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2015

### **document version**

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

### **citation for published version (APA)**

Haanstra, T. M. (2015). *Patients' expectations: determinants, mechanisms and impact on clinical outcomes*. [PhD-Thesis - Research and graduation internal, Vrije Universiteit Amsterdam].

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CHAPTER 5

Unfulfilled expectations after total hip and knee arthroplasty surgery: there's a need for better preoperative patient information and education

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## Abstract

### Objective

To assess patients' preoperative expectations of the outcome of Total Hip or Knee Arthroplasty (THA/TKA) and to determine to what extent each expectation was fulfilled one year postoperative.

### Methods

Prospective cohort study. Preoperative expectations and their fulfilment after one year were measured with the Hospital for Special Surgery Hip/Knee Replacement Expectations Surveys. Preoperative and postoperative scores were subtracted to calculate fulfilment of expectations.

### Results

343 THA and 322 TKA patients were included. Preoperatively, >60% of patients expected at least much improvement in 19/20 (THA) and 12/19 (TKA) items. Expectations were fulfilled or exceeded in >60% of patients in 20 items for THA and 17/19 items for TKA. For THA the largest proportions of unfulfilled expectations (>30%) were found for: "walking long distances", "Walking stairs" and "Improve ability to cut toenails". In TKA expectations for 12/19 items were unfulfilled in >30% of patients, with the largest proportions for "kneeling down" and "squatting".

### Conclusion

Although for most items >60% patients indicated their expectations were met there was a substantial number of patients, having unfulfilled expectations which may lead to dissatisfaction with the outcome of surgery.

### Practice Implications

Patient education should be targeted at the expectations that were most often unfulfilled.

## Introduction

Total Hip Arthroplasties (THA) and Total Knee Arthroplasties (TKA) have proven to be successful surgical interventions for patients with hip or knee osteoarthritis. Despite the overall favourable results, previous studies have estimated that between 7%-15% of THA<sup>1</sup> and 11-20%<sup>2,3</sup> TKA patients are dissatisfied after surgery. Dissatisfaction may lead to doctor shopping and poor adherence to treatment recommendations. Evidence suggests that dissatisfaction is (at least partly) related to patients' expectations that are not fulfilled<sup>4,5</sup>. From a clinical perspective, eliciting and discussing patients' expectations is a vital part of clinical decision making as it enhances the patients' active role in decision making and promoted patient centered care<sup>6</sup>. Knowing which specific expectations are unrealistically high in a large proportion of patients may aid surgeons in their education and communication with patients.

Several studies have assessed fulfilment of patients expectations, although the majority only assessed a small selection of items (e.g. only expectations regarding pain)<sup>1-3,7</sup>, while evidence shows that patients have a very wide range of expectations<sup>8</sup>. Furthermore, a direct comparison of preoperative expectations regarding THA or TKA and their fulfilment in a general hospital setting is, as far as we know, lacking. This is relevant because in The Netherlands, as well as many other countries, the majority of these operations is done in this setting.

The aims of the present study were:

- 1 To assess patients' preoperative expectations of the outcome of THA or TKA regarding a number of specific aspects of functioning;
- 2 To determine to what extent each expectation is fulfilled one year after surgery in general hospital setting.

## Methods

### Study Design

This study was part of a prospective cohort study on the outcomes of THA and TKA performed at the Department of Orthopedics of the Rijnland Hospital, the Netherlands, from October 2010 to September 2013 (inclusion of patients was done until September 2012). The study protocol was reviewed and approved by the local hospital Review Board of the Rijnland Hospital, Leiderdorp in the Netherlands (registration number 10/07).

### Patients and recruitment

The prospective cohort study aimed to include all consecutive patients undergoing a primary THA or TKA because of osteoarthritis, aged 18 years or older, able to read and understand Dutch and being mentally and physically able to complete questionnaires. Excluded were patients with revision surgery, undergoing a hemi-arthroplasty, or undergoing a THA or TKA because of a tumor or rheumatoid arthritis.

One day preoperatively, before being admitted to the hospital, the treating orthopedic surgeon provided oral and written information about the study to all eligible patients. The patients received an informed consent form as well as a set of questionnaires at the same moment, one day preoperatively. The patients were asked to return the set of questionnaires and informed consent form the next day, the day of the surgery, when admitted to the hospital. Those who did not want to participate were asked if they were willing to provide the main reason. Of these patients age and sex were recorded.

#### Measurements

One day preoperatively and 12 months thereafter questionnaires were administered to the participating patients in person (preoperative assessment) or by regular mail (follow-up). Sociodemographic and clinical characteristics were only gathered preoperatively.

