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## Anterior knee pain: a long-term follow-up

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**Objective.** To assess the long-term outcome of anterior knee pain diagnosed in childhood.

**Method.** Forty-eight patients diagnosed with anterior knee pain in childhood were contacted by postal questionnaire 4–18 yr after initial presentation.

**Results.** The 22 respondents comprised 16 women and six men, with mean age at follow-up of 22 yr. Twenty of 22 (91%) still had knee pains, eight daily, two weekly and 10 occasionally. In 10 (45%) the pain affected their daily life and in eight (36%) it restricted their physical activities. Twelve (54%) used painkillers. Ten (45%) had developed other diagnoses: four had psoriasis and six arthritis, of whom one had ankylosing spondylitis. Fifteen (68%) had symptoms in other joints at follow-up.

**Conclusion.** These results suggest that anterior knee pain that occurs in childhood may not be so benign a condition as thought.

KEY WORDS: Anterior knee pain, Children, Young adults, Outcome.

Musculoskeletal complaints account for 6.1% of primary paediatric clinic visits, and knee pains account for 33% of these complaints [1]. Hypermobility of the knee joints [2] and growth-related factors unique to the adolescent age group may play an important role in the epidemiology and management of anterior knee pain [3]. This condition is generally regarded as self-limited and the prognosis given to the patients is good.

This is a cross-sectional study assessing the long-term outcome of anterior knee pain diagnosed in childhood.

### Method

We sent postal questionnaires to all patients who were diagnosed as having anterior knee pain and who attended the regional clinic of the Department of Paediatric Rheumatology at Booth Hall Children's Hospital and St Mary's Hospital, Manchester between 1977 and 1991. The questionnaires were sent to the patients 4–18 yr after their initial presentation, explaining the aim of the study and inviting them to respond and return the questionnaire in the prepaid envelope. We chased the non-responders twice with a letter. The patients were not seen or examined as part of the study.

### Results

We contacted 48 patients, 36 female and 12 male. Twenty-two of them replied (46% response rate); 16 (44% response rate) were female and six (50% response rate) male. The remainder were not contactable, but there were no features (i.e. sex, age and severity of anterior knee pain at presentation in the clinic of these patients) to suggest they were different from the group as a whole. Tables 1–3 give the results in absolute numbers for the men and women separately. Statistical analysis was not used because of the small numbers of participants in the study.

The mean age at first diagnosis was 10.5 yr; for the women it was 10.4 yr (range 9–13) and for the men 10.8 yr (range 8–13). The mean age at follow-up was 22 yr; for the women it was 22.3 yr (range 15–30) and for the men 22.6 yr (range 19–25). Table 1 shows the participants' current status regarding the occurrence of knee pain, participation in sports and association of knee pain with physical activity. Ninety-one per cent of the patients were still having knee pains at follow-up. The

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TABLE 1. Current status of the respondents

	Women	Men	Total
No. of patients	16	6	22
Knee pains at follow-up	15	5	20 (91%)
Daily	5	3	8
Weekly	1	1	2
Occasionally	9	1	10
Pain worse at night	5	1	6
Pain day and night	10	3	13
Pain after physical activity			
Always	4	2	6
Sometimes	10	3	13
Never	2	1	3
Physical activity			
Taking part in sports	12	5	17
Taking part in competitive sports	2	2	4
Physical activities restricted	6	2	8
Daily life affected	7	3	10
Job plans affected	1	3	4

TABLE 2. Medical care of the respondents at the time of the follow-up and treatments used (often in combination)

	Women	Men	Total
No. of patients	16	6	22
No current medical attendance	14	3	17
Seeing general practitioner	2	2	4
Seeing hospital doctor	2	1	3
Seeing a herbalist		1	1
Treatments used currently			
Painkillers	9	3	12
Exercise	5	2	7
Physiotherapy	4	2	6
Strapping	4	1	5
Ultrasound		2	2
Alternative medicine	2	1	3
None	2		2

comments of the respondents on effects on their daily life were that they could not sleep, were irritable, had a limp or restricted movements, tiredness at work, stiffness, or were unable to do sports. One woman reported that she was unable to work because of the knee pains; the other 15 of the 16 women who responded reported that the knee pains did not affect their job plans. On the other hand, two men stopped working and a further one found it difficult to sit down all day due to stiffness. Only three out of the six men reported that the knee pains did not affect their job plans. Eight people were restricting their physical activities, for example stopping running, dancing or horse riding.

