EXTENDED REPORT

Level of acceptability of EULAR recommendations for the management of knee osteoarthritis by practitioners in different European countries

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Objective: To evaluate the level of acceptability of the EULAR recommendations for the management of knee osteoarthritis (KOA) in practice.

Methods: A questionnaire was sent to general practitioners, rheumatologists, rehabilitators, and orthopaedic surgeons in five European countries (France, Spain, Belgium, Switzerland, Italy). Practitioners were asked to give their opinion on the 10 EULAR recommendations and on 23 treatment modes for KOA. Practitioners' opinions were compared with those of the expert task force involved in the development of these recommendations.

Results: The overall response rate was 10.4% (4204 replies). Results were similar across countries and specialties. Of the 23 treatment modes proposed, only joint lavage and intra-articular (IA) corticosteroid injections were more strongly recommended by the expert task force than by the responders as a whole, while the opposite was true for spa therapy. Principal component analysis showed: (1) some practitioners preferred "hard line" treatments (surgery, IA injections, or non-steroidal anti-inflammatory drugs (NSAIDs)); (2) there was a difference between those prescribing pharmacological (paracetamol) or non-pharmacological measures with low iatrogenicity (exercises, sticks, education), and those prescribing less well validated treatments closer to "alternative" medicine; (3) each specialist tended to advocate modes that they were most familiar with: rheumatologists were more likely to recommend IA injections and NSAIDs; orthopaedic surgeons, surgical procedures; rehabilitators, education and all non-pharmacological modes; general practitioners, spa therapy and opioids.

Conclusions: A multidisciplinary approach is optimal in the management of this chronic disease with its variable course.

European recommendations for the treatment of knee osteoarthritis (KOA), based on expert opinion and evidence based medicine, were published by a EULAR task force in 2000.¹ The task force took into account the 23 types of treatment that were available for knee osteoarthritis and recommended 10 guidelines for the management of the disease (table 1).

Although the ultimate goal of guidelines is to improve the management and thus the outcome of a specific disease,² scientific data are not always translated into practice, resulting in non-standard patient treatment and eventually a poor overall outcome. Thus the compliance of physicians in putting guidelines into practice plays a key role in this process.³ Compliance is influenced by several factors, such as the physician's background, the recommendations themselves, and the disease for which they are developed, and also the way they are implemented.⁴ Thus, despite the importance of clinical guidelines, their acceptability by physicians to whom they are addressed is not routinely quantified. Further, in the management of KOA, physicians with different backgrounds are involved—general practitioners, rheumatologists, rehabilitators, and orthopaedic surgeons.

We therefore carried out a survey to evaluate the opinion of physicians involved in the management KOA across Europe on the 10 recommendations and the 23 treatment modes.

METHODS

A questionnaire was sent to general practitioners, rheumatologists, rehabilitators, and orthopaedic surgeons in five

European countries—Belgium, France, Italy, Spain, and Switzerland—between February and April 2001.

In all countries the questionnaire was sent by the scientific societies of each specialty involved, to all their members. However, in Switzerland, a general mailing was undertaken to all general practitioners, rheumatologists (including rehabilitators), and orthopaedic surgeons, using a national database. In Italy, only rheumatologists were involved.

The two questions addressed in this paper are:

- What is your overall opinion about the usefulness of each of the 23 treatment modes of the European recommendations on the treatment of knee osteoarthritis (using a 100 mm visual analogue scale (VAS), ranging from 0 "I do not recommend its use" to 100 "I recommend its use")?
- What is your overall opinion on each of the 10 European recommendations on the treatment of knee osteoarthritis (using a 100 mm visual analogue scale ranging from 0 "I totally disagree with this recommendation" to 100 "I totally agree")?

