Evaluating care of patients reporting pain in fundholding practices

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Abstract

Objective—To compare quality of care between 1990 and 1992 in patients with self diagnosed joint pain.

Design—Questionnaire and record based study.

Subjects—Patients identified at consecutive consultations during two weeks in 1990, 1991, and 1992.

Setting—Six practice groups in pilot fundholding scheme in Scotland.

Main outcome measures—Length of consultation; numbers referred or investigated or prescribed drugs; responses to questions about enablement and satisfaction.

Results—About 15% of patients consulted with joint pain each year. 25% (316) of them had social problems in 1990 and 37% (370) in 1992; about a fifth wanted to discuss their social problems. Social problems were associated with a raised general health questionnaire score. The mean length of consultation for patients with pain was 7.6 min in 1990 and 7.7 min in 1992. Patients wishing to discuss social problems received longer consultations (8.5 min 1990; 10.4 min 1992); but other patients with social problems received shorter consultations (7.4 min; 7.2 min). The level of prescribing was stable but the proportion of patients having investigations or attending hospital fell significantly from 1990 to 1992 (31% to 24%; 31% to 13% respectively). Fewer patients responded "much better" to six questions about enablement in 1992 than in 1990. Enablement was better after longer than shorter consultations for patients with social problems.

Conclusions—Quality of care for patients with pain has been broadly maintained in terms of consultation times. The effects of lower rates of investigation and referral need to be investigated further.

Introduction

General practice fundholding in the United Kingdom has been running for four years and early results from evaluations of the system are now available.¹⁻⁸ Most studies have examined the implications of changes at the interface between primary and secondary care⁹⁻¹² or trends in prescribing practice.¹³⁻¹⁵ Because of the difficulty of identifying evaluative methods and appropriate databases, little work has been done on assessing the quality of care. This has created an important void in the clinical and political debate over how fundholding should develop.

In our study of prescribing trends in fundholding and control practices we noted that the volume of non-steroidal anti-inflammatory drugs prescribed had fallen by 22% between 1990 and 1992.¹³ Previous work in general practice has used length of consultation and patient satisfaction as indicators of the quality of care at consultations.¹⁶ We developed these methods to assess quality of care in patients visiting the doctor with self

reported joint pain to see whether the fall in the use of non-steroidal anti-inflammatory drugs was associated with other trends in their care. We selected patients with joint pain because degenerative joint disorders affect large numbers of patients^{17,18} and cause substantial discomfort and disability.¹⁹ In addition, pain is generally thought to be treated less effectively than it might be.

Effective primary care entails listing the needs of a patient at a consultation, deciding on the priority for dealing with these needs, and giving care that meets the need or needs selected for attention. The care delivered should improve health or halt its deterioration; offer support where deterioration is inevitable; or identify an appropriate channel through which services can be provided. The needs to be addressed should be negotiated between doctor (or carer) and patient (or family); they may include physical and psychosocial problems or education on health behaviour or health promotion. Needs can be short term or longer term. Patients should normally feel satisfied by the consultation, although occasionally conflict may exist between meeting needs and patients' expectations, leading to dissatisfaction. The care delivered should improve patients' understanding and increase their ability to cope with the problem. Needs may be identified and met over a series of interactions (which may occur over a long time) rather than at a single meeting. More efficient primary care involves carrying out the above processes at lower cost. Thus quality is a relative rather than an absolute concept.

Subjects and methods

In April 1990 we started an action research project to evaluate the shadow fundholding project in the Grampian and Tayside areas of Scotland. Six practices in Grampian (65 000 patients) and three practices in Tayside (19 000 patients) were recruited to pilot the introduction of general practice fundholding in Scotland. The questions posed in the evaluation were both administrative and clinical, and the methods proposed to address them have been published as have results from earlier analyses.^{6,20}

Patients aged over 16 attending surgery consultations during two weeks in September 1990 (before practices started holding funds), September 1991 (after six months' shadow fundholding), and March 1992 (after six months' real fundholding) completed a questionnaire before their consultation. The questionnaire asked them to indicate which (if any) of 17 selected marker conditions affected them and whether they were visiting the doctor about this problem today. The conditions were selected to give a broad cover of continuing health problems and to correlate with the main drug groups whose use we were studying. Four of the conditions were pain in the shoulder, pain in the neck, pain in the back, and pain in the hip. Patients ticking any of these boxes were included in the analyses reported here.

