

## Monitoring Osteoarthritis: A Cross-sectional Survey in General Practice

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### Abstract

**Background:** Despite being a highly prevalent chronic condition managed predominantly in primary care and unlike other chronic conditions, osteoarthritis (OA) care is delivered on an ad hoc basis rather than through routine structured review. Evidence suggests current levels of OA care are suboptimal, but little is known about what general practitioners' (GPs) consider important in OA care, and, thus, the scope to improve inconsistency or poor practice is, at present, limited.

**Objectives:** We investigated GPs' views on and practice of monitoring OA.

**Methods:** This was a cross-sectional postal survey of 2500 practicing UK GPs randomly selected from the Binley's database. Respondents were asked if monitoring OA patients was important and how monitoring should be undertaken.

**Results:** Responses were received from 768 GPs of whom 70.8% were male and 89.5% were principals within their practices. Despite 55.4% (n = 405) indicating monitoring patients with OA was important and 78.3% (n = 596) considering GPs the appropriate professionals to monitor OA, only 15.2% (n = 114) did so routinely, and 45% (n = 337) did not monitor any OA patients at all. In total, 61.4% (n = 463) reported that patients should self-monitor. Respondents favored monitoring physical function, pain, and analgesia use over monitoring measures of BMI, self management plans, and exercise advice.

**Conclusions:** The majority of respondents felt that monitoring OA was important, but this was not reflected in their reported current practice. Much of what they favored for monitoring was in line with published guidance, suggesting provision of suboptimal care does not result from lack of knowledge and interventions to improve OA care must address barriers to GPs engaging in optimal care provision.

**Keywords:** osteoarthritis, general practice, disease monitoring, chronic disease management

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## Introduction

Osteoarthritis (OA) is estimated to affect 9.6% of men and 18.0% of women over the age of 60 years worldwide and is one of the 10 most disabling diseases in developing countries.<sup>1</sup> One third of people aged 45 years and over in the UK have sought treatment for OA,<sup>2</sup> although this may only be the tip of the iceberg given that current evidence suggests many people who experience joint pain in the United Kingdom choose not to consult their GP.<sup>3</sup> OA is a chronic condition, managed predominantly in primary care. It is associated with significant morbidity<sup>4</sup> and excess mortality,<sup>5</sup> and there is no “magic bullet,” with management options limited largely to control of symptoms.

However, unlike other chronic conditions, in the United Kingdom, OA does not benefit from a structured approach to continuing care; patients consult in times of increased symptom burden, but are not necessarily asked to return for review as a matter of course. This seems at odds with both the chronic nature of the condition and the symptom-based approach to management available to practitioners. Comparison could be drawn with chronic obstructive pulmonary disease (COPD), also chronic in nature with management options limited to symptom control, but in the United Kingdom, patients are annually routinely invited to attend their physician’s practice for a structured face-to-face review where, among other things, breathlessness is scored and spirometry testing is repeated, offering an opportunity to monitor the progress of the condition and alter management to improve patients symptoms.

There is evidence that care provided to OA patients is not always optimal,<sup>6,7</sup> and Steele et al report that of 13 chronic conditions adherence with set quality indicators was at its lowest in care for OA, reinforcing this lack of structured approach to OA management.<sup>8</sup> Given that the morbidity associated with OA remains a significant cost to both individuals and the health economy as a whole, by implication there is room for improvement in the way we care for patients with the disease.

There is evidence that a reduction in OA pain can result in improved function and general health status<sup>9,10</sup> and that simply by improving a patient’s experience of pain, without any biomechanical alteration, function can be improved.<sup>10</sup> There is some suggestion that

there is a cost saving to be made from routine monitoring of certain factors in OA patients. Improving care for depression in those with OA has been shown not only to reduce depression, but also lessen pain intensity and interference with activities of daily living and improve general health and quality of life.<sup>11</sup>

If monitoring, described as “repeated testing aimed at guiding and adjusting the management of a chronic or recurrent condition,”<sup>12</sup> could offer an opportunity to identify and address poor symptom control and functional impairment and screen for comorbid conditions such as depression, then by implication, it may also reduce the burden on individuals and the associated cost to the health service. Given that many patients suffering joint pain choose not to consult their GP, routine structured monitoring may offer the opportunity to “hang on” to those that do.