Completed questionnaires were collected and data were recorded and analysed, using SAS 8.2 software for PC (SAS Institute Inc, Cary, North Carolina, USA), as follows. Descriptive analyses (means, standard deviations, medians, and quartiles) and comparisons between practitioners' and

Abbreviations: EULAR, European League Against Rheumatism; KOA, knee osteoarthritis; PCA, principal components analysis; VAS, visual analogue scale

Table 1 Final recommendations for the management of knee osteoarthritis based on the opinion of the experts (from reference 1)

- 1 The treatment of knee OA should be tailored to the individual patient, taking into account factors such as age, comorbidity, and the presence of inflammation
- 2 Optimal management of knee OA requires a combination of pharmacological and non-pharmacological treatment modes
- 3 Intra-articular injection of a long acting steroid is indicated for acute exacerbation of knee pain, especially if accompanied by effusion
- 4 There is evidence that SYSADOA (glucosamine sulphate, chondroitin sulphate, diacerein, and hyaluronic acid) may possess structure modifying properties, but more studies using standardised methods are required
- 5 Hyaluronic acid and other SYSADOA are probably effective in knee OA, but the size effect is relatively small, suitable patients are not well defined, and pharmacoeconomic aspects of this treatment are not well established
- 6 Non-pharmacological treatment of knee OA should include regular education, exercise, appliances (sticks, insoles), and weight reduction
- 7 Exercises, especially those directed towards increasing strength of quadriceps and/or preserving normal mobility of the knee, are strongly recommended
- 8 Paracetamol is the oral analgesic to try first and, if successful, is the preferred long term oral analgesic
- 9 NSAIDs (oral and topical) should be considered in patients (with effusion) unresponsive to paracetamol
- 10 Joint replacement has to be considered in cases of refractory pain associated with disability and radiological deterioration

NSAID, non-steroidal anti-inflammatory drug; OA, osteoarthritis; SYSADOA, symptomatic slow acting drugs for osteoarthritis.

experts' opinions were carried out on the whole survey population, and by country and specialty. Comparisons of the mean scores between countries (whatever the specialty), and between specialties (whatever the country), were made using an overall analysis of variance (Fisher's test). Multivariate descriptive analysis using principal components analysis (PCA) was employed to summarise high dimensional data into fewer dimensions.⁵ PCA aimed to examine relations among all the answers provided by practitioners. This statistical analysis "reduces" data to the pertinent components with respect to variability and identifies correlations between therapeutic modes; these can determine "medical practices" or "general opinions" within the sample of the survey participants. In these newly calculated scales, the country effect and the specialty effect on medical practices and general opinion can be examined.

Missing answers were considered as missing data in the analyses. In the multivariate analysis we used only fully completed questionnaires.

RESULTS

More than 40 000 questionnaires were sent out, to nearly 30 000 general practitioners, 3500 rheumatologists, more than 2000 rehabilitators, and 4900 orthopaedic surgeons in five European countries. As the questionnaires were sent by the scientific society to their members only, not all physicians were represented. This explains the variability in the percentage of practitioners across countries and specialties (table 2).

In all, 4204 completed questionnaires were returned, corresponding to 10.4% of the practitioners contacted. This percentage varied across countries (from 6.5% (Spain) to 18% (Italy), and across specialty (from 7.4% of general practitioners to 22.9% of rheumatologists) (table 2).

Nine hundred and sixty four questionnaires (23% of responses) contained one or more incomplete items and each item was completed in at least 91% of the returned questionnaires. PCA were conducted on the 3240 fully completed questionnaires.

The age distribution of practitioners was almost identical in France, Belgium, and Switzerland (table 2). For France, the age distribution of physicians was based on the national statistics, as an indicator of sample representativeness. In all countries, between one quarter and one fifth of practitioners were in the 30 to 40 year age group. Spain had the highest percentage of practitioners in the 41 to 50 year age group.

Data from Italy were insufficient and the percentage of given answers was too small to be analysed. Fifty two per cent of practitioners answering this question (94.6% response rate) were in private practice, 29% in a hospital, and 19% had a mixed mode of practice.

Opinions on treatment modes

The overall results of the survey were compared to the EULAR task force experts' opinions¹ (table 3). The results were globally similar. Only three treatment modes were judged differently by experts and survey participants: joint lavage and intra-articular (IA) steroid injections were more strongly recommended by the experts (mean (SD): 55 (28) mm and 71 (27) mm, respectively) than by the survey participants as a whole (30 (26) mm and 46 (27) mm). Conversely, the survey participants were more in favour of spa therapy (49 (29) mm) than the experts of the task force (28 (22) mm).