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The questionnaire also asked about current social difficulties that might be affecting health—namely housing, relationships, money, and work or unemployment. Patients were asked to indicate whether they wished to discuss any of these problems at their consultation.

In September 1990 the questionnaire also incorporated the Nottingham health profile.²¹ However, because the profile was found to be insufficiently discriminating for our purposes, it was replaced with the 12 question general health questionnaire in September 1991 and March 1992.

The time of arrival at the surgery was recorded for all patients together with their appointment time. Patients took this record into the consulting room, where the doctor noted the time the consultation started and finished. These consultations are described as the index consultations for the processes of care analyses described below. Consultations were categorised into those lasting five minutes or less (short), those lasting six to under 10 minutes, and those lasting 10 minutes or more (long).

We selected a random sample of patients who had joint pain in the three study periods for more detailed analysis of care. The sampling produced cohorts of a minimum of 200 patients with each type of pain where possible. Six months after the index consultation a team of nurses attached to the participating practices retrieved the records of the relevant patients and collected data from the index consultation and from all available clinical records covering the preceding 12 months and the subsequent three months. These 15 months are subsequently referred to as the review period. They recorded whether the pain had been noted at the index consultation or at any point in the review period. They also noted any referrals (including referrals to direct access services such as physiotherapy) or investigations (including radiography) initiated and prescriptions written for relevant drugs (analgesics and non-steroidal anti-inflammatory drugs) either at consultations or on repeat prescription. We determined the health board's charges for outpatient episodes and used these to calculate the cost per patient consulting with pain.

At the end of each consultation patients were given an enablement and satisfaction instrument to complete before they left the surgery. The questionnaire included six questions about understanding and coping with health and illness that we had found discriminating in a previous study of doctors' work and its impact on patients.¹⁶ The questionnaire also included specific questions about satisfaction with decisions to prescribe, investigate, and refer.

We decided not to recruit control practices for several reasons, the main one being our belief that test and control practices would differ in other organisational and attitudinal factors as well as whether they were part of the fundholding experiment. The absence of funding to support data collection in control practices and the unacceptability to the volunteer practices of the option of random allocation into a fundholding and a control group were other relevant issues. The practices that we used as controls in our previous study on prescribing¹³ all subsequently became second wave fundholders, confirming our view of how difficult it would have been to design a true experiment during a time of multiple change in systems of and in attitudes towards delivery of primary care. Instead we used the practices as their own controls over time.

STATISTICAL ANALYSES

Differences in results between categories and across time periods were tested for significance by the χ^2 test. Consultation lengths were compared by the *t* test. For comparisons over time we used data from September 1990 and March 1992 to give the best before and after statistics.

Results

The number of patients aged over 16 who attended the surgery was 9990 in September 1990, 8640 in September 1991, and 8736 in March 1992. The completion rate of questionnaires among those over 16 years of age for the three periods was 81% (8092), 83% (7171), and 78% (6814) respectively.

Table I shows that the proportion of patients reporting on pain in the shoulder, back, hip, or neck was constant over the three periods studied (31.4%; 31.5%; 32.8%). About half the patients with pain reported that they were visiting with these problems at the index consultation.

The proportion of patients reporting problems with one or more of the four social problems increased significantly between 1990 and 1992, from 24.7% in 1990 to 31.3% in 1992 ($P < 0.001$), but the percentage of patients with social problems who wished to discuss them at consultations remained stable (21.7% in 1990; 20.1% in 1992). Patients who reported pain were increasingly likely to report social problems (25.2% in 1990; 36.8% in 1992). The percentage of those patients who had pain and social problems who wanted to discuss their social problems with their doctor remained stable at around 22%.

Table II shows the mean length of consultations and the distribution of short, medium, and long consultations. For patients with pain only mean consultation lengths remained the same (7.6 minutes) and the distribution of consultation lengths remained stable. For patients with pain and a social problem that they did not wish to discuss, however, the proportion of short consultations increased significantly ($P < 0.03$).

