001$), whereas incidence decreased slightly with age (χ^2_{trend} ; $P = 0.04$). The rising prevalence was caused by chronic pelvic pain lasting longer in older women, as indicated by the increasing proportion of cases with onset of chronic pelvic pain before December 1994 (Fig. 2).

Prevalence rates were significantly different between regions ($P < 0.001$). The lowest rate per thousand was found in Scotland (16.0, 95% CI 14.0 to 18.0) and the highest in Wales (29.4, 95% CI 26.5 to 32.3). These differences remained highly significant after adjusting for variations in age distributions ($P < 0.001$). Further investigation of the relation between incident and prevalent cases suggested that the differences in prevalence could be attributed to persistent regional differences in incidence rather than duration.

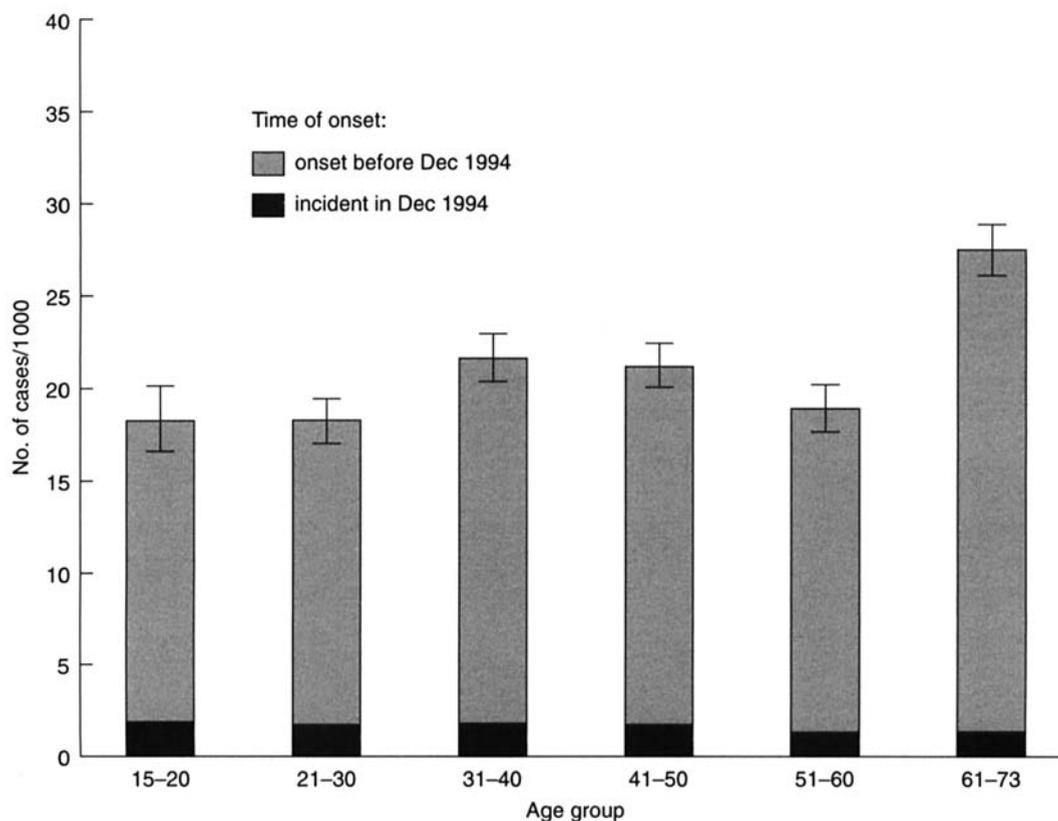


Fig. 2. Monthly prevalence rates of chronic pelvic pain for December 1994 by age in 1994 and time of onset (error bars indicate 95% confidence intervals for total prevalence rates).