Some differences were observed between countries: practitioners in Belgium were less in favour of weight reduction (mean (SD): 44 (37) mm) and spa therapy (36 (29) mm) compared with the global average response (69 (31) mm and 49 (29) mm) (table 4). The following treatment modes were more often recommended in some countries compared with the average: osteotomy (64 (28) mm) and joint lavage (40 (28) mm) in France; use of insoles (58 (27) mm and 61 (29) mm) in Switzerland and Italy; and topical creams (57 (28) mm) in Switzerland. All differences were statistically significant though not clinically relevant, except for vitamins, where opinions were the same across countries (14 (18) mm in the whole survey).

Some differences were observed between specialties (table 5): total knee replacement and osteotomy were more often recommended by orthopaedic surgeons (mean (SD): 86 (16) mm and 72 (25) mm, respectively), while exercise (66 (27) mm) and insoles (30 (28) mm) were less often recommended compared with other specialties. General practitioners were more in favour of opioids (30 (26) mm) and less likely to prescribe hyaluronic acid (28 (23) mm), while rheumatologists were strong advocates of IA steroid administration (60 (24) mm).

To summarise the large amount of information collected, four principal components were identified in the PCA multivariate analysis:

- Component 1 (18.3% of total variability): this opposed the practitioners who gave high scores to all items (compared with the mean values of the total survey) to those who

Table 2 Details of the questionnaire mailing, by country, and by specialty, and the demographics of the physicians involved

	Belgium	France	Italy	Spain	Switzerland	Total
Number of inhabitants (millions in 2001)	10.3	59.7	57.8	40.1	7.3	175.2
Specialties (number (% of the total number of specialists in the country))						
GPs	4 757 (31.3%)	6 070 (8.3%)	40	12 000 (50%)	7 147 (100%)	29 984
Rheumatologists	199 (58.2%)	905 (34.6%)	921 (100%)	1 070 (100%)	352* (100%)	3 447
Rehabilitators	367 (74.7%)	444 (38.1%)	39	1 300 (100%)	–	2 150
Orthopaedic surgeons	732 (67.7%)	1 535 (49%)	–	2 100 (100%)	555 (100%)	4 922
Questionnaires (n)						
Number sent	6 055	8 924	1 000	16 470	8 054	40 503
Number returned (% sent)	1 067 (17.6%)	1 174 (13.2%)	180 (18.0%)	1 071 (6.5%)	712 (8.8%)	4 204 (10.4%)
Age group of physicians (years) (% in sample/% in national database)						
30–40	25/25.4†	21/17.6‡	36	25	18	
41–50	37/31.0	41/45.0	52	57	43	
51–60	25/21.3	30/30.9	10	12	32	
>60	13/22.3	8/6.0	2	5	6	

*In the Swiss health system, it is not possible to differentiate between rheumatologists and rehabilitators.

†National Statistics for Belgium: http://www.statbel.fgov.be/pub/d3/p363y2000_fr.pdf

‡National Statistics for France: DREES, 2001 (D Sicart - Les médecins: estimates for 1 January 2001 to 28 October 2001): http://www.sante.gouv.fr/GP_general_practitioner.

gave low scores to all items. Belgium among countries and orthopaedic surgeons among specialties scored all items lower than the mean values of the total survey.

- Component 2 (9.3% of total variability): this corresponded to consistency in practitioners' preference for knee replacement, osteotomy, joint lavage, IA steroids, arthroscopic debridement, IA hyaluronic acid, and NSAIDs. French practitioners were more likely to recommend these "hard line" treatments than Spanish or Italian. Similarly, orthopaedic surgeons were more likely to recommend these treatment methods than general practitioners.
- Component 3 (7.9% of total variability): this opposed recommendations for exercise, sticks, patient education, and paracetamol (which were positively related) to

recommendations for vitamins, mineral salts, and hormone replacement therapy. Italians, Spanish, and Swiss physicians were more likely to recommend the first group than the second group, while Belgian physicians were more likely to do the reverse. Similarly, orthopaedic surgeons were more likely to recommend the first group than the second group, while general practitioners were more likely to recommend the second group.

