

# A measure of treatment response: patient and physician satisfaction with traditional NSAIDs for osteoarthritis control

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**Purpose:** The clinical response to traditional nonsteroidal anti-inflammatory drugs (tNSAIDs) varies substantially. The objective of this study was to describe physicians' and patients' perceptions of response to tNSAIDs as measured by satisfaction with control of patients' osteoarthritis (OA).

**Patients and methods:** A cross-sectional survey was undertaken in 2009 in Germany, Spain, and the UK. Linked physician and patient questionnaires collected data on OA management, degree of pain and disability, and satisfaction with OA control.

**Results:** The study included 363 treating physicians and 713 patients receiving tNSAIDs. Patient mean (standard deviation) age was 65.5 (11.0) years (range 36–94 years); 60% were women; 86% were white; and one-quarter were obese. Dissatisfaction with control of patients' OA was expressed by physicians or their patients, or both, for 51% of patients, including 208 patients (31%) with mild OA and 478 patients (60%) with moderate or severe OA. Overall, 37% of patients reported dissatisfaction and 34% had a physician who reported dissatisfaction. Patient and physician assessments were the same in 70% of cases; Cohen's  $\kappa$  coefficient was 0.34 (95% confidence interval 0.26–0.41), indicating fair agreement. Of those reporting dissatisfaction, most physicians (79%) and patients (64%) believed that the current control was the best that could be achieved. The most common reasons for which physicians reported dissatisfaction were inadequate response (56%), side effects (11.1%), and poor tolerance (7.8%).

**Conclusion:** One-half of patients or their treating physicians were dissatisfied with the control of OA provided by tNSAID therapy; moreover, most believed it was the best control that could be achieved.

**Keywords:** cross-sectional, dissatisfaction, pain, survey

## Introduction

Osteoarthritis (OA) is a common form of degenerative joint disease affecting an estimated 151.4 million people worldwide.<sup>1</sup> Joint pain and stiffness, together with associated loss of function and reduced quality of life, constitute the main disease burden of OA. A worldwide public health concern, OA is one of the leading causes of long-term disability that predominantly affects people of working age and older, and is thus expected to increase in prevalence as the world's population ages.<sup>2,3</sup> Management of OA pain is therefore an important health care goal.

There are a variety of therapies available for treating pain associated with OA. Paracetamol (or acetaminophen in the US) is recommended as the initial pharmacologic therapy for mild symptoms, followed by a traditional nonsteroidal anti-inflammatory drug (tNSAID) or cyclooxygenase-2-selective NSAID.<sup>2,4</sup> The response to NSAIDs,

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as well as associated side effects, can vary substantially among individuals, and there is evidence that patients can be classified as responders or nonresponders to particular agents.<sup>5</sup> The fact that therapies vary in their benefit–risk profiles, and individual patients in their responses to these therapies, reinforces the need for careful selection of therapy for each patient.

The focus of clinical trial research of OA therapies, such as NSAIDs, has typically centered on the response to treatment (relief of pain), while the consequences of inadequate pain relief are less well investigated. Moreover, the outcomes of clinical trials do not always directly translate to the real world, where patients may use their pain medication intermittently and have comorbidities that influence tolerability.

The objectives of this study were to concurrently evaluate the perceptions of physicians and patients regarding response to OA therapy in a real-world clinical care setting, as measured by satisfaction with the current control of OA among patients receiving tNSAIDs. Exploration of patient and physician satisfaction with tNSAIDs may offer information relevant for individualized management of OA.

## Methods

This analysis drew on data from the 2009 Adelphi Real World Arthritis Disease Specific Program (DSP). The DSPs, described in detail elsewhere,<sup>6</sup> are multinational cross-sectional surveys of physicians and patients, conducted every 1–2 years to understand current clinical practice for common chronic diseases. The physicians who participated in the 2009 arthritis DSP were recruited by telephone from public lists of health care professionals, and included primary care physicians, rheumatologists, and orthopedists. To be eligible, physicians had to have been qualified as a physician from 1971–2007, to see a minimum of ten patients with OA per month, and to be personally involved in the drug management for arthritis. Participating physicians were asked to identify, and complete a written survey for, consecutive patients with rheumatoid arthritis or OA at any site; these patients, in turn, were asked to participate by completing a written patient survey. Physicians did not see or influence patient responses, and patient survey completion was voluntary.