TABLE I—Numbers (percentages) of patients reporting pain and social problems

	1990 (n=8092)	1991 (n=7171)	1992 (n=6814)	P value (1990v1992)
Patients reporting one or more pain conditions	2544 (31.4)	2257 (31.5)	2232 (32.8)	0.09
Shoulder	882 (10.9)	746 (10.4)	845 (12.4)	<0.004
Back	1659 (20.5)	1420 (19.8)	1390 (20.4)	0.86
Hip	636 (9.1)	724 (10.1)	675 (9.9)	0.12
Neck	947 (11.7)	825 (11.5)	845 (12.4)	0.19
Patients visiting with one or more pain conditions	1253 (15.5)	1013 (14.1)	1005 (14.7)	0.21
Shoulder	397 (4.9)	294 (4.1)	348 (5.1)	0.61
Back	761 (9.4)	595 (8.3)	600 (8.8)	0.29
Hip	348 (4.3)	308 (4.3)	286 (4.2)	0.63
Neck	413 (5.1)	301 (4.2)	327 (4.8)	0.53
Patients reporting one or more social problems	1996 (24.7)	2241 (31.3)	2134 (31.3)	<0.001
Family	1060 (13.1)	1126 (15.7)	1083 (15.9)	<0.001
Money	955 (11.8)	1061 (14.8)	1008 (14.8)	<0.001
Housing	267 (3.3)	301 (4.2)	300 (4.4)	<0.002
Work or unemployment	728 (9.0)	918 (12.8)	899 (13.2)	<0.001
Patients wishing to discuss social problems	433 (21.7)*	443 (19.8)*	430 (20.1)*	0.24
Patients visiting with pain who had social problems	316 (25.2)†	343 (33.6)‡	370 (36.8)‡	<0.001
Patients with pain and social problems they wished to discuss	74 (23.4)‡	79 (23.0)‡	80 (21.6)‡	0.53

*Percentage of those with social problems.

†Percentage of those visiting with pain.

‡Percentage of those visiting with pain who had social problems.

TABLE II—Length of consultation for patients visiting for pain

	<5 min	5-9 min	≥ 10 min	Mean	95% Confidence interval
No (%) visiting in 1990 (n=1187):	205 (17.3)	691 (58.2)	291 (24.5)	7.6	7.4 to 7.8
Pain only (n=886)	161 (18.2)	508 (57.3)	217 (24.5)	7.6	7.4 to 7.8
Plus social problem (n=230)	37 (16.1)	142 (61.7)	51 (22.2)	7.4	7.0 to 7.8
Plus social problem wish to discuss (n=71)	7 (9.9)	41 (57.8)	23 (32.4)	8.5	7.6 to 9.4
P values:					
Pain only v plus social problem	0.46	0.23	0.46	0.31	
Pain only v plus social problem wish to discuss	0.08	0.95	0.14	0.08	
Plus social problem v plus problem wish to discuss	0.19	0.57	0.08	0.03	
No (%) visiting in 1992 (n=994):	175 (18.5)	524 (55.5)	245 (26.0)	7.7	7.4 to 8.0
Pain only (n=603)	104 (17.2)	340 (56.4)	159 (26.4)	7.6	7.3 to 7.9
Plus social problem (n=270)	65 (24.1)	153 (56.7)	52 (19.3)	7.2	6.7 to 7.7
Plus social problem wish to discuss (n=71)	6 (8.5)	31 (43.7)	34 (47.9)	10.4	9.0 to 11.8
P values:					
Pain only v plus social problem	0.02	0.94	0.02	0.17	
Pain only v plus social problem wish to discuss	0.06	0.04	0.0002	0.001	
Plus social problem v plus problem wish to discuss	0.004	0.05	0.0001	0.001	
P values for 1990 v 1992:					
Pain only	0.65	0.71	0.41	0.98	
Plus social problem	0.03	0.25	0.42	0.65	
Plus social problem wish to discuss	0.77	0.09	0.06	0.02	

TABLE III—Analysis of general health questionnaire score for patients with pain in 1991 and 1992

