Criteria used when deciding on eligibility for total knee arthroplasty

Between thinking and doing

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Published in:
The Knee

DOI:
10.1016/j.knee.2015.08.012

Publication date:
2016

Document version
Accepted manuscript

Document license
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Citation for pulished version (APA):
Skou, S. T., Roos, E. M., Laursen, M. B., Rathleff, M. S., Arendt-Nielsen, L., Simonsen, O., & Rasmussen, S. (2016). Criteria used when deciding on eligibility for total knee arthroplasty: Between thinking and doing. *The Knee*, *23*(2), 300-305. https://doi.org/10.1016/j.knee.2015.08.012

CRITERIA USED WHEN DECIDING ON ELIGIBILITY FOR TOTAL KNEE ARTHROPLASTY – BETWEEN THINKING AND DOING

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Original research article for The Knee

Running title: Surgery or no surgery – factors influencing the surgeon's decision

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Funding sources

This trial is partially funded by The Danish Rheumatism Association, Obel Family Foundation, Spar Nord Foundation, The Bevica Foundation, The Association of Danish Physiotherapists Research Fund, Medical Specialist Henirich Kopps Grant, and The Danish Medical Association Research Fund. The funders do not have any role in this study other than to provide funding.

Conflict of interest

None declared.

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Manuscript: currently 2,903 words

Abstract: currently 236 words

ABSTRACT

Background: Clinical decision-making in total knee arthroplasty (TKA) is a complex process needing further clarification. The aim of this study was to compare TKA eligibility criteria considered most important by orthopaedic surgeons (OS) to characteristics of patients with knee osteoarthritis (OA) eventually found eligible for TKA.

Methods: Nine OS chose the five criteria most important when deciding on TKA eligibility. Cross-sectional data from 200 patients found either eligible (n=100) or not eligible (n=100) for TKA by one of the nine OS, were analyzed in a regression analyses with TKA eligibility as the dependent variable.

Results: Radiographic severity (n=8), pain (n=9), functional disability (n=8) and not responding to the recommended non-surgical treatment (n=7) were considered most important by OS.

Associations ($P<0.25$) between TKA eligibility and criteria found important by the OS were demonstrated for worse radiographic severity and more functional limitations, but not for pain and not responding to the recommended non-surgical treatment.

Furthermore, more comorbidities and higher BMI were associated with TKA-eligibility, but not found important for TKA eligibility by the OS.

Conclusion: Radiographic severity and functional limitations were confirmed as drivers for TKA eligibility, while pain was not. Not responding to non-surgical treatment was not included in the

decision-making, suggesting low uptake of clinical guidelines in clinical practice. This study highlights the complexity of the decision-making with some overlap between the criteria that OS think they apply and what is actually applied in clinical practice.

Keywords: Osteoarthritis; Knee; Decision-making; Arthroplasty; Therapeutics.

1. INTRODUCTION

The incidence of total knee arthroplasty (TKA) in the US has increased markedly from 31.2 per 100.000 person-years in 1971-76 to 220.9 in 2005-2008 [1], and is expected to increase by almost 700% towards 2030 [2].

TKA is an effective treatment of end-stage knee osteoarthritis (OA) [3]. However, a systematic review have demonstrated that 20% undergoing TKA experience only small or no improvements in pain [4], and more knee pain is known to be related to lower patient satisfaction [5]. One possible way to improve patient outcomes after TKA would be to refine eligibility criteria in order to select patients that are more likely to benefit from the procedure.

Clinical disease severity in patients undergoing total joint arthroplasty is known to vary between countries [6]. Although patients found eligible for TKA and total hip arthroplasty (THA) have more severe pain and functional limitations than patients not eligible, there is a considerable overlap in patient status, even when adjusting for radiographic severity, thereby making it impossible to establish cut-off values for eligibility for arthroplasty [7]. This could be due to the fact that pain, disability and radiographic severity poorly reflect the complexity of decision-making when the orthopaedic surgeon (OS) evaluates eligibility for TKA/THA [3,6,8].