The DSP was conducted under the European Pharmaceutical Market Research Association (EphMRA) code of conduct, thus ensuring compliance with Health Insurance Portability and Accountability Act (HIPAA) and all European data protection requirements. Patients were asked to provide consent before participating. Physicians were compensated

for their participation in the study according to accepted research rates.

Patients with OA in Germany, Spain, and the UK who reported using a tNSAID were included in the study. Patients using disease-modifying agents and biologics were excluded. The diagnosis and severity of OA were established by the treating physicians; specification of the diagnostic test(s) leading to the OA diagnosis and severity assessment were not required.

Patients and their physicians completed standardized questionnaires to collect data on OA management, including clinical characteristics, prescribing behaviors, treatment patterns, patient-reported outcomes, and health-related quality of life. For each patient, physicians were asked, “Which of the following best describes your satisfaction with the current control of this patient’s arthritis?” Each patient was asked, “Overall, are you satisfied with the current control of your arthritis medicine?” The level of satisfaction with OA control was reported by both physicians and patients as (1) satisfied; (2) not satisfied, but I believe this is the best that can be achieved; or (3) not satisfied, and I believe better control can be achieved. The meaning of the word “control” was not specified in the questionnaire and therefore was based on the physicians’ and patients’ subjective perception. The satisfaction question permitted each physician and patient to interpret the word “control” according to their priorities. Other patient-reported outcomes included a generic health-related quality of life instrument, the EuroQol EQ-5D;<sup>7</sup> the Health Assessment Questionnaire (HAQ);<sup>8</sup> and the Western Ontario and McMaster Universities OA Index (Likert scale).<sup>9</sup>

Study questionnaires were developed in English and then translated into the language of the study country by a local DSP fieldwork agency. A second independent translation agency linguistically validated each translated document. All responses were deidentified and anonymized to preserve patient confidentiality and to avoid bias at the data collection and analysis phases.

## Statistical analyses

Descriptive statistics were used to describe the sample of patients using tNSAIDs. Categorical and continuous variables were compared using the Chi-squared test and *t*-test, respectively. Cohen’s  $\kappa$  coefficient with 95% confidence interval was derived to determine agreement between patient and physician in satisfaction with current control of OA. Analyses were carried out using Stata version 10.1 (Stata Corp LP, College Station, TX, USA) and SAS software version 9.2 (SAS Institute Inc, Cary, NC, USA).

## Results

A total of 361 physicians participated in the study, including primary care physicians (34%), rheumatologists (54%), and orthopedists (12%). They completed study questionnaires for 1572 patients, of whom 1119 (71.2%) completed the corresponding patient questionnaire. Among the patients completing the patient questionnaire, 713 (63.7%) were treated with a tNSAID and were included in the analyses described here. Results by country are reported in Tables S1–S3.

Patient demographic and clinical characteristics are summarized in Table 1 for the 705/713 patients with recorded OA severity, graded by physicians as mild

(n = 214, 30%) versus moderate (n = 389, 55%) or severe (n = 102, 14%). Patients ranged in age from 36–94 years, with a mean (standard deviation) age of 65.5 (11.0) years; 60% were women; 86% were white; and the mean (standard deviation) body mass index was 27.7 (4.7). The time since the diagnosis of OA ranged from 0–27 years, with a median of 3.5 years. Patients with mild as compared with moderate or severe OA were younger, more likely to be employed, and less likely to be obese or to have a concomitant gastric condition or history of cardiovascular disease; moreover, they had less need for analgesia and were less disabled (by HAQ score) (Table 1).