Score	No (%) with social problems*			No (%) with consultation time*				Mean consultation time
	None	≥ 1	Total	<5 min	5-9 min	≥ 10 min	Total	
0	573 (82.6)	121 (17.4)	694	150 (22.6)	397 (59.8)	117 (17.6)	664	7.0
1-4	399 (59.6)	270 (40.4)	669	117 (18.5)	350 (55.3)	166 (26.2)	633	7.6
≥ 5	145 (34.9)	270 (65.1)	415	49 (12.5)	201 (51.1)	143 (36.4)	393	8.7

Patients with social problems that they did wish to discuss had longer mean consultation times in both years (8.5 minutes in 1990 ($P < 0.03$) and 10.4 minutes in 1992 ($P < 0.001$)). The length increased significantly in 1992 compared with 1990 ($P < 0.02$). These increases in mean consultation length for patients wishing to discuss their social problems were associated with fewer short consultations and progressively more long consultations in 1990 and 1992.

Because we did not have comparable data on psychological wellbeing for all three study periods, we analysed the data on social problems and from the general health questionnaire for only 1991 and 1992. Patients who had social problems were more likely to have a general health questionnaire score of 5 or more (table III), and these patients had significantly more long consultations than did those with lower scores ($P < 0.001$).

Table IV presents the results of the examination of medical records for patients visiting with one or more joint pains. The percentage of patients reporting joint pain who had it noted in their medical records over the review period was 69.8% in 1990, but fell to only 61% in 1992 ($P < 0.001$).

Prescriptions for analgesics or non-steroidal anti-inflammatory drugs were issued at 19.8%, 19.6%, and 15.7% of index consultations in 1990, 1991, and 1992 respectively. However, a further 28.4%, 40.6%, and 30.8% of patients were already taking these or other similar drugs at the time of consultation, and a smaller proportion subsequently received these drugs. The proportion of all patients taking pain relief thus did not differ significantly between the first and last study period (52.9% v 49.6%; $P = 0.19$).

Investigations were initiated at 10%, 7%, and 6.9% of index consultations in 1990, 1991, and 1992 respectively, and the proportion having investigations during the 15 month review period (over 90% of which were radiography) fell from 30.7% to 28% to 24.1% ($P < 0.002$).

Referrals were made at 4.4%, 3.7%, and 2.8% of index consultations. The number of patients not referred at the index consultation but who attended outpatients (including physiotherapy) at any time during the review period dropped substantially over the three periods—164 (22.0%), 73 (12.8%); 72 (7.3%); $P < 0.001$). With a further small reduction in additional referrals arranged after the index consultation that had not yet taken place, the cumulative referral rates across the three periods became 31.1%, 21.1%, and 13.3% ($P < 0.001$).

The box gives the health board costs for the levels of referral to either hospital outpatients or direct access services or radiology services reported in table IV for the first and last study periods. It suggests a saving in hospital services between the two periods of £27 per

TABLE IV—Contact rates, prescribing, referral, and investigation patterns for patients visiting with pain problems during 15 months around index consultations

	September 1989-December 1990 (n=747)	September 1990-December 1991 (n=571)	March 1991-June 1992 (n=992)	P value*
No (%) who had pain noted	522 (69.8)	436 (78.6)	656 (61.0)	<0.001
At index consultation	418 (56.0)	360 (63.0)	456 (46.0)	<0.001
During review period	103 (13.8)	89 (15.6)	149 (15.0)	0.47
No (%) prescribed analgesics or anti-inflammatory drugs	395 (52.9)	360 (63.0)	493 (49.6)	0.19
At consultation	148 (19.8)	112 (19.6)	156 (15.7)	<0.03
Already taking	107 (14.3)	107 (18.7)	166 (16.7)	0.17
Given subsequently	35 (4.7)	16 (2.8)	31 (3.1)	0.09
Taking other relevant drug	105 (14.1)	125 (21.9)	140 (14.1)	0.97
No (%) investigated:	230 (30.7)	160 (28.1)	239 (24.1)	<0.002
At consultation	75 (10.0)	40 (7.0)	68 (6.9)	<0.02
Test already done	125 (16.7)	98 (17.2)	136 (13.7)	0.08
Test done subsequently	30 (4.0)	22 (3.9)	35 (3.5)	0.59
No (%) referred:	232 (31.1)	120 (21.1)	132 (13.3)	<0.001
At consultation	33 (4.4)	21 (3.7)	28 (2.8)	0.07
Already referred	164 (22.0)	73 (12.8)	72 (7.3)	<0.001
Subsequent referral	35 (4.7)	26 (4.6)	2 (3.2)	0.12

*September 1989-December 1990 v March 1991-June 1992.

patient presenting with pain. In a practice of 10 000 with 8500 aged over 16, 66% of whom consulted during any one year, there would be 5610 consultants. If our finding of 15% prevalence of pain was repeated, 841 patients would be attending with pain, and a possible saving of £22 700 ($841 \times £27$) would have resulted between 1990 and 1992.