- Component 4 (5.5% of variability): this opposed practitioners' age group to the recommendations for opioids, NSAIDs, and IA steroids. These treatment modes were recommended less often by older physicians and also less often in Belgium and France. On the other hand, rheumatologists, who were younger, were more likely to

Table 3 Assessment of treatment modes in the whole survey compared with the experts' opinion,¹ expressed in mm on a visual analogue scale, where 0 = "I do not recommend its use", and 100 = "I do recommend its use"

	Experts' opinion	Survey (total)	
		No of responses	Mean value (mm)
Exercise	82 (15)	4069	76 (23)
TKR	81 (33)	4038	70 (24)
Paracetamol	78 (22)	4195	76 (23)
NSAIDs	77 (24)	4196	66 (22)
Education	77 (25)	4055	75 (24)
IA steroids	71 (27)	4196	46 (27)
Diet	69 (29)	4061	69 (31)
Sticks	60 (32)	4063	67 (24)
Lavage	55 (28)	3959	30 (26)
Insoles	54 (34)	4020	47 (30)
SYSADOA	50 (27)	3975	47 (27)
Topics	50 (29)	4010	44 (29)
Hyaluronic acid	48 (24)	3902	35 (26)
Osteotomy	42 (31)	4004	49 (29)
Opioids	40 (21)	4186	27 (25)
Patellar tape	35 (28)	3824	23 (22)
Arthroscopic debridement	32 (28)	3962	34 (26)
Psychotropic drugs	28 (23)	4035	17 (18)
Spa therapy	28 (22)	4049	49 (29)
Telephone contact	27 (26)	3882	30 (27)
Vitamins	19 (22)	4015	14 (18)
HRT	15 (19)	4001	12 (16)
Minerals	14 (15)	4010	19 (22)

Values are mean (SD) or n.

HRT, hormone replacement therapy; IA, intra-articular; NSAIDs, non-steroidal anti-inflammatory drugs; SYSADOA, symptomatic slow acting drugs for osteoarthritis; TKR, total knee replacement.

Table 4 Assessment of treatment modes in the whole survey and by country, expressed in mm on a visual analogue scale, where 0 = "I do not recommend its use", and 100 = "I do recommend its use"

	Survey (total)	Belgium	France	Italy	Spain	Switzerland	p Value*
No of questionnaires	4204	1067	1174	180	1071	712	
Exercise	76 (23)	72 (25)	69 (26)	83 (17)	81 (18)	82 (20)	<0.0001
TKR	70 (24)	69 (23)	76 (22)	55 (29)	67 (25)	72 (23)	<0.0001
Paracetamol	76 (23)	74 (23)	79 (21)	66 (27)	76 (22)	75 (25)	<0.0001
Education	75 (24)	71 (25)	74 (25)	87 (16)	79 (21)	73 (24)	<0.0001
NSAIDs	66 (22)	62 (23)	68 (22)	68 (22)	64 (20)	74 (20)	<0.0001
IA steroids	46 (27)	44 (26)	49 (29)	50 (25)	41 (25)	52 (26)	<0.0001
Diet	69 (31)	44 (37)	80 (22)	86 (17)	77 (21)	74 (26)	<0.0001
Sticks	67 (24)	62 (26)	68 (24)	65 (25)	70 (21)	68 (24)	<0.0001
Lavage	30 (26)	22 (24)	40 (28)	33 (27)	28 (24)	28 (25)	<0.0001
Insoles	47 (30)	42 (30)	43 (31)	61 (29)	46 (28)	58 (27)	<0.0001
SYSADOA	47 (27)	44 (27)	51 (28)	56 (26)	42 (24)	50 (27)	<0.0001
Topics	44 (29)	40 (28)	42 (29)	43 (30)	42 (27)	57 (28)	<0.0001
Hyaluronic acid	35 (26)	29 (25)	38 (26)	58 (26)	35 (24)	33 (27)	<0.0001
Osteotomy	49 (29)	39 (28)	64 (28)	40 (27)	46 (26)	50 (27)	<0.0001
Opioids	27 (25)	20 (23)	30 (28)	14 (18)	27 (22)	33 (27)	<0.0001
Patellar tape	23 (22)	23 (21)	22 (22)	26 (22)	22 (20)	26 (24)	0.00004
Arthroscopic debridement	34 (26)	33 (26)	32 (27)	36 (26)	33 (25)	37 (26)	0.00007
Psychotropic drugs	17 (18)	14 (17)	16 (18)	15 (20)	21 (18)	18 (18)	<0.0001
Spa therapy	49 (29)	36 (29)	50 (28)	60 (27)	63 (25)	45 (28)	<0.0001
Telephone contact	30 (27)	23 (25)	30 (27)	44 (31)	34 (28)	29 (27)	<0.0001
Vitamins	14 (18)	13 (17)	14 (19)	13 (16)	14 (17)	14 (20)	0.11193
HRT	12 (16)	10 (16)	16 (20)	9 (12)	13 (15)	8 (12)	<0.0001
Minerals	19 (22)	17 (21)	20 (24)	15 (18)	21 (22)	17 (21)	0.00001