Other criteria considered important for TKA eligibility and/or suggested in the literature to affect the decision-making are: Not responding to the recommended non-surgical treatments [3], duration of symptoms [9], being medically fit [3,10], age [3,9] and Body Mass Index (BMI) [3,9]. However, no reports exist on whether criteria considered important for TKA eligibility are actually applied in clinical practice, or which combination of criteria best reflect the complexity of the decision on eligibility. Studies on this topic would improve the understanding of the decision-making process and should be accompanied by an investigation of how patient preferences affect whether or not they choose to proceed with surgery.

Therefore, the purpose of this study was to compare criteria regarded important by OS when deciding on TKA eligibility to characteristics of patients with knee OA who were actually found eligible for TKA by the same OS. Our primary hypothesis was that the eligibility criteria considered important by OSs and the patient characteristics actually associated with TKA eligibility would be the same, and that a combination of criteria would explain most of the variance in TKA eligibility.

2. MATERIAL AND METHODS

2.1. Study design

This was a cross-sectional study conforming to the STROBE statement for reporting cross-sectional studies [11].

2.2. Participants

Baseline data from 200 patients with knee OA (confirmed by radiography) enrolled in one of two randomized controlled trials (RCT) investigating the effectiveness of TKA (n=100) [12] and non-surgical treatments (n=100) [13] between September 2011 and December 2013 were analyzed. All

patients were referred from primary care to an OS in one of two specialized public hospital units in The North Denmark Region for evaluation of TKA eligibility.

The main difference between the two RCT populations was eligibility for TKA, with one including only patients eligible [12] and the other only patients not eligible for TKA [13]. For a full list of eligibility criteria, see the published study protocols [12,13].

Ethics approval was obtained for both RCTs from the Ethics Committee of The North Denmark Region (N-20110024 and N-20110085) and both trials were registered on ClinicalTrials.gov (NCT01410409 and NCT01535001).

2.3. Outcome Variable

Eligibility for TKA (yes/no) as assessed by the OS was the outcome variable, dividing the study population into two equally sized groups (n=100).

2.4. Predictor criteria for the decision on TKA eligibility

A list of ten potential criteria influencing the OS' decision on whether or not patients with knee OA are eligible for TKA was defined by the authors of the study based on recent recommendations [3], a review of the literature, and from interviews with two high-volume OS: 1) radiographic severity of the knee OA, 2) knee pain during several activities of daily living (Knee pain during ADL), 3) knee pain at night, 4) knee pain demanding morphine or morphine-like drugs, 5) functional limitations in daily activities due to the knee OA (functional limitations), 6) not responding to the recommended non-surgical treatment, 7) duration of symptoms, 8) comorbidities, 9) age, and 10) BMI (Table 1). The criteria were assessed as part of the baseline assessment when the participants were enrolled in the RCTs.

2.5. Statistical analyses

The 200 patients allowed us to conduct the analyses using a minimum of 20 predictor variables [20]. We decided only to apply 10 variables.

2.5.1. Model including criteria considered important by orthopedic surgeons for TKA eligibility

All nine OS involved in recruiting patients for the two RCTs were asked to choose the five most important criteria which they applied when deciding on TKA eligibility and prioritize them according to the importance of each individual criterion. Criteria regarded important by at least half of the nine OS (n≥5) were included in one multivariable model (the surgeon-based model).

2.5.2. Model including characteristics of patients found eligible

Furthermore, univariable and multivariable logistic regression analyses were applied to investigate whether the a priori hypothesized predictor criteria for TKA eligibility were actually associated with TKA eligibility. The construction of this model (the statistically-based model) followed the construction proposed by Bursac et al. [21]. Criteria with a $P<0.25$ in the univariable analyses were included in another multivariable analysis, since traditional levels can fail in identifying important criteria [21]. A criterion included in the first model was removed if $P\geq0.10$ and changing the estimate of the other criteria <20%. Criteria not selected for the first model due to ($P\geq0.10$) in the univariable analyses were re-entered into the model one at a time to identify criteria that contributed to the model in the presence of the other criteria. If a criterion had a P-value<0.10, it was kept in the final model. The significance level of the final regression model was set at $P<0.05$.

