Musculoskeletal foot problems in primary care: what influences older people to consult?

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Abstract

Objective. To estimate the incidence of, and factors associated with, consultation for musculoskeletal foot problems in primary care.

Methods. Survey data from 13 986 people aged >50 years who took part in the North Staffordshire Osteoarthritis Project were linked to a database of primary care consultations. Foot problems were defined as responding affirmatively to the questions: ‘Have you had any problems with your feet over the last year?’ or ‘Have you had pain in the last year in and around the foot?’. The main outcome measure was a record of a musculoskeletal foot-related consultation within 18 months following the survey.

Results. Of the 3858 participants with foot problems who had not consulted before the survey, 350 (9.1%) consulted in the 18 months following the survey. Age, sex, education, general health and pain in other regions were not associated with future consultation. However, those who consulted were more likely to have reported foot pain (adjusted odds ratio (OR) 2.04; 95% CI 1.22, 3.42) and to consider treatments to be effective in controlling disease (OR 1.54; 95% CI 1.07, 2.21) in the baseline survey, and to have been a frequent consulter in the 18 months before the survey (OR 1.65; 95% CI 1.30, 2.09).

Conclusions. Only a minority of older people with musculoskeletal foot problems consult their general practitioner about them. Foot pain, frequent consultation for other problems and positive perceptions of treatment efficacy appear to be the strongest factors influencing future consultation.

Key words: Foot deformities, Osteoarthritis, Pain, Consultation.
have a considerable impact on balance [14] and mobility [4, 15] in this population, and have been identified as a risk factor for falls [16]. Secondly, there is some evidence that many older people consider foot problems to be an inevitable consequence of ageing [17], and therefore do not seek treatment for them from health professionals [18]. As such, it is possible that a substantial proportion of chronic foot problems in the community are not being adequately managed.

The objectives of this study were therefore to (i) determine the incidence of GP consultation for older people with foot problems and (ii) explore the predisposing, enabling and need-related factors that may influence the decision to consult. To do this, we identified a group of people with foot problems from a population-based survey of musculoskeletal pain and linked these data to a database of primary-care consultations.

Methods

Participants

Participants were drawn from two phases of the North Staffordshire Osteoarthritis Project (NorStOP), the details of which have been described elsewhere [19, 20]. In summary, the sampling frame consisted of all adults aged ≥50 years registered with six general practices from the Keele GP Research Partnership (KGPRP). In the UK, >95% of people are registered with a general practice, so general practice registers provide a convenient frame for sampling a local population [21]. The first phase of recruitment was conducted in April 2002, and achieved a response rate of 71.3% (n = 7878 from 11 055 eligible people) [2]. The second phase of recruitment was conducted between July 2002 and May 2003 and achieved a response rate of 69.7% (n = 6108 from 8763 eligible people) [22].

Of the total sample of 13 986 people, 5358 (38.3%) responded affirmatively to the question ‘Have you had any problems with your feet over the last year?’ and 5286 (37.8%) responded affirmatively to the question ‘Have you had pain in the last year in and around the foot?’. The total number of people reporting either foot problems or foot pain was 5706 (40.8%), and this group formed the study population for the analysis. Of these, 4402 consented to medical record review (77.1%). Those who consented to medical record review were more likely to be male (40.4 vs 32.1%; P < 0.001), and slightly younger [mean 67.1 (s.d. 10.2) vs 68.6 (10.8) years; P < 0.001] than those who did not consent.

Health survey

The NorStOP health survey consisted of an extensive health questionnaire incorporating questions relating to socio-demographics, general health, physical function, participation and bodily pain [19]. For the purpose of this study, we selected sections of the questionnaire that broadly reflected the three components of the Andersen–Newman behavioural model of health-care utilization (i.e. predisposing, enabling and need-related factors), which included socio-demographics (age, sex and education level), anthropometrics (height, weight and obesity (BMI ≥ 30 kg/m²)), general health (Short Form 36 physical function subscale (SF-36) [23]) and bodily pain (pain lasting a day or more in the past 4 weeks, marked on a full-body manikin). Widespread pain was defined as pain shaded on the manikin in the axial skeleton or low back plus at least two areas of two contralateral limbs [24].

Symptoms of anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS) [25]. The HADS consists of 14 items: 7 for anxiety and 7 for depression, each recorded on a 4-point response scale (possible range of each dimension: 0–21) with high scores indicating higher levels of symptoms. Scores of 0–7 are considered ‘normal’, 8–10 are ‘suggestive’ of a disorder and scores of ≥11 indicate probable ‘caseness’ of a disorder. Both sub-scales correspond well with psychiatric diagnosis [25].