**Table 1** Characteristics of the study patient population, overall and by severity of osteoarthritis<sup>a</sup>

Characteristic <sup>a</sup>	Total (n = 705)		Mild OA <sup>b</sup> (n = 214)		Moderate/severe OA <sup>b</sup> (n = 491)		P
	n		n		n		
Age, mean (SD)	705	65.5 (11.0)	214	62.1 (11.0)	491	66.9 (10.8)	<0.001
36–55 years		146 (20.7)		65 (30.4)		81 (16.5)	<0.001
56–75 years		421 (59.7)		123 (57.5)		298 (60.7)	
76–85 years		122 (17.3)		22 (10.3)		100 (20.4)	
>85 years		16 (2.3)		4 (1.9)		12 (2.4)	
Sex, female	705	420 (59.6)	214	129 (60.3)	491	291 (59.3)	NS
Race, white	705	605 (85.8)	214	177 (82.7)	491	428 (87.2)	NS
Spanish/Hispanic		64 (9.1)		21 (9.8)		43 (8.8)	
Other		34 (4.8)		15 (7.0)		19 (3.9)	
Employed	705	170 (24.1)	214	65 (30.4)	491	105 (21.4)	0.012
Smoker	705	164 (23.3)	214	56 (26.2)	491	108 (22.0)	NS
BMI, mean (SD)	705	27.7 (4.7)	214	26.8 (4.0)	491	28.1 (4.9)	<0.001
Obese (BMI ≥ 30 kg/m <sup>2</sup> )	705	169 (24.0)	214	38 (17.8)	491	131 (26.7)	0.024
Concomitant condition							
GI condition	705	170 (24.1)	214	32 (15.0)	491	138 (28.1)	<0.001
History of CV disease	705	403 (57.2)	214	100 (46.7)	491	303 (61.7)	<0.001
Hypertension	411	332 (80.8)	102	78 (76.5)	309	254 (82.2)	NS
Depression/anxiety	277	75 (27.1)	64	19 (29.7)	213	56 (26.3)	NS
Other medication	705		214		491		
Gastroprotective agent		330 (46.8)		75 (35.1)		255 (51.9)	<0.001
Cardiovascular agent		371 (52.6)		92 (43.0)		279 (56.8)	<0.001
Lipid-lowering agent		94 (13.3)		14 (6.5)		80 (16.3)	<0.001
Current need for analgesia <sup>b</sup>							
0–2.9 (none)	705	172 (24.4)	214	93 (43.5)	491	79 (16.1)	<0.001
3–3.9		107 (15.2)		44 (20.6)		63 (12.8)	
4–5.9		190 (27.0)		42 (19.6)		148 (30.1)	
6–7.9		160 (22.7)		20 (9.4)		140 (28.5)	
8–10 (strongest need)		28 (4.0)		0 (0.0)		28 (5.7)	
Osteoarthritis, knee	705	467 (66.2)	214	124 (57.9)	491	343 (69.9)	0.002
Osteoarthritis, hip	705	310 (44.0)	214	64 (29.9)	491	246 (50.1)	n/a
HAQ <sup>c</sup>	683		205		470		
0.0–0.9		245 (36.0)		124 (60.5)		119 (25.3)	<0.001
1.0–1.9		322 (47.1)		67 (32.7)		250 (53.2)	
2.0–2.9		114 (16.7)		14 (6.8)		99 (21.1)	
3.0		2 (0.29)		0 (0.0)		2 (0.43)	

**Notes:** P-value calculated using the Chi-squared test for categorical values and t-test for continuous variables; <sup>a</sup>values are number (%) of patients (eight patients were missing data on OA severity); <sup>b</sup>physician assessment; <sup>c</sup>patient self-assessment.

**Abbreviations:** BMI, body mass index; CV, cardiovascular condition; GI, gastrointestinal; HAQ, Health Assessment Questionnaire (scale: zero [no disability] to three [complete disability]); n/a, not assessed; NS, not statistically significant; SD, standard deviation; OA, osteoarthritis.

All patients were taking a tNSAID, most commonly diclofenac (46%), ibuprofen (37%), or naproxen (6%). Sixty percent of patients reported good compliance (ie, “I follow the instruction fully and give my medication every chance to work”), including 63% with mild OA and 59% with moderate to severe OA (Table 2).