Values are mean (SD).

*p Values for Fisher's test of country effect (analysis of variance).

HRT, hormone replacement therapy; IA, intra-articular; NSAIDs, non-steroidal anti-inflammatory drugs; SYSADOA, symptomatic slow acting drugs for osteoarthritis; TKR, total knee replacement.

recommend these methods than orthopaedic surgeons, who were older.

These four components accounted for 41% of total variability. All further identified components accounted for too little variability to provide useful comparisons.

Opinion on the EULAR recommendations

Overall, the physicians were strongly in favour of the recommendations (table 6). The scores ranged from 93 (11) mm for tailored treatment (recommendation 1) to 76 (27) mm for IA steroid injections (recommendation 3). There were very few differences between countries (table 6) and

Table 5 Assessment of treatment modes in the whole survey and by specialty, expressed in mm on a visual analogue scale, where 0 = "I do not recommend its use", and 100 = "I do recommend its use"

	Survey (total)	GPs	Rheumatologists	Rehabilitators	Orthopaedic surgeons	p Value*
No of questionnaires	4204	2213	790	260	845	
Exercise	76 (23)	77 (21)	80 (20)	79 (22)	66 (27)	<0.0001
TKR	70 (24)	64 (24)	69 (25)	74 (21)	86 (16)	<0.0001
Paracetamol	76 (23)	79 (21)	77 (22)	73 (24)	68 (26)	<0.0001
Education	75 (24)	75 (23)	81 (21)	83 (19)	67 (27)	<0.0001
NSAIDs	66 (22)	65 (22)	67 (21)	65 (22)	71 (22)	<0.0001
IA steroids	46 (27)	42 (25)	60 (24)	47 (27)	44 (29)	<0.0001
Diet	69 (31)	67 (32)	76 (26)	66 (32)	68 (31)	<0.0001
Sticks	67 (24)	67 (24)	66 (23)	72 (23)	65 (25)	0.0018
Lavage	30 (26)	23 (23)	38 (26)	30 (26)	40 (28)	<0.0001
Insoles	47 (30)	53 (28)	50 (30)	45 (28)	30 (28)	<0.0001
SYSADOA	47 (27)	46 (27)	53 (27)	49 (27)	42 (26)	<0.0001
Topics	44 (29)	49 (28)	42 (29)	44 (30)	32 (27)	<0.0001
Hyaluronic acid	35 (26)	28 (23)	48 (27)	40 (25)	40 (26)	<0.0001
Osteotomy	49 (29)	42 (26)	45 (27)	52 (29)	72 (25)	<0.0001
Opioids	27 (25)	30 (26)	24 (24)	22 (24)	21 (23)	<0.0001
Patellar tape	23 (22)	26 (21)	23 (22)	22 (22)	17 (20)	<0.0001
Arthroscopic debridement	34 (26)	33 (24)	29 (24)	27 (24)	42 (29)	<0.0001
Psychotropic drugs	17 (18)	20 (19)	14 (16)	13 (16)	14 (16)	<0.0001
Spa therapy	49 (29)	49 (29)	52 (27)	56 (29)	45 (29)	<0.0001
Telephone contact	30 (27)	32 (27)	33 (28)	25 (27)	22 (24)	<0.0001
Vitamins	14 (18)	15 (20)	11 (16)	11 (16)	12 (16)	<0.0001
HRT	12 (16)	13 (17)	10 (15)	13 (19)	10 (15)	<0.0001
Minerals	19 (22)	22 (24)	13 (19)	16 (20)	16 (19)	<0.0001