Perceptions of illness and treatment efficacy were assessed using a series of 10 statements scored on a 5-point Likert scale, ranging from ‘strongly disagree’ to ‘strongly agree’. These statements, derived from the Revised Illness Perceptions Questionnaire [26], provide an indication of the participant’s sense of control over their illness, their perception of the effectiveness of treatments for musculoskeletal problems and their level of fear of pain associated with their condition.

Medical record review

The six practices from which consultation data were obtained are part of the KGPRP and, as such, undergo a cycle of assessment, feedback and training in the use of computerized morbidity coding [27]. Morbidity information from consultations are documented using Read codes and terms, a commonly used hierarchical coding system in UK primary care [28]. GPs are requested to enter at least one morbidity term for every contact. Although the use of diagnostic terms is encouraged, symptom terms may also be used until a diagnosis is reached. We have previously shown that 93% of GP contacts at practices within the KGPRP are given a morbidity term [27], and that musculoskeletal disease prevalence estimates are comparable with the National Royal College of General Practitioners Weekly Returns Service database [29]. For each participant, all consultations documented in the practice records for the 18 months before their response to the survey and for the 18 months after the survey period were extracted.

Read terms were allocated to a body region using a protocol described in detail previously [30]. Briefly, four GPs allocated relevant musculoskeletal Read terms under Chapters N (Musculoskeletal and connective tissues diseases), R (symptoms, signs and ill-defined conditions), S (injury and poisoning) and one (history/symptoms) to the individual body regions. If no region could be allocated, then the code was defined as ‘unspecified’. ‘Unspecified’ problems tended to be codes...
where either no region was described in the associated Read term (e.g. ‘arthralgia’) or the problem covered more than one region (e.g. ‘generalized osteoarthritis’). The defined regions were then grouped into four main body sectors: (i) head/neck, (ii) torso, (iii) upper limb and (iv) lower limb. The lower limb sector included consultations specified as foot, ankle, lower leg, knee, thigh, hip and pelvis. Participants in the study were classified as ‘consulters’ or ‘non-consulters’ in the 18 months before and 18 months after the survey based on whether they had a foot or ankle consultation documented in their general-practice records. The North Staffordshire local research ethics committee approved the study and written informed consent was obtained from all participants.

**Statistical analysis**

Variables considered to be possible predictors of consultation were dichotomized before analysis. Participants who scored below the lowest tertile on the SF-36 physical function scale were defined as having ‘low’ physical function, whereas those who scored ≥8 on each of the HADS scales were defined as having symptoms of anxiety or depression, respectively. Responses to the 10 questions regarding perceptions of illness and treatment efficacy were dichotomized, with ‘agree’ or ‘strongly agree’ responses documented as a ‘yes’, and all other responses documented as a ‘no’. The number of consultations in the 18 months before the survey was converted based on quartiles, with participants above the upper quartile defined as ‘frequent consulters’. Differences between participants who did and did not consult in the 18 months following the survey were first analysed by calculating unadjusted odds ratios (ORs) and 95% CIs. All significant predictors (P < 0.05) were then entered into a direct (simultaneous) logistic regression model. Analyses were performed using SPSS 15.0 for Windows (SPSS Inc., Chicago, IL, USA).

**Results**

Of the total sample, 5706 (40.8%) participants were defined as having a foot problem, and 4402 (77.1%) of these consented to medical record review. A total of 544 (12.4%) had a record of a previous consultation for a musculoskeletal foot problem. The model was statistically significant (χ² = 35.8, degrees of freedom (df) = 4, P < 0.001) and goodness of fit was acceptable (Hosmer and Lemeshow χ² = 1.61, df = 5, P = 0.90; Table 4).

**Discussion**

The first objective of this study was to estimate the cumulative incidence of primary-care consultations for musculoskeletal foot disorders in older people. Overall in our sample, this was low, with only 9.1% of those reporting foot problems in the population survey registering a consultation in the 18 months following the survey. Although we specifically excluded people who had consulted their GP for a foot problem before the survey in order to focus on new episodes of care, the prevalence of previous consultation for foot problems in all persons reporting pain at baseline was also low (12.4%). To the best of our knowledge, this is the first analysis undertaken focusing on primary-care consultation for foot disorders in the UK. Interestingly, a higher frequency of GP consultation (26%) was reported in a Dutch study involving 1130 people with non-traumatic foot complaints aged >65 years [31]; however, this disparity could be at least partly explained by the cross-sectional design and the older age of their sample.