#### Sociodemographic and clinical characteristics

Sociodemographic characteristics included: age (years); gender; height (cm) and weight (kg) to calculate the Body Mass Index; current smoking status (yes/no); level of education (low: primary school, lower vocational education, medium: lower general secondary school, intermediate vocational education or high: higher general secondary school, higher vocational education, university); marital status (living alone; yes/no).

Patient reported outcome measures were used to describe the clinical characteristics of the population at baseline. The Hip disability and Osteoarthritis Outcome Score (HOOS)<sup>9</sup>, the Knee injury and Osteoarthritis Outcome Score (KOOS)<sup>10</sup> and the Oxford Hip Score (OHS) and the Oxford Knee Score (OKS)<sup>11,12</sup> were used to assess pain, symptoms, activity limitations-daily living, sport and recreation, function, and hip or knee-related quality of life.

The Short Form-36 survey (SF-36)<sup>13</sup>, the EuroQol 5 Dimensional questionnaire (EQ5D) and the EuroQol Visual Analogue Scale (EQ-VAS)<sup>14</sup> were used to assess general health related quality of life. From the SF-36 two summary component scores for physical health (PCS) and mental health (MCS) were calculated.

#### Expectations

One day preoperatively all patients were asked to complete a validated Dutch translation of the Hospital for Special Surgery (HSS) Hip Replacement and Knee Replacement Expectations Surveys<sup>15</sup>. The HSS Hip Replacement Expectations Survey included 20 items and the HSS Knee Replacement Expectations Survey 19 items. These items concerned the topics pain, other symptoms, daily activities and societal participation. For each item patients could indicate their expectations on a 5-point Likert scale.

One year post-operatively the same questionnaire was completed but at that time, patients were asked the perceived actual outcome of all the items listed in the preoperative expectation questionnaire, using the same answering categories (see Appendix). Patients were not informed about their preoperative answers/scores at the follow-up assessment.

#### Statistical Analysis

Descriptive statistics were used for the preoperative sociodemographic and clinical characteristics, as well as for the scores on the expectation questionnaires. To assess potential selection due to attrition, baseline characteristics of patients with and without complete follow-up were compared by means of the Mann-Whitney-U-test or Chi-Square test.

To compute fulfilment of expectations one year after surgery, for each item of the HSS expectation survey the postoperative score was subtracted from the preoperative score for each individual patient. A negative fulfilment score indicated less improvement than expected, a zero score indicated an outcome as expected and a positive score a greater improvement than expected. When a patient used the answering category 'not applicable' in either the preoperative or postoperative questionnaire or both, a fulfilment score was not calculated for that item. For each HSS expectation item the frequencies of unfulfilled, fulfilled and exceeded expectations were calculated in both THA and TKA patients. All data were analysed using the SPSS statistical package (version 20.0, SPSS, Chicago, Illinois). All analyses were done separately for THA and TKA groups.

## Results

#### Response

Figure 1 describes the flow of patients. Out of 665 eligible patients undergoing THA and 599 patients undergoing TKA, 428 THA patients (64%) and 417 TKA (70%) patients agreed to participate and completed the survey one day preoperatively. The 343 THA (80%) and 322 TKA (77%) patients who completed both the complete set of preoperative and the postoperative questionnaires are included in the current analyses.

#### Preoperative characteristics of patients with and without follow-up

Table 1 describes the preoperative characteristics of the patients with and without complete follow-up. In both the THA and TKA groups the majority of the patients were female, and the mean age was 67 years. In the THA group, the female patients with incomplete follow-up (N=85), had higher BMI scores and their preoperative HOOS scores on HOOS-ADL, HOOS-Pain and HOOS-Quality of life scores were lower. TKA patients with incomplete follow-up (N=95) had significantly higher KOOS Quality of life and EQ5D scores.

#### Differences in preoperative expectations in patients with and without complete follow-up

A comparison of the preoperative expectations of patients with and without complete follow-up showed that overall in both the THA and TKA groups, the patients with complete follow-up had higher expectations, illustrated by higher frequencies of patients answering "back to normal" for most of the items and fewer missing values than patients with only preoperative scores (results not shown).