Values are mean (mm).

*p Values for Fisher's test of country effect (analysis of variance).

GP, general practitioner; HRT, hormone replacement therapy; IA, intra-articular; NSAIDs, non-steroidal anti-inflammatory drugs; SYSADOA, symptomatic slow acting drugs for osteoarthritis; TKR, total knee replacement.

Table 6 Assessment of recommendations in the whole survey and by country, expressed in mm on a visual analogue scale, where 0 = "I totally disagree with this recommendation", and 100 = "I totally agree with this recommendation"

	Survey (total)	Belgium	France	Italy	Spain	Switzerland	p Value*
No of questionnaires	4204	1067	1174	180	1071	712	
Tailored treatment	93 (11)	92 (12)	92 (12)	95 (10)	94 (11)	95 (9)	<0.0001
Combined treatment	91 (15)	89 (16)	88 (17)	95 (11)	93 (12)	94 (11)	<0.0001
Paracetamol first	82 (24)	78 (25)	86 (20)	68 (32)	85 (21)	77 (27)	<0.0001
NSAIDs	83 (21)	77 (25)	85 (19)	79 (28)	85 (17)	88 (19)	<0.0001
Steroid injection	76 (27)	75 (26)	73 (30)	88 (18)	76 (27)	82 (24)	<0.0001
SYSADOA/structure	77 (26)	77 (26)	76 (27)	84 (22)	76 (25)	78 (24)	0.00082
HA/SYSADOA small effect	78 (25)	79 (25)	78 (26)	72 (29)	79 (24)	78 (26)	0.01683
Non-pharmacological treatments	91 (14)	89 (16)	90 (15)	94 (12)	93 (11)	93 (12)	<0.0001
Exercises recommended	88 (18)	86 (18)	83 (22)	93 (12)	92 (13)	93 (12)	<0.0001
Total knee replacement	92 (14)	91 (14)	90 (15)	93 (12)	92 (13)	93 (12)	0.00024

Values are mean (SD).

*p Value for Fisher's test of country effect (analysis of variance).

HA, hyaluronic acid; NSAID, non-steroidal anti-inflammatory drug; SYSADOA, symptomatic slow acting drugs for osteoarthritis.

specialties (table 7), other than the observation that rheumatologists were more likely to recommend corticosteroid injections (90 (15) mm) than physicians overall (76 (27) mm).

Principal component analysis also identified several pertinent components:

- Component 1 (30% of total variability): this opposed the practitioners who gave high scores to all items (compared with the mean values of the total survey) to those who gave low scores to all items. Belgium and France among the five countries and orthopaedic surgeons among the specialties scored all items lower than the mean values of the total survey.
- Component 2 (10.5% of variability): this corresponded to consistency in practitioners' preference for recommendations 8 and 9 referring to paracetamol and NSAIDs (see table 1). Those who agreed with these recommendations tended not to favour recommendations 4 and 5, relating to hyaluronic acid and symptomatic slow acting drugs for osteoarthritis (SYSADOA) (see table 1). Belgian and Italian physicians had a greater preference for hyaluronic acid and SYSADOA, whereas their Swiss, Spanish, and French counterparts were more in favour of NSAIDs and paracetamol. Similarly, orthopaedic surgeons, and to a lesser extent rheumatologists, were in favour of NSAIDs and paracetamol rather than hyaluronic acid and SYSADOA, whereas the reverse was true for general practitioners.