Table 2 shows the requirements for medical care and the treatments currently used to treat the knee pain, as well as the impairment of the respondents' life. Only four patients were not using any treatment at all. Seven patients were still under medical review. Ten of the 22 respondents stated that they had had a subsequent diagnosis. Table 3 shows the number of respondents developing other medical conditions associated with joint pains after the diagnosis of anterior knee pain. Four developed subsequently psoriasis and six arthritis;

TABLE 3. Reported diagnoses developed after the diagnosis of anterior knee pain

	Women	Men	Total
No. of patients	16	6	22
New diagnosis	7	3	10
Psoriasis	3	1	4
Arthritis	4	2	6
Symptoms in other joints at follow-up	10	5	15

the type of arthritis was not specified in five, but one of the male respondents was given the diagnosis of ankylosing spondylitis. Some, female and male, reported that they had other joints affected, such as ankles, hip, elbows, fingers, wrist and spine.

### Discussion

At long-term follow-up the majority of the respondents (91%) in the study were still having knee pains. These affected daily life in 45% of the respondents and over a third of the respondents required medication. Even if all the non-respondents were pain-free at the time of the follow-up, the percentage of the total group still having pain (42%) would be regarded as high.

In our study men seem to be more severely affected than women. Although the numbers of the responding men was small, it seems that 50% of men had daily knee pains, compared with 31% of women. Fifty per cent of the six responding men reported that the knee pain affected their job plans, compared with 6% of the women. Forty-three per cent of the women and 50% of the men reported a new diagnosis after the diagnosis of anterior knee pain. For the patients who developed subsequent psoriasis, even in retrospect there was no clinical evidence of this diagnosis at presentation.

The respondents in our study were active young people. Despite the fact that the majority did not have current medical attendance, they used a large amount of medication, indicating significant pain. It is interesting that three-quarters of the respondents exercised regularly, although they suffered from knee pain. Research showed that patients with anterior knee pain who exercised were significantly more likely to be discharged 3 months after physiotherapy treatment than non-exercised patients, and these benefits were maintained at 1 yr [4]. The results of our study make us question if this apparent response to physiotherapy is maintained in the long term.

The findings of other prognostic studies on anterior knee pain support the results of our study. A study followed up girls with idiopathic anterior knee pain in adolescence and who were treated non-operatively. At a mean follow up of 16 yr, 22% had no pain, 71% thought that their symptoms were better than at presentation, 88% used analgesics rarely or not at all, and 90% continued to have significant symptoms for up to 20 yr after presentation. No features were identified that predicted the persistence of symptoms [5].

In a follow-up of 46 patients with chronic traumatic anterior knee pain, only 4% of patients were pain-free, 68% had moderate or severe pain and 28% mild pain. Twenty per cent felt improvement, 59% were static and 17% felt they had deteriorated. The commonest clinical findings were patellofemoral crepitus (96%), local tenderness (72%) and difficulty in squatting or kneeling (72%). Few patients improve beyond 2 yr and continued improvement was unlikely. The study concluded that chronic traumatic anterior knee pain is a clinical syndrome characterized by persistent debilitating symptoms resistant to treatment [6].

In conclusion, the results of our study suggest that anterior knee pain may not be as self-limiting a condition in childhood as previously thought. More research is required to establish the natural course of the disorder and which of the patients will have persisting symptoms.

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