A priori, possible interactions were defined between the following criteria: 2 and 3, 2 and 4, 3 and 4, 2 and 5, 2 and 10, 5 and 10, 5 and 8, and 8 and 10. These interactions were tested in both the model based on criteria considered important by the OS for TKA eligibility and the model based on

characteristics of patients found eligible for TKA if both interacting criteria were in the model. The interaction was kept in the final models if $P<0.10$ or changing the estimate of the other criteria >20%.

Odds ratios (OR) were used to assess the association between each predictor criterion and TKA eligibility and Nagelkerke's R^2 was used to compare the performance of each of the predictor criteria and a as measure of overall performance of both of the models (explained variation, i.e. how good the model fits the data).

3. RESULTS

Demographic variables for the participants are presented in table 2. BMI data from eight participants (four eligible and four not eligible for TKA) was missing. Therefore these participants were excluded, and a total of 192 patients were included in the analyses.

3.1. Model including criteria considered important by orthopedic surgeons for TKA eligibility

The OS' prioritization is presented in table 3. One OS stated that findings from the clinical examination were also important when deciding upon eligibility. Four criteria were regarded as important when deciding on TKA eligibility by at least half of the OS: radiographic severity of the knee OA (n=8), knee pain during ADL (n=9), functional limitations (n=8) and not responding to the recommended non-surgical treatment (n=7). These criteria were included in the surgeon-based model (Table 5). The model accounted for 23% of the variance in TKA eligibility (Nagelkerke's $R^2 = 0.228$, $P<0.001$).

3.2. Model including characteristics of patients found eligible

In the univariable analyses worse radiographic OA severity, worse pain during ADL, morphine usage, more functional limitations, more comorbidities and higher BMI were associated with being eligible for TKA (Table 4). The model including criteria associated with TKA eligibility in the univariable analyses (Table 5) consisted of radiographic severity, functional limitations, comorbidities, and BMI. This model significantly accounted for 27% of the variance in TKA eligibility (Nagelkerke's $R^2 = 0.267$, $P<0.001$).

No interactions were found in neither of the models ($P>0.10$ and changing the estimates <20%).

4. DISCUSSION

Radiographic severity and functional limitations were confirmed as drivers for TKA eligibility, while pain and not responding to the recommended non-surgical treatment were found important by the OS but not associated with TKA eligibility. When combined in a model, criteria associated with TKA eligibility in the univariable analyses (radiographic severity, functional limitations, comorbidities and BMI) only accounted for 27% of the variance in TKA eligibility and only 23% of the variance was accounted for when including the criteria found important by at least half of the OS in a model. This study highlights that the decision on TKA eligibility is a multifactorial process with some overlap between the criteria that OS consider important and what they actually apply in clinical practice.

4.1. Non-surgical treatment before TKA

Most of the OS (n=7) found not responding to the recommended non-surgical treatment to be important for their decision on TKA eligibility. However, it was not associated with TKA eligibility. Even though being a recognized eligibility criterion for TKA [3] it is well known that

clinical practice does not reflect the recommendations [22-25]. In a study from the US using data from the United Healthcare Database only 10% undergoing TKA in 2009 had participated in rehabilitation in the preceding five years [23], while 3% had received a mechanical intervention, such as a knee brace, and 44% an intra-articular corticosteroid injection [23]. Results from a recent systematic review and meta-analysis summarizing studies using quality indicators to assess the quality of care in OA confirmed the suboptimal care of OA patients for both pharmacological and non-pharmacological treatments [25]. The study found pass rates, defined as the percentage of patients receiving appropriate care according to guidelines, of only 37.5% (95% CI 30.8–44.5%) and 36.1% (95% CI 27.8-44.7%), respectively, for pharmacological and non-pharmacological treatment of OA [25]. Therefore, the lack of association between TKA eligibility and not responding to the recommended non-surgical treatment could merely be a result of lack of adherence to the recommended non-surgical treatment. The implementation of evidence-based guidelines in clinical practice is challenging due to a wide range of barriers and requires a comprehensive approach tailored to the specific settings and target groups to succeed [26]. Nationwide initiatives comprising training of physical therapists to deliver evidence-based, individualized exercise and education to OA patients [27] in combination with information and education of other health care professions and the population have been successfully introduced in Denmark[28] and Sweden[29], and represents a way to improve adherence to OA guidelines.

