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Impact of physician specialty on classification of physician-perceived patient severity for patients with osteoarthritis

J. Bailey †*, G.A. Hawker ‡, R. Wood †, J.C. Cappelleri §, V. Higgins †, N. Joyce §, M.-A. Hsu §

† Adelphi Real World, Macclesfield, Cheshire, UK
‡ Women's College Research Institute, Women's College Hospital & University of Toronto, Canada
§ Pfizer Inc, Groton, CT, USA

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SUMMARY

Background: Physicians often classify patients' osteoarthritis (OA) severity subjectively. As treatment decisions are influenced by severity classifications, it is important to understand the factors that influence physicians' OA severity ratings. This research sought to empirically identify physician and patient characteristics that lead to a patient being perceived as having more severe OA.

Methods: Data were analyzed from the OA IX Disease Specific Program, a large cross-sectional survey of OA physicians and patients in Germany, the UK, and USA between September 2011 and January 2012. Eligible, consenting physicians completed a Patient Record Form (PRF) for 10 consecutive OA patients. The PRF asked physicians to report the patient's demographics [age, gender, body mass index (BMI), ethnicity], their assessment of the patients' symptom severity, treatment, probability for surgery, to rate their overall OA severity (mild, moderate or severe) and the factors that had influenced the rating. Chi-squared tests and analysis of variance were used to identify patient characteristics that significantly impacted physicians' OA severity ratings. Controlling for the significant patient characteristics, we then examined the impact of physician specialty on physician's OA severity ratings. Finally, we investigated the differences in physician-reported factors that influenced the physicians' rating of patients' severity between physician specialties.

Results: Three hundred and sixty-three physicians [220 primary care physicians (PCPs), 48 rheumatologists, 95 orthopedic surgeons] recruited 3561 patients. Patients with greater age and BMI, worse symptoms and greater health care use were given higher OA severity ratings. Controlling for these factors, orthopedic surgeons rated their OA patients as more severe than PCPs and rheumatologists [adjusted odds ratio (OR) 1.8, 95% confidence interval (CI) 1.4–2.4]. Specialists (rheumatologists and orthopedic surgeons) were more likely than PCPs to use joint spaced narrowing based on X-ray and severity of joint deterioration radiographic severity to assess patients' OA severity (joint space narrowing: 79% and 78% vs 55%, $P < 0.0001$).

Conclusions: Patient age, BMI, presence and severity of symptoms and health care use significantly impacted physicians' OA severity ratings, but radiographic changes appeared to be given greater weight among orthopedic surgeons and rheumatologists than PCPs when assessing patient severity. Whether these differences translate into different treatment recommendations for similar patients is unknown, and warrants study.

Introduction

Osteoarthritis (OA) is the most common arthritis and is estimated to affect 9.6% of men and 18.0% of women globally[1,2]. Patients experience pain and stiffness and the condition is the sixth leading cause of years living with a disability[2]. There is no cure for OA and treatment aims to alleviate symptoms and slow the progression of the disease[3]. Management options include lifestyle changes (weight loss, physical activity), pharmacological and non-

* Address correspondence and reprint requests to: J. Bailey, Adelphi Real World, Macclesfield, Cheshire, UK.
E-mail addresses: james.bailey@adelphigroup.com (J. Bailey), gillian.hawker@wchospital.ca (G.A. Hawker), robert.wood@adelphigroup.com (R. Wood), joseph.c.cappelleri@pfizer.com (J.C. Cappelleri), victoria.higgins@adelphigroup.com (V. Higgins), nina.joyce@pfizer.com (N. Joyce), ming-ann.hsu@pfizer.com (M.-A. Hsu).

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Table I
Univariate relationship between physician-reported patient characteristics and physician-perceived severity