To date, there has been little research into the benefits of chronic disease monitoring as a whole, and yet, despite this, the model is in routine use for many chronic conditions. It is not understood why the chronic disease model has not been applied to OA and similarly why current levels of OA care are suboptimal, with little known about what general practitioners (GPs) consider important in OA care. Thus, scope to improve inconsistency or poor practice is, at present, limited, and, with this in mind, we investigated GPs’ views on and their current practice of monitoring patients with OA.

## Methods

### Ethical approval

The study was approved by the North Staffordshire Local Research Ethics Committee (09/H1204/65).

### Participants

A random sample of 2500 GPs currently working in the United Kingdom was generated and obtained from the Binley’s database. Binley’s is a for-profit organization providing health professionals’ contact details, which are selected at random from a Microsoft Access database by assigning each record a unique random numerical identifier between 0 and 1 in addition to any existing database identifiers, ordering by the new random identifier, and then selecting the required number of records at random. The sample was sent an 8-page self-completion postal questionnaire, a reminder postcard was mailed after 2 weeks, and a



further copy of the questionnaire was sent 2 weeks after that.

## Questionnaire design

Very little has previously been written about GPs' views on the monitoring of osteoarthritis, so there were no existing validated questionnaires or tools located. The questionnaire was piloted at 2 general practices and at a local vocational training scheme afternoon teaching session in 2008. The purpose of the pilot was to ensure that the questionnaire was clear and easy to read, that the questions were not ambiguous, and that it could be completed in less than 10 minutes since target participants were busy GPs. On average, it took the pilot participants 15 minutes to complete the questionnaire fully, but this was deemed acceptable by both the authors and all who took part.

## Questionnaire content

Respondents were asked for demographic details, including gender, job title, and whether they had special interest in musculoskeletal medicine or additional postgraduate qualifications. They were then asked a series of questions about monitoring OA. The term "monitoring" was not further defined as no definition within this context exists in the current literature. Respondents were asked whether they consider monitoring to be important for patients with OA with options of "yes" or "no." They were then asked whether they routinely monitor OA patients, with options of "yes," "no," or "some." If they answered "some," they were asked to include an estimate of the proportion of patients with the disease they monitor. A list of potential components to monitor and healthcare professionals who should be responsible for monitoring were included, and respondents asked to select as many as they felt were appropriate from the list. Respondents were also asked to indicate the frequency of monitoring they felt should be undertaken, selecting from options which ranged from monthly to annually. A pilot study was undertaken using a group of North Staffordshire general practitioners. Copies of the questionnaire are available from the lead author on request.

## Statistical analysis

The results were analyzed using PASW Statistics 18, release 18.0.0 (SPSS, Inc., Chicago, IL).

Descriptive statistics were used followed by a chi-square test to determine significant associations. Respondents with missing data were included, and the complete data for individual questions was analyzed.

## Results

Of the 2500 questionnaires sent, 768 were returned completed (30.7%). Overall, 70.4% (n = 541) of respondents were male, and 89.1% (n = 684) were principals within their practices. Characteristics of respondents are summarized in Table 1.

The majority of respondents (55.4%; n = 405) felt that monitoring patients with OA was important. Having a special interest in musculoskeletal disease ( $\chi^2 = 7.66$ ,  $P = 0.006$ ), an awareness of the National Institute for Clinical Excellence (NICE) OA guidelines ( $\chi^2 = 10.02$ ,  $P = 0.002$ ) and possessing a masters ( $\chi^2 = 6.169$ ,  $P = 0.013$ ) or doctoral ( $\chi^2 = 7.60$ ,  $P = 0.006$ ) level higher medical qualification were significantly associated with considering monitoring OA important.

