

# Occurrence of symptomatic knee osteoarthritis in rural Finland: a prospective follow up study

PEKKA KANNUS,<sup>1,2</sup> MARKKU JÄRVINEN,<sup>1,2</sup> HANNU KONTIALA,<sup>3</sup>  
LEENA BERGIUS,<sup>3</sup> EIJA HYSSY,<sup>3</sup> ERJA SALMINEN,<sup>3</sup> ARNA TUOMI,<sup>3</sup>  
TEPPO UNKILA,<sup>3</sup> AND ILONA VALTANEN<sup>3</sup>

*From the <sup>1</sup>Department of Clinical Sciences, University of Tampere, Tampere, Finland; <sup>2</sup>Tampere Research Station of Sports Medicine, Tampere, Finland; and <sup>3</sup>Orivesi Health Centre, Orivesi, Finland*

**SUMMARY** All visits to physicians in the Orivesi Region Federation of Municipalities for Public Health Work in Finland paid due to symptomatic osteoarthritis of the knee joint were prospectively recorded over a period of one year. Two hundred and thirty four visits were made, accounting for 0.63% of all visits. The prevalence of knee osteoarthritis was 1.11% (men 0.45%, women 1.72%), and the incidence was 0.60%. The disease occurred almost twice as often in the right knee than in the left. The study provides basic information about patients needing medical help because of symptomatic knee osteoarthritis. The results can be used as an aid to the planning of examination and treatment resources and in assessment of the need for such services.

Rheumatic diseases are one of the most common public health problems and they have become increasingly prevalent in Finland<sup>1</sup> and other industrialised countries.<sup>2-5</sup> The prevalence of osteoarthritis, especially, has increased in recent years.<sup>1,4,6</sup> According to Klaukka *et al* the prevalence of osteoarthritis in Finland increased markedly in 12 years; whereas the prevalence in 1964 was 0.7% by 1976 it had risen to 3.2%. During the same period the prevalence of rheumatoid arthritis remained constant (1.1% and 1.2%).

Epidemiological studies have not been able to show the reasons behind this noted increase in prevalence of osteoarthritis. Undoubtedly, the main reason has been the demographic shift towards older generations during the last decades, but obviously the prevalence in each age group has increased as well.<sup>1</sup> In addition, generally accepted satisfactory criteria for osteoarthritis are still lacking, and there has been variation from study to study in the criteria used to diagnose the disease.<sup>7-9</sup>

Osteoarthritis commonly affects the knee joint,<sup>10-13</sup> and the knee joint has been found to be one of the most usual targets of subjective rheumatic complaints,<sup>6</sup> especially among women.<sup>14</sup> There is, however, no reliable information available as to the

actual occurrence and nature of knee osteoarthritis and as to the extent and kind of examinations and treatment needed. This lack of reliable epidemiologic data and forecasts is an impediment to the planning of examination and treatment resources in knee arthrosis and to an evaluation of the need for such measures.

The purpose of the present prospective study was to record and analyse all visits to physicians due to symptomatic knee osteoarthritis over a period of one year, using a base population suitable in size for the purpose, in order to obtain reliable prevalence, incidence, and workload data, for the disease. The treatment already provided and the need for further specialised care were also examined.

## **Patient and methods**

The project was based at the Orivesi Region Federation of Municipalities for Public Health Work in Finland. The size of the population in the area at the time of the study was 13 700; the Federation consists of the rural municipalities of Orivesi, Juupajoki, and Längelmäki with a total land area of 1228 km<sup>2</sup>. At the time of the study 48% of the inhabitants were men and 52% women. Thirty six per cent of them were under 30, 38% between 30 and 60, and 26% over 60. As services by private practitioners or medical specialists are not available in the area the inhabitants invariably seek both

Accepted for publication 18 May 1987.

Correspondence to Dr Pekka Kannus, Department of Clinical Sciences, University of Tampere, Teiskontie 35, SF-33520, Tampere, Finland.

initial and further treatment primarily in their own community health centre. The Federation was therefore considered the best possible area for the research.

A record of visits paid due to symptomatic knee osteoarthritis to the outpatient and inpatient units of the health centre was begun by the physicians (all experienced general practitioners) of the Federation on 1 July 1985. A research form designed for the purpose was used; for each visit the data on a total of 18 variables were recorded according to coding instructions specified in advance.

The diagnosis of knee osteoarthritis was based on the patient's subjective evaluation, the clinician's objective evaluation, and an x ray examination. The standardised subjective and objective criteria<sup>7-10</sup> were pain at rest or on motion or night pain, or both; joint swelling or stiffness, or both; joint tenderness and crepitation; joint enlargement due to osteophyte outgrowths and capsular thickening; limited range of motion; and general discomfort of the affected knee. At least six of these criteria were required before acceptance in the study. An x ray confirmation of the clinical diagnosis was required for every patient and was based on the classic radiological criteria of knee osteoarthritis described by Kellgren and Lawrence,<sup>15</sup> i.e., osteophytes, joint space narrowing, subchondral sclerosis or cysts, or both, and bone remodelling. At least three of these radiological criteria had to be fulfilled, before acceptance in the study.