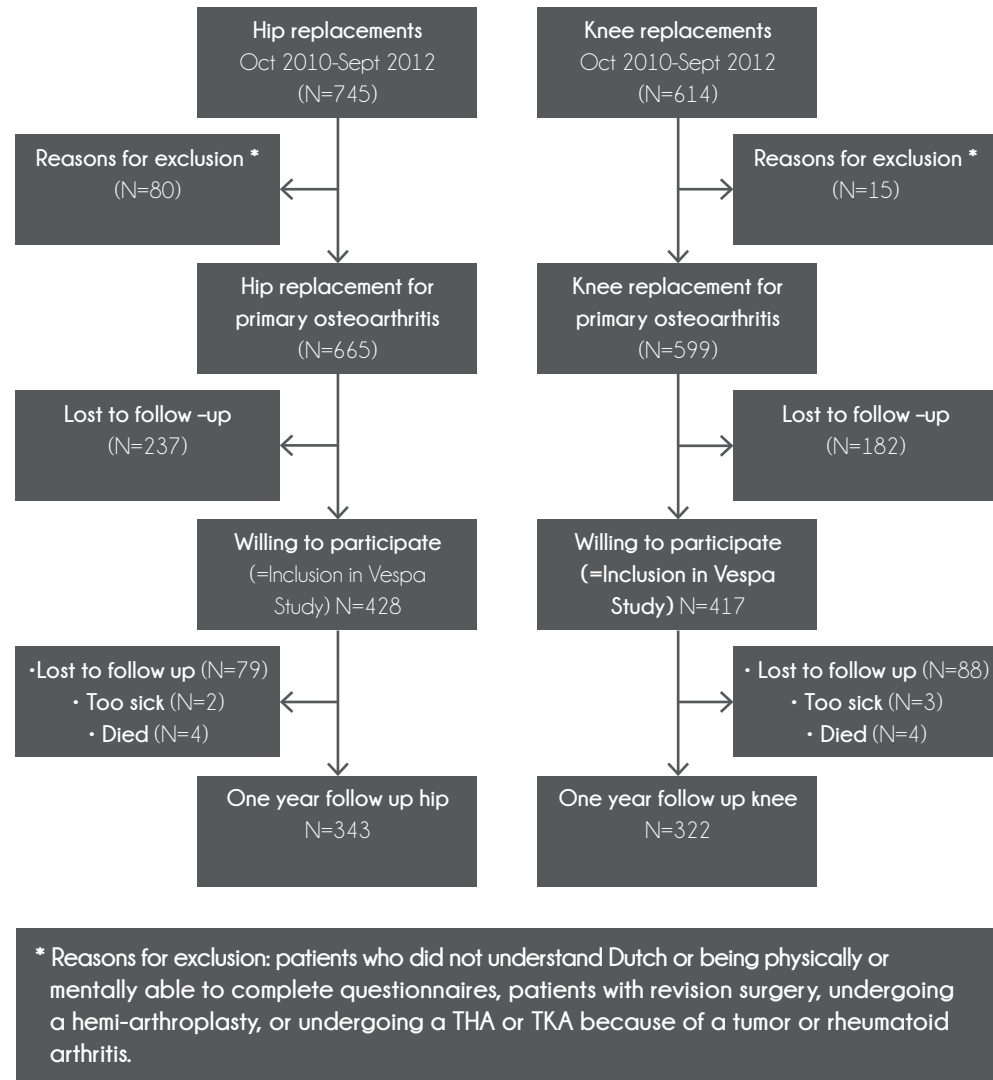


Figure 1: Flowdiagram of the VESPA study

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Table 1. Characteristics of patients

	THA patients with follow-up (N=343)	THA Patients with incomplete follow up (N=85)	P	TKA patients with follow up (N=322)	TKA Patients with incomplete follow up (N=95)	P
<b>Gender, Female; no (%)</b>	197 (57%)	61 (71.4%)	0.031	226 (70%)	66 (70%)	0.872
<b>Age, years (mean, SD)</b>	67.2 (9.5%)	65.1 (12.3%)	0.202	66.9 (9.5%)	67.2 (10.1%)	0.917
<b>Body Mass Index (mean, SD)</b>	27.1 (4.4%)	28.1 (4.5%)	0.043	29.5 (4.5%)	29.5 (5.1%)	0.874
<b>Education level; no (%)</b>						
Low	127 (37%)	41 (48%)	0.111	164 (51%)	47 (49%)	0.386
Medium	103 (30%)	24 (28%)		100 (31%)	34 (36%)	
High	113 (33%)	20 (24%)		58 (18%)	14 (15%)	
<b>Living status: Living Independently; no (%)</b>	313 (91.3%)	79 (92.9%)	0.322	298 (92.5%)	78 (83.0%)	0.170
<b>Work status: Working; no (%)</b>	87 (25.4%)	25 (29.8%)	0.865	75 (23.3%)	23 (24.5%)	0.093
<b>HOOS or KOOS (0-100); mean (SD)</b>						
ADL	44.4 (17.6)	37.5 (18.0)	0.009	48.7 (17.7)	45.3 (18.9)	0.178
Pain	41.7 (18.2)	35.6 (16.9)	0.016	41.6 (16.2)	40.8 (18.1)	0.725
Quality of life	34.6 (10.6)	31.3 (8.8)	0.003	35.0 (10.5)	32.1 (11.0)	0.014
Sport	20.3 (18.9)	17.4 (17.5)	0.283	13.2 (15.7)	15.9 (17.7)	0.318
Symptoms	37.7 (18.2)	37.1 (19.5)	0.775	44.9 (13.5)	42.5 (12.8)	0.059
<b>EQ5D score (0-1); mean (SD)</b>	0.6 (0.3)	0.5 (0.3)	0.060	0.6 (0.3)	0.5 (0.3)	0.005
<b>EQ5D VAS scale (0-100); mean (SD)</b>	67.0 (18.3)	63.8 (19.1)	0.177	70.1 (18.4)	65.7 (19.4)	0.116
<b>Oxford Knee/Hip Score (0-48); mean (SD)</b>	24.7 (7.3)	22.6 (8.6)	0.142	25.3 (6.8)	23.1 (9.0)	0.067
<b>SF36 MCS (1-100); mean (SD)</b>	50.9 (10.3)	51.0 (10.4)	0.076	52.8 (10.2)	49.9 (12.5)	0.052
<b>SF36 PCS (1-100); mean (SD)</b>	39.9 (7.4)	39.8 (7.4)	0.086	40.4 (7.4)	39.0 (7.4)	0.161