Results of patient-reported measures, while variable, indicated persistent arthritis-associated disability for many patients. The mean (standard deviation) score on the generic EQ-5D was 0.59 (0.28) on a scale of zero (dead) to one (perfect health), while mean (standard deviation) score for patient functioning on the HAQ was 1.32 (0.68) on a scale of zero (no disability) to three (complete disability). On the Western Ontario and McMaster Universities OA Index (score of zero representing best response), the average score for pain was 5.7 on a zero to 20 scale and 2.5 for stiffness on a zero to eight scale; the average score for physical functioning had a mean score of 16.1 on a zero to 68 scale.

Physicians recorded dissatisfaction with the current control of arthritis for one-third of patients ( $n = 243$ , 34%; Table 3). Inadequate response was the most common reason cited for dissatisfaction, while for most of these patients, the prescribing physician believed that the current state of control was the best that could be achieved (Table 3). The replies of patients regarding satisfaction with their arthritis medication were proportionately similar to those of physicians (37% dissatisfied). Patient and physician assessments were the same in 70% of cases; the  $\kappa$  coefficient was 0.34 (95% confidence interval 0.26–0.41), indicating fair agreement. Overall, for 351/688 (51%) of patients, either the physician or the patient, or both, were dissatisfied. Only one-third of dissatisfied patients believed that better control of their arthritis could be achieved (Table 3).

Dissatisfaction with OA control was significantly more frequent for patients with moderate or severe OA than for those with mild OA (Table 3). Physicians recorded dissatisfaction with arthritis control for 14% of patients with mild and 43% of those with moderate to severe OA; the causes of dissatisfaction were similar among physicians regardless of OA severity. Among patients themselves, dissatisfaction was expressed by 24% of those with mild and 43% of those with moderate or severe OA. Patient and physician assessments were more often the same for patients with mild OA (76% versus 66% of those with moderate or severe disease). For 31% of patients with mild and 60% of those with moderate or severe OA, either the physician or the patient, or both, were dissatisfied.

## Discussion

This study provides comprehensive data from both physicians and consulting patients in three European countries on physician prescribing behaviors and satisfaction with control of OA provided by tNSAID treatment. It was found that for one-half of patients, either the physician, patient, or both were dissatisfied with OA control provided by tNSAIDs. Not surprisingly, this figure was higher for those patients with moderate or severe OA (60%) than for those with mild disease (31%). Thus, despite multiple options for tNSAID therapy, there is still an unmet medical need for alternative treatment options for patients and physicians to adequately treat OA.

The majority of physicians and patients who reported dissatisfaction in this survey also reported that they believed that the current level of OA control was the best that could be achieved for the patient. Interestingly, fewer physicians (21%) than patients (36%) believed that better control could be achieved. Given the importance of the patient–physician

**Table 2** Self-reported patient compliance for prescribed osteoarthritis medications, overall and by severity of osteoarthritis<sup>a</sup>

Characteristic	Total ( $n = 713$ )	Mild OA <sup>b</sup> ( $n = 214$ )	Moderate/severe OA <sup>b</sup> ( $n = 491$ )
I follow the instruction fully and give my medication every chance to work	429 (60.2)	135 (63.1)	288 (58.7)
I follow the instructions fully but sometimes forget to take the medication on the right day	154 (21.6)	43 (20.1)	110 (22.4)
I follow the instructions fully but am quick to give up if it doesn't work straight away or I get side effects	53 (7.4)	13 (6.1)	40 (8.2)
It varies, I tend to take my medication for a while and then stop and/or take it when I remember	26 (3.7)	5 (2.3)	20 (4.1)
It varies, I tend to take my medication only when symptoms occur or worsen	54 (7.6)	21 (9.8)	33 (6.7)
It varies, I tend to take my medication only when I know I may get a flare up/worsening of my arthritis	14 (2.0)	4 (1.9)	10 (2.0)

**Notes:** There were no statistically significant differences between patients with mild versus moderate/severe OA (Chi-squared test); <sup>a</sup>values are number (%) of patients (eight patients were missing data on OA severity); <sup>b</sup>physicians graded severity of OA as mild, moderate, or severe.