The low rate of consultation for musculoskeletal foot problems could be interpreted as a measure of unmet need; however, it is also possible that some proportion of those not consulting their GP seek care from other health professionals, such as podiatrists [6]. Although the GP is the most frequently consulted medical practitioner for musculoskeletal disorders and plays a major gate-keeper role in the UK health-care system [32], no referral is required to access private podiatry services. As we did not ask participants whether they had sought treatment from other health-care providers, it is not possible to estimate to what extent this could have influenced the consultation rate observed. In the aforementioned Dutch primary care study, 18% of older people sought treatment for their foot problems from podiatrists, physiotherapists or chiropodists [31]. Similarly, in the Cheshire Foot Pain and Disability Survey [33], the most commonly consulted health professional in those with foot pain was a podiatrist. These findings suggest that non-medical health-care providers are responsible for managing a significant caseload of foot problems in the...
However, whether the level of provision of podiatry services in the UK is sufficient to meet this demand is uncertain, as it has previously been estimated that ~40% of older people who require podiatry do not currently receive it [34].

The most commonly documented Read terms for musculoskeletal foot-related consultations were non-specific foot pain (26%) and ankle pain (9%). Despite the fact that our sample was limited to those aged >50 years, this observation is consistent with our previous analysis of general-practice consultation data across all age groups [7], and indicates that although GPs within our network are encouraged to use specific diagnostic terms, many musculoskeletal foot conditions are sub-optimally coded. While the selection of non-specific symptom codes could in some cases be attributed to limited knowledge of foot problems [35, 36], it is also possible that a definitive diagnosis was not yet available for many of the consultations recorded in the database.

The second objective of this study was to explore factors that may influence an older person’s decision to consult their GP for treatment of musculoskeletal foot problems. To do this, we adopted the Andersen–Newman behavioural model of health-care utilization, which suggests that the decision to access medical care is influenced by predisposing, enabling and need-related factors [13]. However, our analysis indicates that few of these factors influence future consultation for a musculoskeletal foot problem. The only measures found to be significantly associated with future consultation were foot pain (which could be considered a need factor), previous frequent consultation for other conditions (which could be considered an enabling factor), reporting fear at the thought of pain and believing that treatments were effective in controlling disease (both of which could be considered predisposing factors). Other need-related factors, such as low physical function and presence of comorbidities, were not associated with future consultation.

![Flowchart showing the number of patients who did and did not consult their GP about their musculoskeletal foot problem 18 months before and 18 months after the survey.]

**Table 1** Ten most commonly documented Read terms for musculoskeletal foot problem consultations

| Read term             | n (%) |
|-----------------------|-------|
| Foot pain             | 239 (25.8) |
| Ankle pain            | 85 (9.2) |
| Plantar fasciitis     | 82 (8.9) |
| Ankle swelling        | 51 (5.5) |
| Toe pain              | 51 (5.5) |
| Metatarsalgia NOS     | 33 (3.6) |
| Heel pain             | 32 (3.5) |
| Ankle joint pain      | 28 (3.0) |
| Arthralgia—ankle/foot| 27 (2.9) |
| Calcaneal spur        | 21 (2.3) |

NOS: not otherwise specified.
consultation, nor were the predisposing factors of age, sex or education level. Similar findings were reported by Gorter et al. [31], who found that while age, sex, education and presence of comorbidities were not associated with primary-care consultation in older people with non-traumatic foot problems in The Netherlands, those who consulted were significantly more likely to report foot pain.

It is worth noting that the case definition used in this study combined participants who reported foot problems and those who reported foot pain in the past year. Population-based studies indicate that although there is a substantial degree of overlap between these categories, there are nevertheless some older people who report problems with their feet in the absence of pain [4, 15]. In the current study, 336 people (9.5% of the sample) reported foot problems without reporting foot pain.