4.2. Is pain less important for TKA eligibility?

Pain was not associated with TKA, even though all OS (n=9) found it to be important for their decision on TKA eligibility, supported by the results from a study on THA eligibility [30]. The OS in our study prioritized pain as the most important, and functional limitations as the second most

important criterion, while radiographic severity was only third. However, looking at the explained variation from the univariable analyses pain and functional limitations explained less variation in TKA eligibility than both comorbidities and BMI with radiographic severity explaining most of the variation in TKA eligibility. Since pain is considered one of the key criteria for TKA eligibility [3,7,9,10,31], it was expected that it would be one of the most important predictor criteria. However, our study highlights that pain is not the only criterion important for TKA eligibility [7,32,33] and it could be so that while pain is an important criterion for TKA eligibility pain severity is not as important as other influencing criteria [8]. This is supported by our results and underlines the importance of not restricting TKA to one type of patient over another based on one criterion alone [8]. Another potential explanation could be, that one of the exclusion criteria for both studies from which the current patient population was drawn was knee pain >60 mm on a 100 mm VAS. This could affect the results, since patients eligible for TKA presumably have higher pain scores than patients not eligible for TKA thereby excluding some patients eligible for TKA from this analysis.

4.3. Age, BMI and comorbidities

Interestingly, age was not associated with eligibility and higher BMI and more comorbidities were associated with eligibility for TKA, even though patients being morbidly obese or of less than 55 years have demonstrated more variable outcome following TKA than patients with lower BMI and older than 55 years [34-40]. However, since most patients in the present study had few comorbidities and were not morbidly obese or younger than 55 the lack of association with age and conflicting association with BMI and comorbidities could be a result of this age-restricted study

population. Furthermore, it is important to recognize, that even though being risk factors for poorer outcome, neither age nor BMI are contraindications for TKA [3].

4.4. Consensus criteria for TKA eligibility are needed

In agreement with current recommendations [3] the OS in our study regarded pain, function, radiographic severity and not responding to non-surgical treatment to be important for their decision on TKA eligibility. However, the analyses showed that more severe radiographic severity, greater functional limitations, more comorbidities and higher BMI were the patient characteristics actually associated with TKA eligibility. This is similar to the findings from a study on eligibility for THA, where severe cardiovascular disease, quality of life with regards to physical function, and radiographic OA severity were related to eligibility for THA when combined in a model [30]. The model based on patient characteristics associated with TKA eligibility accounted for only 27% of the variance in TKA eligibility, while the model based on criteria found important by at least half of the OS accounted for only 23% of the variance, thereby leaving about 75% of the variance in TKA eligibility unaccounted for. Including patient preferences could potentially improve this, since it is known to affect whether or not patients undergo total joint arthroplasty [41]. Since our study did not evaluate whether or not the participants underwent TKA, but if they were found eligible for TKA by the OS, the authors believe that not including patient preferences in the analyses was appropriate. Future studies should evaluate the effects of patient preferences on whether or not the procedure is actually performed. Furthermore, additional unknown criteria influence the decision-making and points out that consensus on the indications for TKA is highly demanded with the possibility to better identify patients that will benefit from the procedure [8] and potentially improve outcomes following TKA further.