Recording was continued for 12 months (1 July 1985-30 June 1986). The data on the research forms were transferred to a Dec 2060 computer at the University of Tampere and the results analysed using the BMDP-82 statistical software program.<sup>16</sup>

## Results

A total of 234 visits to physicians due to symptomatic knee osteoarthritis were recorded in the area studied during one year, accounting for 0.63% of all consultations over this period. The number of patients was 152; there were thus an average of 1.5 visits per patient. The prevalence of the disease was  $152/13\ 700=1.11\%$ . Eighty two of these 152 patients were seeking medical help for their knee osteoarthritis for the first time, giving an incidence of 0.60%. The prevalence of symptomatic knee osteoarthritis for different age and sex groups is presented in Table 1. The age classification used was the same as that used by the central statistical office of Finland<sup>17</sup> and by some previous studies of knee osteoarthritis.<sup>18-22</sup> The prevalence of the disease was 0.45% for men and 1.72% for women.

The osteoarthritis affected the right knee in 40%

Table 1 Prevalence (%) of symptomatic knee osteoarthritis in rural Finland according to age and sex

Age (years)	Men	Women	All
≤44	0.02	0.13	0.08
45-54	0.90	1.10	1.00
55-64	1.04	3.35	2.44
65-74	1.01	3.51	2.81
≥75	1.97	6.31	4.55
All	0.45	1.72	1.11

of patients, the left in 22%, and both knees in 38%. The distribution of the visits over the year is shown in Fig. 1. Visits were somewhat, but not significantly, more common in the spring and summer months (April to September) than in the autumn and winter (November to March).

An x ray examination of the knee was often carried out or arranged during the visit, confirming the clinical diagnosis. Most new patients (71%) had an x ray examination at their first visit, and for the others it was arranged later on. Other further examinations were much less common; laboratory tests were needed in 6% and a diagnostic knee aspiration in 4% of the visits.

The modes of treatment most often used, are presented in Table 2. Some patients required more than one treatment, and all were recorded. The most common treatments were non-steroidal anti-inflammatory pain medication (52% of visits), various types of physical therapy (24%), thigh muscle exercise (23%), and intra-articular or intramuscular injections of glycosaminoglycan

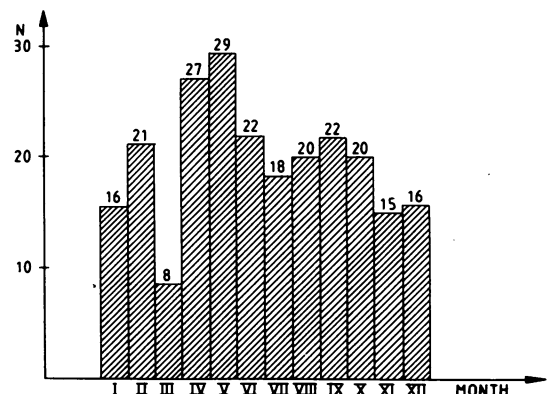


Fig. 1 Monthly distribution of visits by the patients with symptomatic osteoarthritis of the knee joint.

Table 2 *Modes of treatment provided for the patients with symptomatic knee osteoarthritis*

Treatment	% Of visits
Anti-inflammatory pain medication	52
Physical therapy	24
Thigh muscle exercises	23
Glycosaminoglycan polysulphate injections	21
Rest or immobilisation, or both	17
Knee bandage	6
Knee aspiration	4
Other	3

Table 3 *Further care provided for the patients with symptomatic knee osteoarthritis*

Further treatment	n	%
No further care by physician	61	26.1
Contact by telephone or letter	1	0.4
New appointment only if needed	111	47.4
New appointment made	51	21.8
Referred to specialist for evaluation of possible surgery, case urgent	0	0.0
Referred to specialist for evaluation of possible surgery, not urgent	5	2.1
Referred to specialist for other reason, urgent	0	0.0
Referred to specialist for other reason, not urgent	2	0.9
Other further care	3	1.3
Total	234	100

polysulphate (21%). Intra-articular corticosteroid injections were not used.

Most patients (83%) needed no sick leave as they were pensioners. For the patients still working leave was unnecessary in 44% of the cases. The length of the leave was usually one to four weeks (33%) or less than a week (20%). A sick leave of more than one month was prescribed in 3% of visits.

The further care provided for the patients with knee osteoarthritis is shown in Table 3. For one out of four visits the attending physician decided that no further care by physician was needed at that time. Five patients (2%) were referred for surgical consultation for assessment of the need for osteotomy or arthroplasty.