PATIENT ENABLEMENT AND SATISFACTION

Table V presents analyses of the three possible responses (much better, better, same or less) to the six general (enablement) questions relating to understanding of and ability to cope with health and illness. For all six questions the percentage of patients responding to the much better option fell significantly ($P < 0.005$) between 1990 and 1992, the biggest fall being between 1990 and 1991. In four of the dimensions this was matched by a rise in the better category of response. Responses to the same or less category rose significantly ($P < 0.04$) for ability to help yourself.

Table VI shows the social problems and length of consultation for those patients responding better and much better in 1990-2. Because the numbers available for study are small at this level of analysis, data from the three years of the study have been combined. Significant differences between enablement scores for short and long consultations occurred in four of the six dimensions for patients with social problems.

Only 8.6% (85), 7.6% (75), 8.8% (87) of patients responded that they were dissatisfied or very dissatisfied

TABLE V—Responses to six questions on enablement in patients visiting with pain in 1990, 1991, and 1992. P values are for comparisons between 1990 and 1992

	Much better		Better		Same or less	
	No (%)	95% Confidence interval	No (%)	95% Confidence interval	No (%)	95% Confidence interval
Able to cope with life:						
1990 (n=941)	121 (12.9)	10.8 to 15.0	260 (27.6)	24.7 to 30.5	560 (59.5)	56.4 to 62.6
1991 (n=816)	88 (10.8)	8.7 to 12.9	259 (31.7)	28.5 to 34.9	469 (57.5)	54.1 to 60.9
1992 (n=756)	65 (8.6)	6.6 to 10.6	249 (32.9)	29.6 to 36.2	442 (58.5)	55.0 to 62.0
P value	< 0.005		< 0.018		0.66	
Able to understand your illness:						
1990 (n=965)	228 (23.6)	20.9 to 26.3	344 (35.6)	32.6 to 38.6	393 (40.7)	37.6 to 43.8
1991 (n=815)	148 (18.2)	15.6 to 20.8	336 (41.2)	37.8 to 44.6	331 (40.6)	37.2 to 44.0
1992 (n=770)	133 (17.3)	14.6 to 20.0	310 (40.3)	36.8 to 43.8	327 (42.5)	39.0 to 46.0
P value	< 0.001		< 0.049		0.46	
Able to cope with your illness:						
1990 (n=955)	198 (20.7)	18.1 to 23.3	310 (32.5)	29.5 to 35.5	447 (46.8)	43.6 to 60.0
1991 (n=814)	135 (16.6)	14.0 to 19.2	315 (38.7)	35.4 to 42.0	364 (44.7)	41.3 to 48.1
1992 (n=768)	108 (14.1)	11.6 to 16.6	305 (39.7)	36.2 to 43.2	335 (46.2)	42.7 to 49.7
P value	< 0.001		< 0.002		0.81	
Able to keep yourself healthy:						
1990 (n=944)	187 (19.8)	17.3 to 22.3	260 (27.5)	24.7 to 30.3	497 (52.6)	49.4 to 55.8
1991 (n=804)	105 (13.1)	10.8 to 15.4	252 (31.3)	28.1 to 34.5	447 (55.6)	52.2 to 59.0
1992 (n=751)	94 (12.5)	10.1 to 14.9	262 (34.9)	31.5 to 38.3	395 (52.6)	49.0 to 56.2
P value	< 0.001		< 0.001		0.98	
Confident about your health:						
1990 (n=990)	172 (17.4)	15.0 to 19.8	263 (26.6)	23.8 to 29.4	555 (56.1)	53.0 to 59.2
1991 (n=824)	92 (11.2)	9.0 to 13.4	222 (26.9)	23.9 to 29.9	510 (61.9)	58.6 to 65.2
1992 (n=784)	84 (10.7)	8.5 to 12.9	228 (29.1)	25.9 to 32.3	472 (60.2)	56.8 to 63.3
P value	< 0.001		0.24		0.08	
Able to help yourself:						
1990 (n=973)	172 (17.7)	15.3 to 20.1	292 (30.0)	27.1 to 32.9	509 (52.3)	49.2 to 55.4
1881 (n=829)	88 (10.6)	8.5 to 12.7	251 (30.3)	27.2 to 33.4	490 (59.1)	55.8 to 62.4
1992 (n=778)	85 (10.9)	8.7 to 13.1	248 (31.9)	28.6 to 35.2	444 (57.1)	53.7 to 60.7
P value	< 0.001		0.40		< 0.04	