### Table 2: Associations of future consultation for a musculoskeletal foot problem with sex, age-group, education, general health, pain and frequency of previous consultation

| Factor                        | All participants (n = 3858), n (%) | No future consultation (n = 3508), n (%) | Future consultation (n = 350), n (%) | OR (95% CI) |
|-------------------------------|-----------------------------------|----------------------------------------|-------------------------------------|-------------|
| **Sex**                       |                                   |                                        |                                     |             |
| Male                          | 1577 (40.9)                       | 1446 (41.2)                            | 131 (37.4)                          | 1.00 (referent) |
| Female                        | 2281 (59.1)                       | 2062 (58.8)                            | 219 (62.6)                          | 1.17 (0.94, 1.47) |
| **Age group, years**          |                                   |                                        |                                     |             |
| 50–64                         | 1631 (42.3)                       | 1489 (42.4)                            | 142 (40.6)                          | 1.00 (referent) |
| 65–74                         | 1193 (30.9)                       | 1080 (30.8)                            | 113 (32.3)                          | 1.10 (0.84, 1.42) |
| >75                           | 1034 (26.8)                       | 939 (26.8)                             | 95 (27.1)                           | 1.06 (0.81, 1.39) |
| **Further education**         |                                   |                                        |                                     |             |
| Obese                         | 862 (23.5)                        | 777 (23.3)                             | 85 (25.4)                           | 1.12 (0.86, 1.45) |
| Anxiousa                      | 1843 (49.0)                       | 1673 (49.0)                            | 170 (49.4)                          | 1.02 (0.82, 1.27) |
| Depressedb                     | 1174 (31.2)                       | 1076 (31.5)                            | 98 (28.5)                           | 0.87 (0.68, 1.11) |
| Low SF-36 physical functionc   | 1225 (33.7)                       | 1112 (33.6)                            | 113 (34.8)                          | 1.05 (0.83, 1.34) |
| **Pain**                      |                                   |                                        |                                     |             |
| Foot pain                     | 3522 (91.3)                       | 3188 (90.5)                            | 334 (95.4)                          | 2.10 (1.25, 3.51)** |
| Low back pain                 | 1813 (47.0)                       | 1651 (47.1)                            | 162 (46.3)                          | 0.97 (0.78, 1.21) |
| Hip pain                      | 1781 (47.0)                       | 1624 (47.2)                            | 157 (45.6)                          | 0.94 (0.75, 1.18) |
| Knee pain                     | 2687 (70.3)                       | 2443 (70.2)                            | 244 (71.1)                          | 1.04 (0.82, 1.33) |
| Widespread pain               | 722 (18.7)                        | 660 (18.8)                             | 62 (17.7)                           | 0.93 (0.70, 1.24) |
| Frequent consulter            | 954 (24.7)                        | 833 (23.7)                             | 121 (34.6)                          | 1.70 (1.34, 2.14)** |

aHADS anxiety sub-scale score > 8. bHADS depression sub-scale score > 8. cLowest tertile (sub-scale score <25). *P < 0.05. **P < 0.01.

### Table 3: Associations of future consultation for a musculoskeletal foot problem with illness perceptions

| Factor                                | All participants (n = 3858), n (%) | No future consultation (n = 3508), n (%) | Future consultation (n = 350), n (%) | OR (95% CI) |
|---------------------------------------|-----------------------------------|----------------------------------------|-------------------------------------|-------------|
| There is a lot that I can do to control my health | 3062 (80.5)                       | 2775 (80.3)                            | 287 (82.2)                          | 1.13 (0.85, 1.51) |
| What I do will affect whether my health gets better or worse | 2753 (75.6)                       | 2513 (76.0)                            | 240 (71.2)                          | 0.78 (0.61, 1.00) |
| Treatments are effective in controlling disease | 3261 (86.0)                       | 2948 (85.6)                            | 313 (89.9)                          | 1.50 (1.05, 2.16)** |
| My health is very unpredictable      | 1789 (46.4)                       | 1618 (47.1)                            | 171 (49.6)                          | 1.11 (0.89, 1.38) |
| Illness makes me feel afraid         | 1838 (47.6)                       | 1664 (48.4)                            | 174 (49.9)                          | 1.06 (0.85, 1.32) |
| The course of my life depends on me  | 2654 (68.8)                       | 2417 (70.0)                            | 237 (68.3)                          | 0.92 (0.73, 1.17) |
| I have the power to influence my life | 2133 (56.1)                       | 1934 (56.0)                            | 199 (57.0)                          | 1.04 (0.83, 1.30) |
| OA is a serious condition            | 3465 (89.8)                       | 3142 (91.2)                            | 323 (93.1)                          | 1.30 (0.84, 2.00) |
| Treatments are effective in controlling pain | 2676 (69.4)                       | 2424 (70.0)                            | 252 (72.8)                          | 1.15 (0.90, 1.47) |
| The thought of pain makes me afraid  | 1273 (33.0)                       | 1138 (32.8)                            | 135 (38.6)                          | 1.28 (1.02, 1.61)** |

*P < 0.05.
reported foot problems but no foot pain. Similar observations have been made in relation to the hand, where the prevalence of hand problems (such as difficulty opening jars and concern about aesthetics) is higher than the prevalence of hand pain [37]. Two frequently reported foot problems in older people—difficulty finding comfortable shoes and difficulty managing basic foot hygiene [4, 38]—are unlikely to be triggers for a GP consultation, so it is perhaps to be expected that the presence of foot symptoms was the strongest predictor of future consultation.

