

# The clinical course of shoulder pain: prospective cohort study in primary care

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Current knowledge of the clinical course and efficacy of treatment for shoulder pain comes mainly from studies of hospital patients. However, only a few patients experiencing such pain require referral to a specialist. Although shoulder pain is common in the general population, the outcome of patients presenting in general practice is unknown.<sup>1</sup> We conducted a prospective cohort study to determine the outcome of shoulder pain in primary care.

## Methods and results

Twelve general practitioners recruited 166 patients who consulted with a new episode of shoulder pain during one year. They recorded demographic information, diagnosis, management, and an assessment of passive elevation of the shoulder; patients assessed the disability associated with their symptoms with a validated 22 item disability questionnaire.<sup>2</sup> To assess outcome, identical disability questionnaires were sent to patients six and 18 months after consultation, together with a question measuring self assessed change in symptoms in the intervening period.

A total of 125 (75%) patients provided follow up information at six months and 95 (57%) at 18 months.

**Table 1—Positive responses to 22 items of disability questionnaire at baseline and follow up. Values are numbers (percentages)**

Problems due to shoulder pain*	Baseline (n = 125)†	6 Month follow up (n = 125)	18 Month follow up (n = 95)
<b>Sleeping problems</b>			
Change position in bed frequently	104 (86)	60 (49)	33 (42)
Sleep less well	103 (84)	61 (49)	44 (43)
Cannot lie on right side	74 (62)	27 (23)	18 (22)
Cannot lie on left side	45 (38)	14 (12)	16 (21)
<b>Physical problems</b>			
Problems moving arm or hand	101 (85)	53 (44)	24(30)
Able to do fewer jobs around the house	88 (74)	52 (43)	13 (17)
Cut down on sports	52 (46)	28 (23)	22 (30)
Less physical recreation	40 (36)	18 (15)	13 (18)
Don't carry shopping	40 (34)	16 (13)	16 (21)
<b>Problems dressing</b>			
Dress more slowly	89 (74)	44 (36)	3 (29)
Problems putting on jersey	88 (73)	44 (36)	23 (28)
Problems fastening clothes	77 (63)	36 (29)	25 (31)
<b>Psychological symptoms</b>			
More irritable	54 (45)	26 (21)	15 (19)
Rest more often	43 (36)	15 (13)	16 (21)
More minor accidents	38 (32)	22 (18)	18 (23)
Worse appetite	11 (9)	2 (2)	3 (4)
<b>Dependency</b>			
Problems bathing self	31 (26)	9 (8)	6 (7)
Need others' help	29 (25)	10 (8)	7 (9)
Trouble writing	21 (18)	9 (7)	6 (8)
Dress with help	18 (15)	4 (3)	3 (4)
Stay at home more	12 (10)	1 (1)	0

Percentages vary because of some spoiled answers.

\*Disability items broadly grouped according to status in functional limitations profile.<sup>3</sup>

†Responses at baseline of those who responded at 6 months.

There were no differences in markers of severity of disease at baseline in these patients and non-responders.

At consultation, patients reported considerable disability, typically scoring positive on half of the 22 disability items (table 1). Injection was a common treatment (58%), capsulitis was the most common diagnosis (39%), and almost one quarter (22%) of patients reported a previous episode of shoulder pain.

After six months, self reported disability had improved (mean difference in disability scores, 4.1; 95% confidence interval 2.8 to 5.3). The most frequently reported disability items were the same as those at baseline (table 1). Only 21% of patients reported complete recovery.

A baseline disability score above the median value of 10, a duration of symptoms greater than a month, having received an injection at consultation, and having had shoulder pain in the past were significantly associated with poorer outcome at six months ( $P < 0.05$ , Wilcoxon rank sum test for equality of medians). Patients who had severely restricted passive elevation at baseline (less than 101°) also had a poorer outcome at six months.

After 18 months the disability score had further decreased (mean difference 4.0; 2.5 to 5.4), although only 49% of patients reported complete recovery.

## Comment

The assumption that shoulder problems are short lived, isolated episodes<sup>3</sup> is not supported by data here, which show that a quarter of patients with a new episode recall a previous problem; such a history influences the outcome of the new episode; and only one in five of these new episodes resolved completely six months later and half had not resolved after 18 months. These findings in a cohort of general practice consultants with shoulder pain parallel the findings of Hazleman *et al* from an elderly community sample that most shoulder disorders were still causing problems three years later.<sup>4</sup>

The recruiting practitioners in our study were asked to include all patients with new episodes of shoulder pain. This was not verified independently, so our findings may not reflect the full range of episodes presented in primary care. The practices were therefore stratified into three groups according to the number of patients recruited. Baseline characteristics of patients in the three groups did not differ; this argues against selection bias.

The poorer outcome at six months in those who were given an injection may reflect the more severe baseline symptoms in this group (at consultation they reported having had their symptoms for longer and had a lower angle of passive elevation). However, this finding does question the effectiveness of injections in reducing longer term morbidity.