**Abbreviation:** OA, osteoarthritis.

**Table 3** Physician and patient satisfaction with treatments prescribed<sup>a</sup>

	Total (n = 713)	Mild OA <sup>b</sup> (n = 214)	Moderate/severe OA <sup>b</sup> (n = 491)	P
<b>Physicians' responses</b>	(n = 709)	(n = 213)	(n = 488)	
Satisfied	466 (65.7)	183 (85.9)	278 (57.0)	<0.001
Dissatisfied	243 (34.3)	30 (14.1)	210 (43.0)	
Believe this is the best that can be achieved for this patient	191 (78.6)	22 (73.3)	167 (79.5)	
Believe better control can be achieved for this patient	52 (21.4)	8 (26.7)	43 (20.5)	
<b>Causes of dissatisfaction</b>	(n = 243)	(n = 30)	(n = 210)	
Inadequate response	135 (55.6)	16 (53.3)	116 (55.2)	NS
Side effects	27 (11.1)	3 (10.0)	24 (11.4)	NS
Poor tolerance	19 (7.8)	2 (6.7)	16 (7.6)	NS
Other	58 (23.5)	8 (26.7)	49 (23.3)	NS
Not stated	22 (9.1)	1 (3.3)	21 (10)	NS
<b>Patients' responses</b>	(n = 692)	(n = 208)	(n = 478)	
Satisfied	433 (62.6)	158 (76.0)	273 (57.1)	<0.001
Dissatisfied	259 (37.4)	50 (24.0)	205 (42.9)	
Believe this is best that can be achieved for my arthritis	157 (64.1)	31 (66.0)	125 (64.1)	<0.001
Believe better control can be achieved for my arthritis	88 (35.9)	16 (34.0)	70 (35.9)	
<b>Physicians' and patients' responses<sup>c</sup></b>	(n = 688)	(n = 207)	(n = 475)	
In agreement	478 (69.1)	158 (76.3)	315 (66.3)	<0.001
Both satisfied	337 (70.5)	143 (69.1)	192 (40.4)	
Both dissatisfied	141 (29.5)	15 (7.3)	123 (25.9)	
Not in agreement	210 (30.3)	49 (23.7)	160 (33.7)	
Physician satisfied, patient dissatisfied	117 (55.7)	34 (16.4)	82 (17.3)	
Physician dissatisfied, patient satisfied	93 (44.3)	15 (7.3)	78 (16.4)	

**Notes:** P-value comparing mild versus moderate/severe (Chi-squared test); <sup>a</sup>values are number (%) of patients (eight patients were missing data on OA severity); <sup>b</sup>physicians graded severity of OA as mild, moderate, or severe (severity grade responses missing for eight patients); <sup>c</sup>Cohen's  $\kappa$  coefficient = 0.34 (95% confidence interval 0.26–0.41).

**Abbreviations:** OA, osteoarthritis; NS, not statistically significant.

relationship, further research should explore the apparent disconnect suggested by the  $\kappa$  coefficient of 0.34, indicating only fair agreement between patient and physician assessments regarding satisfaction with current control of OA.

Satisfaction with control of OA was measured as a proxy for physicians' and patients' assessments about the effectiveness of therapy; conversely, dissatisfaction with control of OA served as a proxy for inadequate response. In a prior study, Dworkin et al used a patient-completed global assessment of treatment satisfaction to assess response to therapy with a lidocaine patch for knee OA and chronic low back pain.<sup>10</sup> They found that improvements in measures of pain intensity, pain relief, and interference with physical functioning each made independent contributions to treatment satisfaction, whereas adverse events and improvements in emotional functioning and sleep did not. Results of other studies indicate that measures of treatment satisfaction improve concurrently with improvements in pain, function, and quality of life.<sup>11,12</sup>

Possible reasons for dissatisfaction were evaluated and it was found that inadequate response to treatment was the most common reason reported by physicians. Dissatisfaction with treatment can, in turn, lead to noncompliance, increased health care resource use such as repeat clinical visits, and

switching to other therapies for pain. Indeed, switching is common for patients receiving tNSAIDs.<sup>13,14</sup>