Overall, only 15.2% (n = 114) of respondents monitored OA patients routinely. Considering monitoring important ( $\chi^2 = 209.34$ ,  $P = <0.001$ ), having a special interest in musculoskeletal disease ( $\chi^2 = 15.16$ ,  $P = <0.001$ ), having attained a Masters degree ( $\chi^2 = 6.15$ ,  $P = 0.046$ ), having read the NICE guidelines ( $\chi^2 = 20.15$ ,  $P < 0.001$ ) and working full time

**Table 1.** Demographic characteristics of respondents.

Characteristics	Respondents to the survey (n)	Respondents to the survey (%) <sup>a</sup>
<b>Gender</b>		
Male	541	70.4
Female	223	29.0
Missing	4	0.5
<b>Job title</b>		
Partner	684	89.1
Salaried	29	3.8
Missing	55	7.2
Special interest in MSM <sup>b</sup>	176	22.9
<b>Size of practice (number of registered patients)</b>		
Small (<4000)	183	23.8
Medium (4000–7999)	294	38.3
Large (>8000)	291	37.9
Missing	0	0

**Notes:** <sup>a</sup>Total may not equal 100 due to rounding; <sup>b</sup>MSM denotes musculoskeletal medicine.



( $\chi^2 = 6.18$ ,  $P = 0.046$ ) were significantly associated with monitoring some or all OA patients routinely. Nearly half (45%,  $n = 337$ ) did not routinely monitor any OA patients, citing increased workload and lack of resources, replication of work undertaken at existing annual medication reviews, and reluctance to medicalize such a common condition as the main reasons for this. Over one-third (39.8%,  $n = 298$ ) reported monitoring some OA patients, with participants indicating that severity of disease, regular prescription of analgesia, and comorbidities were the factors by which those requiring monitoring were chosen.

Of those who considered monitoring important, only 27.7% ( $n = 112$ ) monitored OA patients routinely, with 49.1% ( $n = 199$ ) monitoring some OA patients selected for similar reasons to those reported above. Nearly a quarter (22.5%,  $n = 91$ ) reported not monitoring any OA patients despite considering it important, with the most common reasons given by participants for this inconsistency in practice being workload and time constraints and the desire to encourage patient self-monitoring.

The most popular interval for monitoring was annually, favored by 45.3% ( $n = 275$ ) of respondents; 33.6% ( $n = 204$ ) favored 6 to 12 month intervals, with only 21.1% ( $n = 128$ ) suggesting more frequent intervals.

Respondents indicated that pain and function should be monitored. Preferred indicators for monitoring pain included analgesia use favored by 84.1% ( $n = 646$ ) and pain intensity by 79.9% ( $n = 614$ ). Most respondents favored simply asking the patient about how severe their pain was, but both visual analogue scales and 10-point numerical rating scales were suggested by participants. Indicators of function respondents felt should be monitored included level of disability, supported by 83.3% ( $n = 640$ ), and interference of symptoms with activities of daily living, supported by 81.8% ( $n = 628$ ). Less than half (43.9%,  $n = 281$ ) suggested how this might be achieved, 10% ( $n = 30$ ) of whom referred to a standardized assessment tool, but only 1.4% ( $n = 4$ ) were able to name a specific tool that might be used for this purpose. X-ray changes were least popular for monitoring, favored by only 22.1% of respondents. The results are shown in Table 2 from most popular to least popular.

The majority of respondents (78.3%,  $n = 596$ ) thought that the GP should be the key professional

**Table 2.** Potential components to monitor in OA patients.

Factor to be monitored	Number "Yes"	% "Yes"
Analgesia use	646	84.1
Level of disability	640	83.3
Interference with activities of daily living	628	81.8
Pain intensity	614	79.9
NSAID use	600	78.1
Analgesic side effects	597	77.7
BMI	570	74.2
Quality of life	541	70.4
Pain duration	529	68.9
Adherence with exercise advice	504	65.6
Mood	484	63.0
Social aspects of care	462	60.2
Self management plan	450	58.6
Widespread pain	429	55.9
X-ray changes	170	22.1

involved in monitoring patients with OA, although both the practice nurse and physiotherapist were also popular choices, favored by 42.7% ( $n = 325$ ) and 44.5% ( $n = 339$ ) respectively. Two-thirds of respondents (61.4%,  $n = 463$ ) highlighted the role of patients in self-monitoring their condition, and over half (53.1%,  $n = 404$ ) selected 2 options indicating shared responsibility between the GP and the patient. Secondary care was a less popular setting for the routine monitoring of OA, although still favored by nearly one-third (31.5%,  $n = 204$ ) of respondents.

## Discussion

The majority of GPs participating in this study felt that monitoring patients with OA was important, in line with current national and international guidance,<sup>13–16</sup> and that GPs were the most appropriate group to undertake this task. However, this was not reflected in their reported current practice: only 15% indicated that they monitored OA routinely, and 45% indicated that they did not monitor any of their OA patients.