4.5. Limitations

Our results should be evaluated with respect to some limitations. Firstly, the exclusion criteria knee pain >60 mm on a 100 mm VAS applied in both studies could be a limitation to the study. Since severe knee pain is considered an important indication for TKA [3], the lack of associations between pain and TKA in our study could merely be the result of not including those with more severe pain. However, KOOS pain scores of both the patients eligible and not eligible for a TKA in our study (mean scores of 49 and 53 respectively on a 0-100 worst to best scale) were comparable to previous pre-surgery pain scores of patients eligible for TKA [7,42]. Secondly, this study did not have the power to assess inter-surgeon variability or the predictive capacity of the model with regards to the individual OS. This could have increased the internal validity of the findings, since it would give the possibility to compare the criteria found most important by the individual OS to the criteria associated with his/her decision on TKA eligibility. Thirdly, the criteria applied in our study were not restricted to local surgeon-specific criteria. We applied questionnaires reflecting pain, function and comorbidities not necessarily used by the individual OS. Since wide variations in pain [7,31,32], function [7,31,32] and comorbidities [31] have been demonstrated among countries, centers and OS when deciding on TKA eligibility we decided to use valid, reliable and recognized measures. We believe this increases the external validity of the results instead of applying a local set of measures not generalizable to other centers and countries. Future studies should elucidate whether the findings are similar in other countries.

5. CONCLUSIONS

While the OS agreed on radiographic severity, pain, functional limitations and not responding to non-surgical treatment being the most important criteria for TKA eligibility, corresponding to

recommendations in clinical guidelines, some discrepancy was found between these criteria and what was actually applied by the same OS in clinical practice. Radiographic severity and functional limitations were confirmed as drivers for TKA eligibility, while pain was not. This may be because our study population did not include knee OA patients with severe pain. However, pain scores of our study population was comparable to previous pre-surgery pain scores of patients eligible for TKA [7,42]. Patients found eligible for TKA had more comorbidities and higher BMI, contrary to the criteria found most important by surgeons. Having had, and not responding to, non-surgical treatment was not included in the decision-making, suggesting low uptake of clinical guidelines in clinical practice.

This study highlights the complexity of the decision-making on TKA eligibility in clinical practice, since about 75% of the variance in eligibility remains unexplained by the criteria found most important by the OS and the characteristics of those actually found eligible.

ACKNOWLEDGEMENTS

The authors would like to thank biostatistician, MSc, Martin Berg Johansen from the Department of Clinical Medicine, Aalborg University for statistical advice and the orthopaedic surgeons from the Department of Orthopaedic Surgery, Aalborg University Hospital involved in the recruitment of patients for the two RCTs. Furthermore, the authors would like to acknowledge project workers

Lasse Lengsø, Mikkel Simonsen, Dorte Rasmussen, Henriette Duve, Anna Emilie Livbjerg, Anders Bundgaard Lind and Josephine Nielsen for helping with the data collection and data entry.

AUTHOR CONTRIBUTIONS

Study conception and design. Skou, Roos, Laursen, Rathleff, Arendt-Nielsen, Simonsen, Rasmussen

Acquisition of data. Skou.

Analysis and interpretation of data. Skou, Roos, Laursen, Rathleff, Arendt-Nielsen, Simonsen, Rasmussen.

Drafting the article or revising it critically for important intellectual content. Skou, Roos, Laursen, Rathleff, Arendt-Nielsen, Simonsen, Rasmussen

Final approval of the article. Skou, Roos, Laursen, Rathleff, Arendt-Nielsen, Simonsen, Rasmussen

Mr. Skou had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

CONFLICT OF INTEREST

None declared.

SOURCE OF FUNDING

This trial was partially funded by The Danish Rheumatism Association, Obel Family Foundation, Spar Nord Foundation, The Bevica Foundation, The Association of Danish Physiotherapists

Research Fund, Medical Specialist Henirich Kopps Grant, and The Danish Medical Association Research Fund. The funders did not have any role in this study other than to provide funding.

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428 **TABLES**

Table 1. Description of predictor criteria for TKA eligibility used in the regression analyses