- Component 3 (9.4% of variability): this opposed recommendations 8 and 9 referring to paracetamol and NSAIDs, as well as age of the practitioners, to recommendations 6 and 7, relating to non-pharmacological treatments and exercise. Italy, Spain, Belgium, and Switzerland (equal third), followed by France (in descending order) preferred recommendations 8 and 9. With reference to specialties, orthopaedic surgeons, who were older, preferred NSAIDs and paracetamol, whereas the other specialists, who were younger, were more in favour of non-pharmacological treatments.
- Component 4 (9.0% of the variability): this opposed recommendation 10 referring to joint replacement to recommendation 9, referring to NSAIDs. Spanish and French physicians preferred NSAIDs to joint replacement whereas the opposite was true for the Swiss; the Italian and Belgian physicians were closer to the Swiss position. Not surprisingly, orthopaedic surgeons preferred prostheses and general practitioners tended to choose NSAIDs.

These four components accounted for 59% of overall variability.

DISCUSSION

We report the results of a European survey of the views of the various specialists involved in the management of knee osteoarthritis. Overall, they showed a high degree of acceptance of the recommendations by the practitioners

Table 7 Assessment of recommendations in the whole survey and by specialty, expressed in mm on a visual analogue scale, where 0 = "I totally disagree with this recommendation", and 100 = "I totally agree with this recommendation"

	Survey (total)	GPs	Rheumatologists	Rehabilitators	Orthopaedic surgeons	p Value*
No of questionnaires	4204	2213	790	260	845	
Tailored treatment	93 (11)	93 (11)	94 (10)	95 (8)	93 (12)	0.00095
Combined treatment	91 (15)	92 (12)	94 (11)	93 (11)	86 (20)	<0.0001
Paracetamol first	82 (24)	84 (21)	81 (25)	81 (27)	75 (28)	<0.0001
NSAIDs	83 (21)	84 (19)	84 (22)	82 (25)	80 (24)	0.00001
Steroid injection	76 (27)	75 (26)	90 (15)	79 (25)	67 (33)	<0.0001
SYSADOA/structure	77 (26)	76 (24)	81 (25)	82 (23)	73 (29)	<0.0001
HA/SYSADOA small effect	78 (25)	78 (25)	78 (26)	81 (23)	79 (26)	0.15537
Non-pharmacological treatments	91 (14)	92 (13)	93 (11)	94 (11)	88 (18)	<0.0001
Exercises recommended	88 (18)	89 (16)	92 (13)	91 (17)	81 (24)	<0.0001
Total knee replacement	92 (14)	90 (14)	92 (13)	93 (13)	93 (13)	<0.0001

Values are mean (SD).

*p Values for Fisher's test of country effect (analysis of variance).

GP, general practitioner; HA, hyaluronic acid; NSAIDs, non-steroidal anti-inflammatory drugs; SYSADOA, symptomatic slow acting drugs for osteoarthritis.

and little difference between the opinions of the European practitioners and those of the EULAR task force¹ concerning the treatments used in KOA. The greatest difference was that the experts were more likely to recommend IA corticosteroid injections and joint lavage than European practitioners, who were more likely to recommend spa therapy.

The overall percentage of physicians who returned a completed questionnaire may seem quite low (10.4%); however, the absolute number of questionnaires analysed was high (4204), allowing analysis in subgroups, defined by countries or specialties.

We checked the representativeness of the survey by considering France and Belgium as an example. We compared the age of the physicians who replied to the questionnaire with that of the whole population of physicians and found very similar distribution curves, suggesting that the survey sample is representative of the whole population of physicians. In addition, all relevant specialties were contacted (that is, all members of scientific societies involved in the management of osteoarthritis). We also checked the representativeness of the general practitioners involved in the survey in France, as the number might seem very low compared with the total number of GPs. However, we found that our sample was indeed representative of the GPs involved in the management of osteoarthritis.