How GPs define monitoring is clearly integral to the way that they responded to the questionnaire, although there is little in the literature to describe this. In the United Kingdom, chronic disease monitoring is dominated by the Quality and Outcomes Framework (QOF), a voluntary scheme by which high quality primary care is incentivized.<sup>17</sup> Each condition included within the QOF has a set of key indicators for the provision of care, and points are awarded for



the attainment of these, with points then translating into financial reward. An annual disease “review” is a common component of many of the chronic disease domains of QOF, such as diabetes and asthma, where information is collected from patients about their current condition, any changes or concerns, and monitoring tests (such as spirometry in COPD) can be performed. It would seem likely that this current model informed the participants’ perceptions of “monitoring,” since the preference for annual monitoring indicated by respondents reflects the frequency required for QOF reviews and current guidance on the management of OA does not recommend a monitoring interval with which to compare.<sup>13–16</sup> For this reason, it may be possible that some of the respondents’ views reflect their current experience of and views on QOF, rather than the condition of OA itself.

In order to maximize available resources, much of the chronic disease monitoring required for conditions within QOF has been delegated to practice nurses, whereas the majority of respondents felt that GPs should have responsibility for monitoring OA. Similar but smaller proportions of GPs thought that physiotherapists and practice nurses should monitor OA. While practice nurses are frequently involved in chronic disease reviews in primary care, disease monitoring is not a role that many physiotherapists are likely to be familiar with, and most practices do not have a physiotherapist attached to undertake routine work. This increased demand on physiotherapy services, simply for monitoring, is unlikely to be met with the current workforce.

One-third of GPs indicated that monitoring of OA should take place in secondary care. There is evidence to suggest that GPs’ attitudes and referral behaviors are strongly influenced by their general orientation to the importance of preventive care, as well as how they measured a successful outcome, with belief (or lack of it) in the potential effectiveness of a service considered a key element in referring behaviors.<sup>18</sup> In the management of OA, there are few tools in the secondary care armory that are not available in primary care, and the majority of respondents preferring primary over secondary care for monitoring OA may reflect an uncertainty that secondary care has more to offer. Alternatively, given that the majority of OA patients are managed entirely in primary care, these respondents may primarily have been considering those with the most severe disease if routine care for

OA was considered appropriate as reason for secondary care referral. However, if one-third of GPs genuinely feel that secondary care is the appropriate setting in which to monitor all OA patients, then potential implementation would require a significant increase in resources.

Two-thirds of respondents highlighted the role of patients in self-monitoring their condition, and over half selected 2 options indicating shared responsibility between the GP and the patient. This reflects published recommendations from Arthritis and Musculoskeletal Alliance (ARMA) and Osteoarthritis Research Society International (OARSI), although current evidence does not support the effectiveness (or cost-effectiveness) of many self-management programs, including those delivered solely by specially trained GPs.<sup>19</sup> Improvements have been demonstrated using educational interventions delivered by GPs along with reinforcement from practice nurses,<sup>20</sup> supporting a multidisciplinary primary care model in the monitoring of OA patients.

This multidisciplinary model may be key to moving towards a proactive approach to managing OA, as it has been in other conditions, such as COPD. In order to facilitate the monitoring of patients with OA, a similar model of regular review in primary care would be required. Given the potential variation in severity of OA, a one-size-fits-all approach may not be enough to optimize care for all OA patients. It is likely that for many, an annual review with a practice nurse to discuss symptoms, self-management techniques, and reiterate the importance of weight management and exercise, in line with current guidance, would suffice.<sup>13–16</sup> However, clearly those with more severe disease or difficulty in self-management may require more frequent review or intensive input and thus require additional appointments with a GP or even secondary care. With increasing demands on GPs from patients living longer with chronic conditions and multimorbidity, and from the administrative burdens of quality indicators such as those included in QOF, there is limited capacity in the current system for the additional time and resources required to provide an increased level of care to patients with OA. Extra financial support to undertake this additional workload in primary care could come in the form of incentives through the addition of OA to QOF, or perhaps through efficiency savings made by streamlining individual disease reviews for patients with multiple



long-term conditions, including OA, into one multi-morbidity review, appropriately utilizing the wider primary care team and reducing the additional burden on GPs themselves.