Criterion	Assessment method	Dichotomization	A priori hypothesis
Radiographic severity	Semiflexed posteroanterior radiographs recorded in standing position (on both legs) with feet pointing forward and hips in neutral ab- and adduction. The X-ray beam was centered at the level of the knee joint with a tube to film distance of 100 cm. Radiographic severity was assessed by the surgeon using the original Kellgren-Lawrence scale (K&L) [14,15].	Yes, into low (K&L 1-2) and high (K&L 3-4) K&L score	A high K&L score is associated with being eligible for total knee arthroplasty (TKA).
Knee pain during ADL	This was assessed using the subscale Pain from the KOOS [16,17]	No	A worse KOOS Pain score is associated with being eligible for TKA.
Knee pain at night	The participants rated their pain on a 100mm VAS in response to the question: "How much knee pain do you have at night?".	Yes, into pain (VAS≥10) and no pain (VAS<10) at night	Pain at night is associated with being eligible for TKA.
Knee pain demanding morphine or morphine-like drugs.	The participants were asked to give information on any pain killers used because of knee pain.	Yes, into using morphine or morphine-like drugs (yes/no)	The need for morphine or morphine-like drugs to relieve the knee pain is associated with being eligible for TKA.
Functional limitations	This was assessed using the subscale ADL (Function in daily living) from the KOOS [16,17]	No	A worse KOOS ADL score is associated with being eligible for TKA.
Not responding to the recommended non-surgical treatment	This implies that the participant had undergone the core treatments of OA (exercise, education and weight loss (if needed)) [18] before being referred to the orthopedic surgeon. This was evaluated from questions on previous treatments held together with the	Yes, participants who had undergone the recommended non-surgical treatment without sufficient effect were rated as "not responding" while the rest were rated as "has not yet tried the recommended non-surgical treatment".	Not responding to non-surgical treatment is associated with being eligible for TKA.

	referral to the orthopedic surgeon due to continuous symptoms-		
Duration of symptoms	This was evaluated using the question: "When did your knee symptoms begin?". The participants chose one of the following categories: 0-6 months ago, 6-12 months ago, 1-2 years ago, 2-5 years ago, 5-10 years ago, or more than 10 years ago.	No	A longer duration of symptoms is associated with being eligible for TKA.
Comorbidities	Comorbidities were registered using the Charlson Comorbidity Index [19].	Yes, the index was dichotomized (0-1 and 2 or above) due to the non-linearity of the index and since an univariable analysis showed that there was no difference between 0 and 1 comorbidities, but between 0 and 2 comorbidities with respect to their association with the outcome variable.	Having comorbidities is inversely associated with being eligible for TKA, since being medically fit is important when considering surgery [3]
Age	Age in years	No	Increasing age is associated with being eligible for TKA.
Body Mass Index (BMI)	Height (seca 213, seca gmbh & co. kg., Hamburg, Germany) and weight (seca 813, seca gmbh & co. kg., Hamburg, Germany) were assessed in a standardized way to calculate BMI.	No	Increasing BMI is inversely associated with being eligible for TKA, since obesity is known to affect outcome variability [3]

Table 2. Demographic variables for patients eligible (n=100) and not eligible (n=100) for total knee Arthroplasty (TKA)*

Variable	Patients eligible for a TKA	Patients not eligible for a TKA
Women, n (%)	62 (62)	51 (51)
Age (years), mean (SD)	66.4 (8.7)	66.0 (8.9)
Radiographic severity, n (%)		
Grade 1-2	12 (12)	46 (56)
Grade 3-4	88 (88)	54 (54)
Knee pain during ADL, mean (SD)	49.1 (15.4)	52.6 (14.0)
Knee pain at night, n (%)	83 (83)	78 (78)
Using morphine because of knee, n (%)	17 (17)	11 (11)
Functional limitations, mean (SD)	54.3 (16.6)	57.9 (16.8)
Not responding to the recommended non-surgical treatment, n (%)	6 (6)	10 (10)
Duration of symptoms, n (%)		
0-6 months	6 (6)	6 (6)
6-12 months	7 (7)	15 (15)
1-2 years	16 (16)	15 (15)
2-5 years	25 (25)	24 (24)
5-10 years	23 (23)	12 (12)
More than 10 years	23 (23)	28 (28)
Charlson Comorbidity Index, n(%)		
0-1	73 (73)	85 (85)
2 or above	27 (27)	15 (15)
Body Mass Index, mean (SD)	32.2 (6.0)	30.0 (5.4)

* Radiographic severity: Radiographic knee osteoarthritis severity on the Kellgren-Lawrence scale; Knee pain during ADL: The subscale Pain from the Knee Injury and Osteoarthritis Outcome Score (KOOS); Knee pain at night: The participants rated their pain on a 100mm visual analogue scale (VAS) in response to the question: "How much knee pain do you have at night?". This was dichotomized into pain (VAS≥10) and no pain (VAS<10) at night. Functional limitations: The subscale ADL from KOOS; Not responding to the recommended non-surgical treatment: Recommended non-surgical treatment was defined as the core treatments of OA (exercise, education and weight loss (if needed); Body Mass Index was only available for 96 participants from each group.