The strengths of this study are the inclusion of large numbers of physicians and their patients as part of a well-established survey, the inclusion of different types of health care providers, a real-world population that included some patients who might not be eligible for randomized clinical trials of treatment efficacy, and the concurrent assessment of physicians and patients for their satisfaction with control of arthritis. Similar to findings in other studies, it was found that patient and physician assessments may differ; this is true for global assessments in rheumatoid arthritis.<sup>15</sup>

Limitations of this purely descriptive study include the potential for recall bias, misunderstanding of survey questions, and other common limitations associated with use of survey instruments, including the potential for selection bias leading to lack of generalizability because only those patients who agreed to complete the questionnaires were included. The results may not represent all regions or practices in the selected countries. Some data were missing, including OA severity for eight patients and some patient self-assessment data, including HAQ data for 30/713 (4%) patients; 21/713 (3%) patients did not reply to the satisfaction question, with

matched physician–patient responses to the satisfaction question missing for 25/713 (4%) of patients. Moreover, it was not assessed which joints were affected by OA nor the effect of nonpharmacologic modalities of pain relief used in conjunction with tNSAIDs. Finally, patients with moderate and severe OA were grouped together because of the small numbers with severe OA.

## Conclusion

This study found there was dissatisfaction with the control of arthritis for 51% of patients receiving current tNSAID therapy, including 60% of those with moderate or severe OA, as expressed by physicians or patients or both. Dissatisfaction was largely related to treatment effectiveness (inadequate response); issues of tolerability were less commonly linked to dissatisfaction by physicians. Further research is needed to explore inadequate control of OA by tNSAIDs. In particular, the associations between inadequate control and outcomes such as uncontrolled pain, repeat physician visits, health care resource use, noncompliance, and switching to other therapies warrant further investigation.

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## Disclosure

SD Taylor, SV Everett, and DJ Watson are employees of Merck Sharp and Dohme Corp, a subsidiary of Merck and Co, Inc (Whitehouse Station, NJ, USA); TN Taylor has no conflicts of interest to declare; G Taylor-Stokes is an employee of Adelphi Real World. Medical writing and editorial assistance was provided by Elizabeth V Hillyer, which was funded by Merck Sharp and Dohme Corp.