This survey had some limitations. For example, certain therapeutic modes (lavage,⁶ arthroscopic debridement,⁷ patellar strapping⁸) were evidently not clearly understood by some physicians and should have been better defined in the questionnaire.

Also, the overall responses should be interpreted with caution owing to the large number of GPs participating in the survey. To clarify the results, we carried out a principal components analysis. This revealed associations between treatment modes and identified differences between medical practices within the sample of responses. We found the following. First, orthopaedic surgeons, as opposed to general practitioners, were more likely to recommend "hard line" treatments (so called because they are invasive or potentially toxic). The positive association between such treatment modes suggests that physicians who prefer certain types of treatment are likely to prescribe others of a similar type. Second, we also showed differences between two groups of treatment methods: on the one hand, pharmacological treatment (paracetamol) or non-pharmacological measures (exercise, sticks, education) that are reasonably well validated and have low iatrogenicity were most often prescribed by orthopaedic surgeons and less often by general practitioners; on the other hand, treatments that are not so well validated (such as hormonal therapy) or "alternative medicines" (that is, vitamins, mineral salts) were most often prescribed by GPs and less often by orthopaedic surgeons. Finally, the age of the prescribers may play a role in the choice of treatment⁹ as younger physicians were more likely than their older peers to prescribe opioids, IA corticosteroids, and NSAIDs.

Principal components analysis of opinion about the 10 recommendations showed the same trends: orthopaedic surgeons were more in favour of the recommendations on NSAIDs and paracetamol than GPs and less in favour of those concerning symptomatic slow acting drugs for osteoarthritis (SYSADOA) and non-pharmacological modes including exercise, and vice versa. Not surprisingly, orthopaedic surgeons were more likely than GPs to recommend knee replacement than the use of oral NSAIDs, and vice versa. The age of the practitioners also played a role, as orthopaedic surgeons (older) were more in favour of recommendations on paracetamol and NSAIDs than other specialists (younger) and less in favour of those on non-pharmacological modes.

Overall, such analyses suggest that the management of the patient with knee osteoarthritis depends in part on the age, specialty, and country of origin of the practitioner consulted. It was interesting that rheumatologists were more likely to prescribe local injections (of both corticosteroids and hyaluronic acid) and NSAIDs, that orthopaedic surgeons most commonly recommended surgical procedures, that rehabilitators recommended non-pharmacological measures, and that general practitioners preferred spa therapy and the use of opioids. Different specialists are seeing patients at different stages of the disease, which may have a direct impact on their prescriptions.

In the management of a chronic disease with variable and progressive clinical manifestations, it is normal that treatment measures should be graduated. At any given stage of the disease, an optimised strategy should be determined using an evidence based approach, and this should favour a multidisciplinary form of management of this chronic disease. Further studies are needed to establish predictive factors of response to treatment and decision trees allowing a "tailored" treatment.

Although we found high scores of agreement with the recommendations, we do not know the extent to which practitioners are ready to apply all these recommendations in clinical practice. A recent survey conducted in general practice in France allowed such an evaluation.¹⁰ The major findings were that there was a very low prescription rate of non-pharmacological treatments (ranging from 9% for exercise to 42% for joint sparing advice), a high rate of prescription of paracetamol as first line treatment (90%), a high rate of co-prescription of NSAIDs as first line treatment (43%), and a low degree of prescription of corticosteroid injections in case of flare up (22%). These results reflect different degrees of compliance with the guidelines.

The existing gap between research and practice has been highlighted on several previous occasions, and studies—including those involving osteoarthritis guidelines—have been carried out to define effective interventions in osteoarthritis.^{4–11} As far as physicians are concerned, lectures, distribution of recommendations, and audiovisual materials are of little use, while interactive educational meetings are consistently effective at promoting behavioural changes among health professionals.¹² To conclude, our findings suggest that a multidisciplinary approach is optimal in the management of this chronic disease with such a variable course.

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