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Table 3: The orthopaedic surgeons' (n=9) prioritization of criteria they use when deciding on eligibility for total knee arthroplasty*

	Prioritization (number of orthopaedic surgeons)				
Criteria	1	2	3	4	5
Radiographic severity	2	2	3	0	1
Knee pain during ADL	6	2	1	0	0
Knee pain at night	0	1	1	2	0
Using morphine because of knee	0	0	1	1	1
Functional limitations	0	4	2	2	0
Not responding to the recommended non-surgical treatment	0	0	1	2	4
Duration of symptoms	0	0	0	0	2
Comorbidities	1	0	0	0	2
Age	0	0	0	1	0
Body Mass Index	0	0	0	1	0

* One orthopaedic surgeon (OS) did not choose one of the ten criteria as prioritization number 4. One OS chose both age and body mass index as prioritization number 4. One OS chose both radiographic severity and duration of symptoms as prioritization number 5. See table 1 + 2 for further explanations.

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Table 4: Univariable logistic regression of associations between eligibility for total knee arthroplasty (TKA) and the predictor criteria for TKA eligibility*

Predictor criteria	OR	95% CI	R^2	*P*
Radiographic severity (low K&L score as reference category)	6.25	3.04-12.83	0.183	<0.001
Knee pain during ADL	0.98	0.97-1.00	0.019	0.09
Knee pain at night (compared to no pain at night)	1.38	0.68-2.79	0.005	0.37
Using morphine because of knee (compared to not using morphine)	1.66	0.73-3.75	0.010	0.23
Functional limitations	0.99	0.97-1.00	0.017	0.11
Not responding to the recommended non-surgical treatment (compared to "has not yet tried the recommended treatment")	0.57	0.20-1.65	0.007	0.30
Duration of symptoms (0-6 months as the reference category)	-----	-----	0.046	-----
6-12 months	0.47	0.11-1.98	-----	0.30
1-2 years	1.07	0.28-4.05	-----	0.92
2-5 years	1.04	0.30-3.68	-----	0.95
5-10 years	1.92	0.51-7.24	-----	0.34
More than 10 years	0.82	0.23-2.89	-----	0.76
Comorbidities (0-1 comorbidities as reference category)	2.10	1.04-4.24	0.029	0.04
Age	1.01	0.97-1.04	0.001	0.73
Body Mass Index	1.07	1.02-1.13	0.048	0.01

*OR = odds ratio; 95% CI = 95% confidence interval; R^2 = Nagelkerke's R^2 (explained variation); K&L = Kellgren-Lawrence scale. See table 1 + 2 for further explanations.

Table 5: Multivariable logistic regression model of associations between eligibility for total knee arthroplasty (TKA) and the predictor criteria for TKA eligibility*			
Predictor criteria	OR	95% CI	*P*
Model based on criteria found important by the at least half of the surgeons			
Radiographic severity (low K&L score as reference category)	7.60	3.54-16.34	<0.001
Knee pain during ADL	0.99	0.96-1.02	0.61
Functional limitations	0.98	0.95-1.01	0.16
Not responding to the recommended non-surgical treatment (compared to "has not yet tried the recommended treatment")	0.54	0.17-1.72	0.30
Model based on criteria associated with eligibility in the univariable analysis			
Radiographic severity (low K&L score as reference category)	7.82	3.51-17.42	<0.001
Functional limitations	0.98	0.96-1.00	0.048
Comorbidities (0-1 comorbidities as reference category)	2.19	0.96-5.02	0.06
Body Mass Index	1.05	0.99-1.12	0.08
*OR = odds ratio; 95% CI = 95% confidence interval; K&L = Kellgren-Lawrence scale. See table 1+ 2 for further explanations.			

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