## Discussion

Treatment for knee osteoarthritis was sought by 1.11% of the population of the area over a period of one year, and the incidence of new patients (patients visiting the physician for the first time because of the knee arthrosis) was 0.60%. Visits due to knee osteoarthritis comprised 0.63% of all consultations with physicians.

As is the case with other diseases of the musculo-skeletal system, the epidemiological prevalence of osteoarthritis of the knee clearly depends on the age and occupational structure of the population studied.<sup>6</sup> Orivesi, Juupajoki, and Längelmäki are typical Finnish rural municipalities, in which agriculture is one of the principal means of livelihood, and the mean age of the population is high. In terms of the country as a whole the prevalence and incidence of knee osteoarthritis obtained in the present study are evidently too high as a population engaged in agriculture has been found to be affected with osteoarthritis more often than other occupational groups,<sup>6</sup> and as this disorder becomes more prevalent with age.<sup>2, 3, 6, 18, 23</sup>

On the other hand, it should be remembered that all patients with osteoarthritis do not seek medical attention even when suffering from severe symptoms. According to a report by Sievers *et al.*, in Finland the condition of approximately 75% of patients with arthrosis is continuously followed up, in 10% of cases there is no follow up despite the patients desire for it, and in 15% of patients no follow up is either desired or carried out.<sup>24</sup>

In addition, when considering the results of studies of osteoarthritis it should be remembered that there are always some cases whose subjective and clinical signs are similar to those of this disease but in which the pathological process is actually something else e.g., chondromalacia, meniscal degeneration, etc. To minimise this problem radiological verification of knee osteoarthritis was required in every case. In addition, before the study the physicians discussed the diagnosis and differential diagnosis of the disease.

The populations and the criteria for diagnosis of knee osteoarthritis vary from survey to survey.<sup>22</sup> According to Nordkild and Sonne-Holm most population studies of the disease (e.g. refs 20, 21) have used different, and often only subjective and/or clinical criteria to make the diagnosis, and therefore the prevalence values have varied considerably.<sup>22</sup> For example, the prevalence of knee osteoarthritis for women between 55 and 74 years seems to vary from 8.0% to 31.6% (median 19.0%).<sup>22</sup>

In this prospective study we set out beforehand strict subjective, clinical, and radiological criteria (see 'Patients and methods') of knee osteoarthritis which had to be met before acceptance in the study. All the patients accepted sought medical help for their knee problem diagnosed as osteoarthritis, and thus only symptomatic knees were actually recorded. This explains why our prevalence values for knee osteoarthritis were low, for instance for women between 55 and 74 years the prevalence was

3-44%. We feel that these prevalence values are clinically the most useful as these numbers are the most important for planning the examination and treatment resources in knee osteoarthritis and in the assessment of the future need for such services.

As in other population studies<sup>18-21 25</sup> more women than men were included here, and the prevalence of the disease in women was also higher than in men (Table 1). The reasons for this female majority remain unknown, but a speculative link can be drawn between women with osteoarthritis and obesity. Thus approximately twice as many Finnish women over 50 are obese (34%; overweight by  $\geq 20\%$ ) than in the comparable group of Finnish men (16%),<sup>6</sup> and obesity has been found to be associated significantly with knee osteoarthritis.<sup>6 19 26 27</sup>

Arthritis occurred 1.8 times more often in the right knee than in the left. The magnitude of this disproportion conforms closely with the findings of Takala *et al* that in women hip (1.8 times) and knee (1.5 times) pains are considerably more common on the right side.<sup>6</sup> The difference is even more apparent in rheumatic symptoms of the upper extremity, in which the continuous or repeated workloads of the right hand have been suggested as the most probable aetiological factor of right sided dominance.<sup>6</sup> Despite the right sided dominance of symptomatic knee osteoarthritis in this study it is very difficult to show that the right side of the lower extremities is involved in greater stress during life. This question remained unsolved and open to speculation.

Many of the patients received more than one form of treatment at the same time. The common use of glycosaminoglycan polysulphate injections was somewhat surprising, but may reflect the lack of any other curative mode of treatment of this disease. Glycosaminoglycan polysulphate has produced good short term results in the prevention of the deterioration of knee osteoarthritis,<sup>28-30</sup> but more evidence is needed before it can be accepted as the drug of choice in the treatment of this disease.

In 6% of cases the attending physician considered knee surgery (osteotomy, arthroplasty) necessary, but only one third of patients were actually referred for orthopaedic consultation. This small number of consultations probably reflects more the general concept of only moderate results for surgical treatment in knee arthritis rather than the real need for surgery. We predict that the good results achieved in total knee arthroplasties in recent years<sup>31-33</sup> will lead to a considerable increase in the need for such consultations in the near future.

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