Frequent consultation for other problems in the 18 months before the survey was also significantly associated with future consultation for a musculoskeletal foot problem. This observation is consistent with previous studies of primary-care consultations in general [39], and of knee pain specifically [10]. Several studies have shown that people who consult their GP on a frequent basis are more likely to be older, female, to have a low income and multiple comorbidities [40]. However, it would appear that frequent consultation is not restricted to particular categories of morbidity [41], suggesting that there is a generic set of characteristics that drive frequent consultation irrespective of the specific symptoms an individual has. Our findings add another condition—musculoskeletal foot problems—to the growing list for which being a frequent consulter influences the decision to seek GP care.

Although we have identified significant independent predictors of consultation for musculoskeletal foot problems in this study, both the number of significant predictors and the strength of the observed associations were rather modest. This could indicate that either our set of predictor variables was inadequate, or that predicting future consultation is inherently difficult. We acknowledge that the addition of other variables, such as a broader array of psychological assessments and more detailed information regarding participants’ foot problems, may have improved our model. However, several previous studies have reported similar difficulty in accurately predicting patterns of consultation [10, 12, 42] and it has been shown that previous patterns of consultation are better predictors of future consultation than measures of health status [39].

The findings of this study need to be considered in the context of several inherent limitations. First, although the questions in the population survey focused on arthritis, it is possible that some participants reporting foot problems or foot pain had non-musculoskeletal foot conditions (such as nail disorders, fungal infections, corns and calluses) [43]. Because we specifically linked the survey data to musculoskeletal, injury and symptom-related Read terms in the consultation database, the rate of consultation reported here is likely to be an underestimate, as consultations for non-musculoskeletal foot problems may have been documented under other chapters. However, given that the most commonly documented Read terms in the database were symptoms rather than diagnostic codes (i.e. foot pain and ankle pain), some proportion of non-musculoskeletal conditions would have been picked up. Secondly, morbidity coding in GP databases frequently lacks specificity, so specific conditions such as plantar fasciitis may have been documented using a vague symptom code such as foot pain. Because of this limitation, it was not possible to explore consultation behaviour for individual foot conditions, although it is likely that the factors influencing the decision to consult may vary depending on the type of foot problem an individual has.

Despite these limitations, the findings of this study indicate that only a small proportion of older people with foot problems consult their GP about them, and that consultation is moderately influenced by foot pain, frequent consultation for other problems and positive perceptions of treatment efficacy. Future studies will need to explore the relative contribution of medical and non-medical health professionals in managing foot problems, the factors that influence an older person’s selection of health-care provider, and whether foot problems are being adequately managed in this age group.

**Table 4** Associations with future consultation for a musculoskeletal foot problem—final model

| Factor                                      | B     | s.e.   | Wald  | df | P-value | OR (95% CI) |
|---------------------------------------------|-------|--------|-------|----|---------|-------------|
| Foot pain                                   | 0.71  | 0.26   | 7.35  | 1  | 0.007   | 2.04 (1.22, 3.42) |
| Frequent consulter                          | 0.5   | 0.12   | 17.26 | 1  | <0.001  | 1.65 (1.30, 2.09) |
| Treatments are effective in controlling disease | 0.43  | 0.19   | 5.39  | 1  | 0.02    | 1.54 (1.07, 2.21) |
| The thought of pain makes me afraid          | 0.29  | 0.12   | 3.51  | 1  | 0.061   | 1.25 (0.99, 1.57) |
| Constant                                    | –3.56 | 0.31   | 129.58|    | <0.001  | 0.003       |

**Rheumatology key messages**

- Few older people with a musculoskeletal foot problem consulted their GP about it.
- Sex, age, education and general health did not influence future consultation.
- Foot pain, frequent consultation for other problems and positive perceptions of treatment efficacy influenced future consultation.

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