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## Supplementary tables

**Table S1** Characteristics of the study patient population, overall and by country<sup>a</sup>

Characteristic <sup>a</sup>	Total (n = 713)		Germany (n = 344)		Spain (n = 252)		UK (n = 117)		P
	n		n		n		n		
Age, mean (SD) years	713	65.5 (11.0)	344	64.8 (11.1)	252	66.5 (11.1)	117	65.1 (10.4)	NS
36–55 years		146 (20.5)		71 (20.6)		51 (20.2)		24 (20.5)	
56–75 years		428 (60.0)		212 (61.6)		147 (58.3)		69 (59.0)	
76–85 years		123 (17.3)		54 (15.7)		46 (18.3)		23 (19.7)	
>85 years		16 (2.2)		7 (2.0)		8 (3.2)		1 (0.9)	
Sex, female	712	427 (59.9)	344	200 (58.1)	251	169 (67.3)	117	58 (49.6)	0.01
Race, white	713	611 (85.7)	344	337 (98.0)	252	177 (70.2)	117	97 (82.9)	<0.001
Spanish/Hispanic		66 (9.3)		1 (0.3)		64 (25.4)		1 (0.9)	
Other		36 (5.0)		6 (1.7)		11 (4.4)		19 (16.2)	
Employed	707	170 (23.8)	340	91 (26.8)	251	48 (19.1)	116	31 (26.7)	NS
Smoker	692	164 (23.0)	336	84 (25.0)	242	61 (26.4)	114	19 (16.7)	NS
BMI, mean (SD)	701	27.7 (4.7)	343	28.3 (5.2)	249	27.3 (3.6)	109	26.4 (4.7)	<0.001
Obese (BMI ≥ 30)		170 (24.3)		99 (28.9)		52 (20.9)		19 (17.4)	
Concomitant condition									
GI condition	713	171 (24.0)	344	67 (19.5)	252	78 (31.0)	117	26 (22.2)	0.005
History of CV disease	713	404 (56.7)	344	203 (59.0)	252	156 (61.9)	117	45 (38.5)	<0.001
Hypertension	404	333 (82.4)	203	173 (85.2)	156	121 (77.6)	45	39 (86.7)	NS
Depression/anxiety	284	78 (27.5)	122	25 (20.5)	124	43 (34.7)	38	10 (26.3)	0.04
Other medication	713		344		252		117		
Gastroprotective agent		335 (47.0)		111 (32.3)		184 (73.0)		40 (34.2)	<0.001
Cardiovascular agent		375 (52.6)		182 (52.9)		138 (54.8)		55 (47.0)	NS
Lipid-lowering agent		95 (13.3)		50 (14.5)		39 (15.5)		6 (5.1)	0.02
OA severity, <sup>b</sup> mild	705	214 (30.0)	342	99 (28.9)	247	77 (31.2)	116	38 (32.8)	<0.001
Moderate		389 (54.6)		170 (49.7)		148 (59.9)		71 (61.2)	
Severe		102 (14.3)		73 (21.3)		22 (8.9)		7 (6.0)	
Current need for analgesia <sup>b</sup>									
Mean (SD)	665	4.2 (2.1)	339	3.8 (2.1)	210	4.6 (2.1)	116	4.6 (2.0)	<0.001
0–2.9 (none)	665	174 (24.4)	339	112 (33.0)	210	39 (18.6)	116	23 (19.8)	<0.001
3–3.9		110 (15.4)		62 (18.3)		30 (14.3)		18 (15.5)	
4–5.9		190 (26.7)		93 (27.4)		61 (29.0)		36 (31.0)	
6–7.9		163 (22.9)		61 (18.0)		71 (33.8)		31 (26.7)	
8–10 (strongest need)		28 (3.9)		11 (3.2)		9 (4.3)		8 (6.9)	
Osteoarthritis, knee	713	472 (66.2)	344	226 (65.7)	252	175 (69.4)	117	71 (60.9)	NS
EQ-5D, mean (SD) <sup>c</sup>	713	0.59 (0.28)	344	0.61 (0.27)	252	0.55 (0.30)	117	0.61 (0.28)	<0.001
HAQ, mean (SD) <sup>c</sup>	713	1.32 (0.68)	344	1.26 (0.68)	252	1.37 (0.63)	117	1.37 (0.77)	<0.001
0.0–0.9	713	245 (35.9)	344	132 (39.4)	252	69 (29.1)	117	44 (39.6)	0.02
1.0–1.9		322 (47.1)		148 (44.2)		132 (55.7)		42 (37.8)	
2.0–2.9		114 (16.7)		53 (15.8)		36 (15.2)		25 (22.5)	
3.0		2 (0.3)		2 (0.6)		0 (0.0)		0 (0.0)	
WOMAC, mean (SD) <sup>c</sup>	519	29.1 (17.2)	241	29.6 (16.5)	190	27.7 (16.5)	88	30.3 (19.5)	NS
Pain	552	5.7 (3.7)	263	5.6 (3.4)	196	5.7 (3.6)	93	5.9 (20.0)	NS
Stiffness	531	2.5 (1.7)	248	2.4 (1.7)	192	2.6 (1.6)	91	2.8 (1.7)	NS
Physical function	681	16.1 (4.2)	322	16.4 (14.4)	245	15.5 (13.7)	114	16.6 (15.0)	NS

**Notes:** P-value calculated using the Chi-squared test for categorical values and t-test for continuous variables; <sup>a</sup>values are number (%) of patients unless otherwise indicated; <sup>b</sup>physician assessment; <sup>c</sup>patient self-assessment.

**Abbreviations:** BMI, body mass index; CV, cardiovascular condition; EQ-5D, EuroQol health-related quality of life (score range: zero [dead] to one [perfect health]); GI, gastrointestinal; HAQ, Health Assessment Questionnaire (scale: zero [no disability] to three [complete disability]); OA, osteoarthritis; WOMAC, Western Ontario and McMaster Universities OA Index (score range [zero is best]: pain zero to 20; stiffness zero to eight; physical function zero to 68); NS, not statistically significant.