TABLE VI—Responses of better or much better to questions on enablement in patients visiting with pain during 1990-2 by length of consultation and social problems

	Short consultations (< 5 min)				Long consultations (≥ 10 min)				P value (short v long consultations in patients with social problems)*
	Social problems		No social problems		Social problems		No social problems		
	No (%) (n=144)	95% Confidence interval	No (%) (n=320)	95% Confidence interval	No (%) (n=213)	95% Confidence interval	No (%) (n=429)	95% Confidence interval	
Able to cope with life	40 (28)	21% to 35%	115 (36)	31% to 41%	104 (49)	42% to 56	180 (42)	37% to 47%	0.0002
Able to understand your illness	66 (46)	38% to 54%	179 (56)	51% to 61%	130 (61)	54% to 68%	262 (61)	56% to 66%	0.008
Able to cope with your illness	66 (46)	38% to 54%	163 (51)	46% to 56%	130 (61)	54% to 68%	232 (54)	49% to 59%	0.005
Able to keep yourself healthy	55 (38)	30% to 46%	141 (44)	39% to 49%	102 (48)	41% to 55%	202 (47)	42% to 52%	0.08
Confident about your health	49 (34)	26% to 42%	138 (43)	38% to 48%	94 (44)	37% to 51%	180 (42)	37% to 47%	0.05
Able to help yourself	58 (40)	32% to 48%	147 (46)	41% to 51%	96 (45)	38% to 52%	184 (43)	38% to 48%	0.41

*All other comparisons between groups gave no significant results.

Annual costs of treating patients with pain in 1990 and 1992

Health board prices (1992)	
Orthopaedic outpatient referral	£ 245
Physiotherapy outpatient referral	£ 119
Spine radiography	£ 13
Costs per 100 patients with pain in 1990	
Referral	£4513
Investigation	£ 322
	£4835
Cost per 100 patients with pain in 1992	
Referral	£1893
Investigation	£ 246
	£2139
Saving for 100 patients = £2696	
= £27/patient.	

Calculations based on activity levels in table IV, assuming referrals equally divided between orthopaedics and physiotherapy and all investigations for radiography of spine. Because activity figures were based on 15 month surveys, all figures are reduced proportionately to give one year values.

with decisions to prescribe, investigate, and refer respectively in 1990. This number remained relatively stable throughout the study (8.8% (69), 6.5% (51), 6.3% (49) in 1992). Around 4.5% of patients felt the doctor could have done something to make them more satisfied across the three time periods; about one third of patients felt that "care was, on the whole, getting better."

Discussion

Although quality has been measured against agreed outcomes in several well defined clinical activities in general practice (for example, asthma, hypertension, diabetes) no agreed package of instruments is available for measuring outcome in relation to need across all primary care consultations. Previous studies have used patient satisfaction questionnaires or measured prescribing and referral levels or lengths of consultations as proxies for quality but generally in isolation and without reference to patients' needs. In addition, most studies of general practice are based on single consultations and do not place these in the context of either whole episodes or whole illnesses, where episodes are recurrent. Furthermore, the entry point to studies is generally based on doctors' statements or perceptions of need, most of which conform to the medical model of illness and rarely incorporate the patient's position.