The finding that the duration of the symptom influences outcome may reflect an adverse consequence of delay in presentation. It is not known whether encouragement to attend a doctor and to receive treatment early in an episode might improve the longer term outcome and reduce the incidence of chronic shoulder problems.

Members of the group who participated in the study were Drs Penny Aeberhard, Martin Allen, Robert Curzon, Ahmet Fuat, Roger Gadsby, Iain Gilchrist, Sally Hull, the late Andrew Martynoga, Ian Robertson, Keith Slinger, Owen Thurtle, Andrew Watson, and David Wheeler. We are grateful to Rita Boswell and Lesley Jordan for their help with the study.

Funding: Arthritis and Rheumatism Council.  
Conflict of interest: None.

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BMJ 1996;313:601-2

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(Accepted 16 May 1996)

## New referrals, a decreasing phenomenon in 1971-94: analysis of registry data in the Netherlands

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Referrals to secondary care are an important but incompletely understood feature of general practice,<sup>1</sup> particularly in health care systems where general practitioners are gatekeepers to secondary care. In the Netherlands from 1971 to 1994 the number of medical specialists increased by 128%, from 5909 to about 13 500, the number of general practitioners by 56%, from 4504 to 7013, and the population by 16%, from 13.3 to 15.5 million. The influence of such powerful external factors would suggest that the number of referrals should also have increased over that time. To test this hypothesis we assessed the mean referral rates in 1971-94 in relation to the incidence of new episodes of illness in the same population.

### Methods and results

We calculated mean referrals and total numbers of new episodes of illness in five periods, standardised for age (in 10 year age categories) and sex distribution of the population in the period 1971-5. Clinical specialties were grouped as: surgical (general surgery, orthopaedics, urology, gynaecology, reconstructive surgery, cardiovascular surgery, neurosurgery, paediatric surgery, oral surgery); senses and skin (otorhinolaryngology, ophthalmology, dermatology); internal medicine (general internal medicine, cardiology, respiratory medicine, rheumatology, gastroenterology, haematology, nephrology, endocrinology); and other (paediatrics, neurology, psychiatry, radiotherapy, rehabilitation medicine, geriatrics, anaesthesiology).

The data were taken from the continuous morbidity registration system in Nijmegen, which has been collecting data from four general practices since 1971. The practices' population of about 12 000 patients is stable (annual turnover of about 5%) and compares well with the Dutch population for age and sex. The recorded data have passed stringent quality controls<sup>2</sup>

and are consistent over the years of registration.<sup>3-5</sup> We used new referrals (not repeat referrals), being the first referral of a patient to a clinical specialty during an episode of an illness. We did not include second opinions, referrals by one specialist to another, or a second referral to the same specialty for the same episode of illness.

The standardised overall rate of referrals amounted to 127.8 per 1000 patient years. Almost half were to the surgical specialties, 30% to senses and skin, 13% to internal medicine, and 10% to other specialties. Together the specialties of general surgery, otorhinolaryngology, ophthalmology, and gynaecology accounted for over half of all referrals. Table 1 shows an overall decrease of referrals of 32% (36% for the surgical specialties, 30% for senses and skin, 15% for internal medicine, 9% for other specialties) from 1971-5 to 1991-4. Most of this decrease was observed between 1971 and 1985 with stabilisation between 1986 and 1994. In the five periods between 1971 and 1994 the number of new episodes were, respectively, 1710, 1939, 1694, 1919, and 1908 per 1000 patient years.

### Comment

Over 24 years we found a 32% decrease in the rate of new referrals in a stable population, without major changes in the incidence of new episodes of illness during 24 years. New referrals obviously can be influenced by general practitioners. The decrease probably points to a more effective primary care.

Funding: None.

Conflict of interest: None.

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(Accepted 3 June 1996)

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BMJ 1996;313:602

Table 1—Trends for new referrals. Numbers per 1000 patient years

	1971-5	1976-80	1981-5	1986-90	1991-4	Total
Surgery	76.8	73.7	52.5	51.8	49.5	61.2
Senses and skin	48.8	42.7	30.3	30.2	34.1	37.3
Internal medicine	20.1	17.0	15.0	15.4	17.0	16.9
Other	15.2	15.2	12.9	13.5	13.9	14.2
Total (raw) and 95% confidence interval	160.9 (157.7 to 164.1)	148.6 (145.5 to 151.8)	110.8 (108.1 to 113.5)	110.9 (108.3 to 113.6)	114.5 (111.4 to 117.5)	129.6 (128.3 to 130.9)
Total (standardised) and 95% confidence interval	160.9 (157.7 to 164.1)	148.2 (145.0 to 151.3)	109.2 (106.5 to 111.9)	107.8 (105.1 to 110.5)	108.4 (105.4 to 111.5)	127.8 (126.5 to 129.2)