Candidate items selected by GPs for monitoring were in line with current evidence-based guidelines, suggesting that suboptimal care does not result from lack of knowledge, but may further reflect concerns around increased time and resource required to proactively manage aspects of a condition such as OA. Pain, physical function, and analgesia use were preferred as potential monitoring targets, despite the absence of a standardized validated tool to measure pain and physical function brief enough to be acceptable in primary care. In contrast, other interventions such as body mass index monitoring and adherence to exercise advice, which may potentially be easier to measure but more time consuming to discuss, were less popular. This may suggest that respondents do not consider these factors as modifiable contributors to the course of OA, but there is evidence to suggest that lack of time, lack of confidence in providing advice and effectiveness of interventions, lack of reimbursements, and lack of patient compliance and motivation are the major barriers to GPs discussing lifestyle interventions such as exercise and weight loss with patients.<sup>21</sup> Tackling these barriers would be vital to any change in the delivery of care for patients with OA, since lifestyle modification is key to the management of this condition. While the results of our survey support these findings, with workload and lack of time the most frequently cited reasons for not monitoring OA patients routinely, despite considering monitoring important, the factors that govern GPs individual practice in the management of OA have not been explored in the literature. Our findings demonstrate that focus should not be upon the importance of monitoring of patients with OA, since the majority are in agreement with this, but rather in increasing those who actually undertake monitoring routinely. More detailed qualitative work is required to understand why this discrepancy exists and to identify factors that influence GPs' willingness to adopt monitoring in patients with OA and may provide barriers to change.

One limitation of this survey is the response rate. Low response rates are not uncommon in surveys of physicians,<sup>22</sup> and while low response does not automatically result in biased findings, caution is needed when interpreting our findings.

Comparison of respondents with the UK population is difficult due to a paucity of available information. The majority of respondents were male (70%), and this is true of the GP population in England (52%).<sup>23</sup> The majority of respondents identified themselves as GP principals (89%), and this is also true of the GP population in England (68%).<sup>23</sup> Female GPs and nonprincipal (eg, salaried, locum, and sessional) GPs appear to be underrepresented in our sample, and these 2 discrepancies would seem to fit together since, in England, female GPs only constitute a minority (39%) of GP principals.<sup>23</sup> While no data about gender were held for nonrespondents, the majority of nonrespondents were also GP principals, and so response bias cannot necessarily be inferred. Nonprincipal GPs are more likely to be a mobile population and thus difficult to contact in a postal survey of this nature. However, it should also be considered that they typically have less continuity of care with patients and, as such, may have different opinions about monitoring chronic disease that are not represented in these findings.

At present there is no evidence to suggest whether monitoring patients with OA can improve outcome despite clinicians' beliefs that monitoring is important for this group. Further work is needed to assess the effectiveness (and cost-effectiveness) of routine monitoring compared with "usual" care and to develop an evidence-based core set of indicators that could be implemented into routine practice to enhance clinical care for this group.

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## Author Contributions

Conceived and designed the experiments: AB, RD, JJE, BN, CDM. Analysed the data: LEC, BN. Wrote the first draft of the manuscript: LEC. Contributed to the writing of the manuscript: BN, AB, JJE, CDM. Agree with manuscript results and conclusions: BN, AB, JJE, RD, CDM. Jointly developed the structure and arguments for the paper: LEC, BN, AB, JJE, CDM. Made critical revisions and approved final version: LEC, BN, AB, JJE, RD, CDM. All authors reviewed and approved of the final manuscript.

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JJE has been employed through funding received from the National Institute for Health Research and Arthritis Research UK, and benefits personally from payments made through the Quality and Outcomes Framework of the General Medical Services contract. Other authors disclose no competing interests.

## Disclosures and Ethics

As a requirement of publication the authors have provided signed confirmation of their compliance with ethical and legal obligations including but not limited to compliance with ICMJE authorship and competing interests guidelines, that the article is neither under consideration for publication nor published elsewhere, of their compliance with legal and ethical guidelines concerning human and animal research participants (if applicable), and that permission has been obtained for reproduction of any copyrighted material. This article was subject to blind, independent, expert peer review. The reviewers reported no competing interests.

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