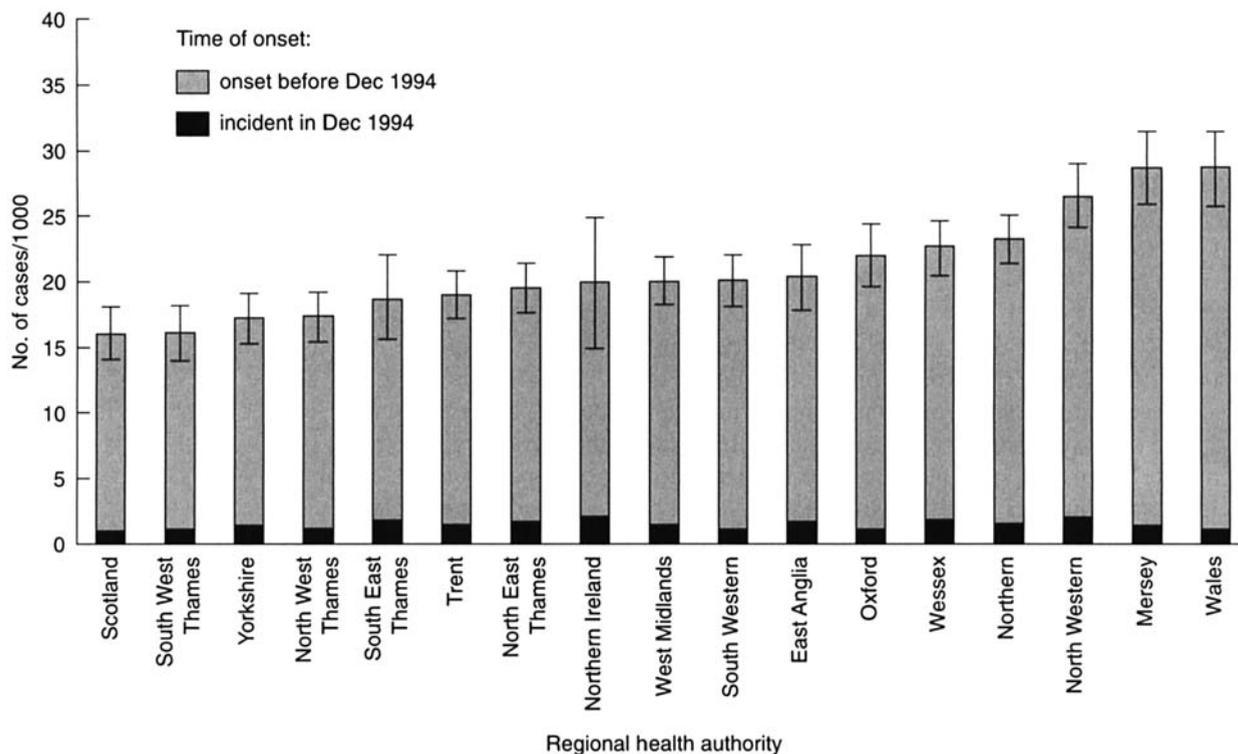


Fig. 3. Monthly prevalence rates of chronic pelvic pain for December 1994 by Regional Health Authority and time of onset (error bars indicate 95% confidence intervals for total prevalence rates).

DISCUSSION

This study provides the first evidence of a high prevalence of chronic pelvic pain in the UK. Using the MediPlus UKPCD database, we estimated monthly prevalence and incidence rates of chronic pelvic pain to be 21.5/1000 and 1.58/1000, respectively. Comparison of the annual chronic pelvic pain prevalence (38/1000) with primary care figures reported for other 'common' chronic conditions illustrates that chronic pelvic pain has a prevalence comparable to migraine (21/1000), asthma (37/1000), and back pain (41/1000)⁹.

We observed a three-month prevalence rate of 23.6/1000 for women aged 18–50 that was lower than the consultation rate reported in the community study of chronic pelvic pain by Mathias *et al.*³. They found that 37/1000 American women aged 18–50 had seen a health care provider (gynaecologist, other physician or mental health professional) for chronic pelvic pain in the previous three months. Their results, however, were based on patient recall and self-reported cases, and are likely to provide higher estimates than those based on medical records. In addition, differences in systems of access to health professionals may also account for some of the variation between figures.

General practice databases, such as MediPlus UKPCD, are being used increasingly for research

purposes, predominantly in the fields of pharmaco-epidemiology and drug prescription monitoring^{10–12}. They are also potential sources of morbidity data¹³ and, as our study confirms, can provide valuable information on the epidemiology of clinical problems in primary care⁴. However, use of routinely collected data for epidemiological purposes has certain limitations. As described in the methods, 43% of practices contributing data to MediPlus UKPCD still considered written records as their primary record and recorded only key diagnoses and prescriptions. It is possible that this type of use would result in an underestimate of chronic pelvic pain cases, and that the uneven geographical spread of highly computerised practices may to some extent have accounted for the differences in rates found between regions. The chance of this bias occurring, however, was minimised by using an extensive selection method for selecting chronic pelvic pain cases, based on a wide range of symptom and diagnostic codes.

Another important problem that has been reported is that of diagnostic variability (i.e. varying use of different symptom or diagnostic labels depending on the interpretation of the complaint)¹⁴. Again, however, we avoided this problem to a large extent by using the all inclusive selection method for selecting chronic pelvic pain cases.

Although our study cannot provide information on the prevalence of chronic pelvic pain in women not

seeking health care, it is probable that our results underestimate general population rates. Mathias *et al.*³ found that while 147/1000 of women aged 18–50 had chronic pelvic pain in the last three months, only 25% had seen a health care provider in that period. In this respect, chronic pelvic pain appears to be similar to back pain, which was described recently by the Clinical Standards Advisory Group as a condition that many people cope with themselves without seeking health care¹⁵. Results of a separate analysis, describing duration of symptoms and patterns of diagnosis and referral in women with chronic pelvic pain, is presented on pages 1156–1161 of this issue.

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