We asked doctors to recruit consecutive patients seen at routine surgery consultations either for two

weeks or for up to 250 consultations in each data collection period, and we have to assume that these patients reflect comparable cohorts. The small reduction in numbers each year reflected the tendency of doctors to elect for the shorter of the options available after the first year of the study. The prevalence of painful conditions remained constant over the three periods. The number of patients with pain who had social problems, however, rose significantly, although the proportion of patients who wished to discuss these problems at consultations remained stable. Patients with greater social needs had significantly higher general health questionnaire scores.

LENGTH OF CONSULTATION

The overall quality of care for patients with pain as measured by length of consultation was the same throughout the study. Doctors gave longer consultations to patients who had social problems that they wished to discuss at consultations, and this trend was stronger in 1992 than in 1990. However, for patients with social problems that they did not wish to discuss the mean length of consultation fell with time and the number of short consultations increased significantly.

Because we changed from the Nottingham health profile to the general health questionnaire during the study, we were unable to categorise our populations by psychological need. However, given the correlation between social problems and high general health questionnaire scores (table III) it seems reasonable to assume that the term "social problems" can be regarded as embracing psychosocial need more generally. This view is supported by the fact that mean consultation lengths and the frequency of long consultations both rose as general health questionnaire scores rose.

INVESTIGATION, REFERRAL, AND TREATMENT

The records of random samples of patients were reviewed to determine the care given during 15 months around the index consultation. The main limitation of this method is the assumption that the clinical record reflects the processes that had taken place at the consultations recorded. The quality of record keeping is unlikely to have deteriorated across the three years since the general trend was towards improving the quality of information available.

The numbers of patients with pain who had investigations carried out or who attended outpatients or had referrals fell significantly between 1990 and 1992. We have no evidence to show whether these reductions in volume of clinical activity are good or bad.

The number of patients receiving relevant drugs remained constant. We did, however, originally focus on patients with pain because we had noted a 22% fall in volume of non-steroid anti-inflammatory drugs over the study period. However, the prescribing data are not patient linked and we cannot comment on whether the fall in volume reflects fewer drugs for patients with long term problems, fewer for short term needs, or more purchasing of over the counter remedies.

OUTCOMES

We built the enablement and satisfaction instrument using our experience with a similar instrument. We separated questions and responses into those which related to patients' ability to understand or to cope with health and illness (which we have described as being about enablement) and those relating to more conventional satisfaction with clinical decisions that have been taken.

We noted shorter consultation time for patients with social problems and an overall decrease in patient enablement in 1992 compared with 1990, and tried to explore the possibility of a causal relation between these findings. However, the absolute numbers of

Practice implications

- Little is known about the effect of fundholding on quality of care and satisfaction of patients
- In this study of patients presenting with joint pain the mean consultation time and the proportion prescribed pain relieving drugs remained constant from 1990-2
- The proportion of patients investigated or referred to hospital fell significantly
- Enablement of patients also fell, and was lower in patients with social problems who received shorter consultations
- Further research is needed to establish the effect of these changes

patients in separate needs, consultation length, and outcome categories for each year became too small to allow satisfactory analysis. We therefore amalgamated the data for all three periods, and table VI shows that for patients with social problems longer consultations had significant benefits over shorter ones.

The costing exercise shown in the box reflects an early position in the evolution of fundholding. At the time the work was carried out, the practices were not yet in a position to use potential or actual savings and had not considered instituting practice based physiotherapy or consultant services.

IMPLICATIONS

This paper describes a series of methods for measuring quality of care which start from patients' perceptions of health and illness, assess information collected over time as well as at a single point, and measure outcome in terms that include measures of behaviour (understanding and ability to cope). We believe that these methods could be used in other work investigating the quality of primary care for patients with continuing health problems.

Pain is an important and common problem but our results suggest that quality of care in terms of length of consultation for patients with pain has been broadly maintained since the 1990 contract and general practice fundholding were introduced. Where social problems coexist the position is less clear. Patients expressing a wish to discuss social problems received longer than average consultations whereas those not wishing to discuss them received shorter than average consultations. The general shift in response from "much better" to "better" in the enablement questions confirms previous work.⁶ The apparent association between social need and better enablement from longer consultations (table VI) suggests a need for further work to explore the extent to which patients' expressed wishes and actual needs are different.