Variables	Overall ($n = 3561$)	Current severity			*P*-value
		Mild ($n = 886$)	Moderate ($n = 1852$)	Severe ($n = 823$)	
Physician-reported patient demographics					
Age, *mean* (*SD*)	64.5 (12.2)	61.8 (11.9)	64.8 (12.1)	66.7 (12.5)	**<0.0001**
Male, *N* (%)	1546 (43.4)	377 (42.6)	819 (44.3)	350 (42.5)	0.5818
BMI, *mean* (*SD*)	29.6 (6.6)	28.5 (5.8)	29.8 (6.7)	30.3 (7.1)	**<0.0001**
Caregiver involved, *N* (%)	394 (11.3)	49 (5.7)	200 (11.0)	145 (18.0)	**<0.0001**
# CV conditions, *mean* (*SD*)	1 (1.2)	0.7 (0.9)	1 (1.2)	1.2 (1.3)	**<0.0001**
# AI conditions, *mean* (*SD*)	0.1 (0.3)	0.1 (0.3)	0.1 (0.3)	0.1 (0.3)	0.0587
# GI conditions, *mean* (*SD*)	0.3 (0.7)	0.3 (0.6)	0.4 (0.7)	0.4 (0.7)	**<0.0001**
# Other conditions, *mean* (*SD*)	0.8 (1.2)	0.6 (0.9)	0.9 (1.3)	1 (1.3)	**<0.0001**
Level of adherence (0–10)†, *mean* (*SD*)	8.2 (1.9)	8.4 (1.9)	8.1 (1.9)	8 (1.9)	**<0.0001**
Physician-reported OA related measures					
Pain rating (0–10)*, *mean* (*SD*)	5.2 (2.1)	3.1 (1.6)	5.2 (1.5)	7.2 (1.4)	**<0.0001**
Functionality rating (0–10)*, *mean* (*SD*)	4.8 (2.2)	2.9 (2.1)	4.8 (1.8)	6.7 (1.7)	**<0.0001**
# Joints affected, *mean* (*SD*)	3.3 (2.9)	2.5 (1.8)	3.5 (3.0)	3.8 (3.2)	**<0.0001**
Level of analgesia (0–10)*, *mean* (*SD*)	4.6 (2.4)	2.7 (1.8)	4.7 (2.1)	6.5 (2.1)	**<0.0001**
Physician-reported symptoms ever suffered by patient, *N* (%)					
Joint tenderness	2552 (73.5)	570 (65.7)	1363 (75.5)	619 (77.5)	**<0.0001**
Tiredness/lethargy	814 (23.4)	134 (15.4)	417 (23.1)	263 (32.9)	**<0.0001**
Stiffness in the morning	2066 (59.5)	489 (56.3)	1075 (59.5)	502 (62.8)	**0.0263**
Stiffness in joints overall	1505 (43.3)	282 (32.5)	821 (45.5)	402 (50.3)	**<0.0001**
Pain on movement	2997 (86.3)	718 (82.7)	1546 (85.6)	733 (91.7)	**<0.0001**
Pain at rest	1833 (52.8)	326 (37.6)	939 (52.0)	568 (71.1)	**<0.0001**
Persistent lower back pain	1174 (33.8)	185 (21.3)	649 (35.9)	340 (42.6)	**<0.0001**
Nocturnal wakening	786 (22.6)	103 (11.9)	380 (21.0)	303 (37.9)	**<0.0001**
Loss of movement	1326 (38.2)	181 (20.9)	689 (38.2)	456 (57.1)	**<0.0001**
Loss of grip	497 (14.3)	115 (13.2)	245 (13.6)	137 (17.1)	**0.0325**
Swollen joints	1140 (32.8)	207 (23.8)	605 (33.5)	328 (41.1)	**<0.0001**
Cracking joints	988 (28.4)	173 (19.9)	520 (28.8)	295 (36.9)	**<0.0001**
Cramp	258 (7.4)	38 (4.4)	126 (7.0)	94 (11.8)	**<0.0001**
Physician-reported physician involvement					
# Consultations in the last 12 months, *mean* (*SD*)	2.9 (2.7)	2.3 (1.8)	2.8 (2.3)	3.9 (3.7)	**<0.0001**
Other physician involved, *N* (%)	721 (20.5)	130 (14.8)	378 (20.6)	213 (26.3)	**<0.0001**
Physician-reported patient surgery status, *N* (%)					
Surgery undertaken	641 (18.3)	157 (18.2)	268 (14.7)	216 (26.6)	**<0.0001**
Surgical candidate	761 (21.8)	46 (5.3)	365 (20.0)	350 (43.1)	
Neither	1705 (48.7)	556 (64.4)	951 (52.2)	198 (24.4)	
Don't know	391 (11.2)	105 (12.2)	237 (13.0)	49 (6.0)	

SD: standard deviation; CV: cardiovascular; AI: autoimmune; GI: gastrointestinal.
Bold text indicates characteristics that are significant.
A *P*-value pertains to whether there is a difference in means (for a continuous outcome) or a difference in proportions (for a categorical) between at least two of the three groups (mild, moderate or severe).
* A higher score indicates a worse state.
† A higher score indicates a better level.

pharmacological therapies, and ultimately surgery either to preserve or replace the joint[4,5].

Treatment decisions are influenced by a number of factors including the physicians' and patients' perceptions of the severity of disease[4,6]. However, the physician's assessment of the severity of disease as mild, moderate or severe is likely multi-factorial and may be influenced by patient socio-demographic characteristics, patient reported symptoms, functional limitations, and structural joint severity based on radiologic findings. The relative importance of these aspects of disease severity in determining physicians' perceptions of their patients' OA severity is not well understood, nor whether there are differences by physician specialty. This latter issue is of particular relevance given that patients with OA may receive care from many different physicians, including a primary care physician (PCP), a rheumatologist, and/or an orthopedic surgeon. Different approaches to disease severity assessment might delay progression to specialist care and joint replacement or, conversely, might result in inappropriate surgical intervention when alternative therapy might be more appropriate[7].

Against this background, the current analysis was undertaken in order to identify physician and patient characteristics that lead to a patient being perceived as having more or less severe OA.

Methods

All data came from the OA IX Disease Specific Program (DSP), a large, cross-sectional multinational survey that captures robust, real-world data[8]. DSPs are run independently and with no set hypotheses. The data captured is a representation of physicians' behavior in real-world clinical practice and provides in depth market understanding of a specific disease area. The survey was conducted between September 2011 and January 2012, including orthopedic surgeons, rheumatologists and PCPs from two European countries, the United Kingdom and Germany, and the United States of America.

Physician participants were identified from public lists of health care professionals according to predefined selection criteria: practicing physicians in one of three specialties (orthopedic surgery, rheumatology, primary practice) and seeing more than 10 confirmed OA patients in a typical month. Candidate respondents were screened by telephone and those who met the predefined eligibility criteria were invited to participate.

Each eligible and consenting physician completed a Patient Record Form (PRF) for 10 consecutively seen OA patients, regardless of the reason for the visit and irrespective of the