**Table S2** Traditional nonsteroidal anti-inflammatory drug use, overall and by country<sup>a</sup>

Medications	Total (n = 713)	Germany (n = 344)	Spain (n = 252)	UK (n = 117)	P
Diclofenac	325 (45.6)	203 (59.0)	64 (25.4)	58 (49.6)	<0.001
Ibuprofen	262 (36.8)	133 (38.7)	97 (38.5)	32 (27.4)	NS
Naproxen	41 (5.8)	2 (0.6)	23 (9.1)	16 (13.7)	<0.001
Meloxicam	33 (4.6)	4 (1.2)	23 (9.1)	6 (5.1)	<0.001
Aceclofenac	26 (3.7)	2 (0.6)	24 (9.5)	0 (0.0)	<0.001
Ketoprofen	16 (2.2)	2 (0.6)	14 (5.6)	0 (0.0)	<0.001
Indomethacin	12 (1.7)	7 (2.0)	5 (2.0)	0 (0.0)	NS
Piroxicam	12 (1.7)	1 (0.3)	7 (2.8)	4 (3.4)	0.02
Etodolac	3 (0.4)	0 (0.0)	0 (0.0)	3 (2.6)	<0.001

**Note:** <sup>a</sup>Patients could be on more than one drug.

**Abbreviation:** NS, not statistically significant.

**Table S3** Physician and patient satisfaction with treatments prescribed, overall and by country<sup>a</sup>

	Total (n = 713)	Germany (n = 344)	Spain (n = 252)	UK (n = 117)	P
<b>Physicians' responses</b>	(n = 709)	(n = 342)	(n = 251)	(n = 116)	
Satisfied	466 (65.7)	234 (68.4)	153 (60.7)	79 (67.5)	NS
Dissatisfied	243 (34.3)	108 (31.6)	98 (39.0)	37 (31.9)	
Believe this is the best that can be achieved for this patient	191 (78.6)	77 (71.3)	82 (83.7)	32 (86.5)	
Believe better control can be achieved for this patient	52 (21.4)	31 (28.7)	16 (16.3)	5 (13.5)	
Causes of dissatisfaction	(n = 243)	(n = 108)	(n = 98)	(n = 37)	
Inadequate response	135 (55.6)	50 (46.3)	63 (64.3)	22 (59.5)	0.03
Side effects	27 (11.1)	10 (9.3)	9 (9.2)	8 (21.6)	NS
Poor tolerance	19 (7.8)	5 (4.6)	11 (11.2)	3 (8.1)	NS
Other	58 (23.5)	39 (36.1)	15 (15.3)	4 (8.1)	<0.001
Not stated	22 (9.1)	7 (6.5)	10 (10.2)	5 (13.5)	NS
<b>Patients' responses</b>	(n = 692)	(n = 338)	(n = 242)	(n = 112)	
Satisfied	433 (62.6)	225 (66.6)	137 (56.6)	71 (63.4)	0.05
Dissatisfied	259 (37.4)	113 (33.4)	105 (43.4)	41 (36.6)	
Believe this is best that can be achieved for my arthritis	157 (64.1)	72 (63.7)	60 (57.1)	25 (61.0)	NS
Believe better control can be achieved for my arthritis	88 (35.9)	37 (32.7)	35 (33.3)	16 (39.0)	
<b>Physicians' and patients' responses</b>	(n = 688)	(n = 336)	(n = 241)	(n = 111)	
Concordant	478 (69.1)	242 (71.6)	156 (64.5)	80 (71.4)	
Both satisfied	337 (70.5)	180 (74.4)	98 (62.8)	59 (73.8)	
Both dissatisfied	141 (29.5)	62 (25.6)	58 (37.2)	21 (26.3)	
Discordant	210 (30.3)	94 (27.8)	85 (35.1)	31 (27.7)	
Physician satisfied, patient dissatisfied	117 (55.7)	50 (53.2)	47 (55.3)	20 (64.5)	
Physician dissatisfied, patient satisfied	93 (44.3)	44 (46.8)	38 (44.7)	11 (35.5)	

**Note:** <sup>a</sup>Values are n (%).

**Abbreviation:** NS, not statistically significant.

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