Decreases in the activities of investigation and referral have resulted in savings in hospital costs to the practices. Although we found a decrease in volume of prescribing in our previous study, there was no decrease in the number of patients receiving relevant prescriptions in this study. The decrease may have been due to reductions in the amount prescribed for short term treatments.

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ANY QUESTIONS

Is sleeping with your mouth open harmful? Is there any treatment?

The nose is the usual route of breathing in adults and infants while awake and during sleep. This ensures that the inspire is filtered, warmed, and humidified. Even when the mouth is open breathing occurs mainly through the nose during sleep, as the tongue tends to occlude the oral airway partially or completely by resting against the soft palate. A study of the breathing route during sleep showed that men breathe more through the mouth than women (29% v 5%), and no one breathed solely through the mouth.¹ Breathing through the mouth during sleep tends to increase with age in men but not women.

The mouth functions as a supplemental respiratory passage when nasal resistance is increased, as may occur during an upper respiratory tract infection or an episode of allergic rhinitis. In this situation the switch from nose to mouth breathing is often accompanied by frequent arousals from sleep, which reduce the quality of sleep.² A consequence of sleeping with the mouth open is that the configuration of the pharynx is narrowed by posterior displacement of the suprahoid structures. This may increase a tendency to upper airway obstruction, and apnoeic episodes are commoner in men who breathe through the mouth. An additional contributory factor may be that nasal flow and pressure receptors are bypassed—these probably have a role in regulating ventilation and lung volumes in sleep.

It is a common observation in sleep laboratory studies that many people sleep with their mouth partly open, particularly during rapid eye movement sleep. A reduction in the efficiency of filtration, warming, and humidification of the inspired air is unlikely to be harmful in normal circumstances as some ventilation will always occur through the nose, and air cleansing plus thermal exchange processes take place throughout the large airways. There is a theoretical risk in a heavily polluted or very cold environment, especially in people with asthma. The importance of the air conditioning properties of the nose in people with asthma is shown by the fact that during exercise inhalation of unconditioned air through the mouth produces bronchoconstriction, which is largely avoided if the person can maintain nasal breathing.³ The relevance of this finding to people with asthma who breathe through the mouth during sleep is unclear, although rhinitis is obviously more common in this group.

There is no specific treatment for people who breathe through the mouth or who sleep with their mouth open. When nasal blockage is a problem, however, treatment aimed at relieving this—for example, decongestants during an upper respiratory tract infection, nasal steroid treatment for rhinitis, removal of nasal polyps, etc—will often prove helpful and may improve sleep quality.—A K SIMONDS, consultant in respiratory medicine, London

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Is a 10 year old boy who is allergic to peanuts likely to be allergic to other nuts, such as walnuts and hazelnuts?

Children who have an allergy to peanuts are no more likely to be allergic to tree nuts than any other person with an allergy. Peanuts are more closely related to legumes than to tree nuts. From the patient's point of view the answer is not quite so simple. Peanuts are used extensively in the food industry, and there is appreciable potential for cross contamination in association with other nuts.

American studies suggest that peanuts come third in the league table of food allergens after milk and egg.¹ But deaths due to anaphylaxis induced by food are most commonly associated with peanuts.² Sensitivity to peanuts appears early in life and for most patients is a lifelong problem. A 16 year follow up of 32 patients who were allergic to peanuts showed no loss of clinical sensitivity despite attempts at avoidance. Seventy five per cent of the patients had, however, inadvertently ingested peanuts over a five year period.³ Peanut allergens have been identified in non-peanut foodstuffs manufactured in common processing equipment owing to cross contamination as a result of inadequate cleaning.⁴ Peanut oils are used extensively in infant milk formulas⁵ and vitamin preparations.⁶

It would be sensible for any person who has a moderate or severe reaction to peanuts to be referred to an allergy clinic initially for skin prick testing and IgE antibody measurements to confirm that the allergy is truly to peanuts; it would then be possible to check whether tree nuts were likely allergens. Patients and their parents need to be armed with appropriate rescue treatment, which normally includes both inhalable and injectable adrenaline. If patients are shown to be allergic to peanuts alone they should be advised to avoid all other nuts unless they remove them from the shells themselves. This will avoid the possibility of cross contamination.—J O WARNER, professor of child health, University of Southampton

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