\* Comparison of working and non-working patients at preoperative assessment by means of Mann-Whitney U or Chi Square tests where appropriate. Significance level < 0.05.

Preoperative expectations and postoperative outcomes in patients with complete follow-up

Table 2a and 2b show preoperative expectations in THA and TKA patients with complete follow-up. In THA and TKA more than 60% of patients expected to get back to normal or much improvement in 19 of the 20 and 12 of the 19 items, respectively.

The items with the largest proportion (>60%) of patients expecting to get back to normal in the group of THA patients concerned “Not in need of stick, crutch or walker” and “Be able to independently put on shoes and socks”. The item with the largest proportion (≥5%) of patients expecting to only “slightly improve” (lowest expectation) was “Improvement in walking ability: long distances (more than 1.5 km)”. The largest proportions of patients undergoing TKA who indicated they expected that aspects would get back to normal (> 50%) concerned “Not in need of stick, crutch or walker” and “Daily activities in and around the house”. The items with the largest proportion (≥5%) of patients expecting to only “slightly improve” (lowest expectation) were “Improvement in walking ability: long distances (more than 1.5 km)”, “be able to kneel down” and “be able to squat”

Fulfillment of expectations

Table 2a and 2b shows the frequencies of unfulfilled, fulfilled and exceeded expectations of improvement for each of the HSS items. Both in the THA and TKA groups the outcome expectations for most items were fulfilled or exceeded by the large majority of patients. Overall, the proportions of patients in whom expectations were fulfilled or exceeded were somewhat lower in the TKA than in the THA group. Our study results showed that in the THA group exceeded expectations were seen in more than 20% of the patients for 6 items. In TKA patients more than 20% of patients had exceeded expectations for 8 items. Still, as depicted in Table 2, there were some items where a substantial proportion (>30%) of patients had unfulfilled expectations, concerning “Improvement in walking ability: long distances” (31%), “Walking stairs” (33%) and “Improve ability to cut toenails” (38%) in THA and “Being able to kneel down” (44%) and “Being able to squat” (47%) in TKA.

Table 2a. THA: Baseline expectations and fulfillment of expectations

	Baseline expectations				Fulfillment of expectations			
	Back to normal	Much improved	Moderate improvement	Slightly improved	Unfulfilled	Fulfilled	Exceeded	Fulfilled + exceeded
1a. Relieve of pain during the day (N=209)	41%	43%	3%	1%	22%	58%	20%	79%
1b. Relieve of pain during sleeping (N=197)	48%	32%	3%	1%	23%	61%	16%	77%
2a. Improvement walking ability: during short distances (in house) (N=190)	47%	31%	3%	2%	21%	56%	23%	80%
2b. Improvement walking ability: middle long distances (up to 1,5 km's) (N=186)	37%	36%	9%	1%	26%	50%	24%	74%
2c. Improvement walking ability: long distances (more than 1,5 km's) (N=175)	33%	32%	12%	5%	31%	45%	24%	69%
3. Not in need of stick, crutch, walker (N=118)	62%	10%	3%	0%	14%	73%	14%	87%
4. Be able to stand better (N=201)	58%	23%	5%	0%	26%	55%	19%	74%
5. Walking stairs (N=204)	54%	27%	4%	1%	33%	51%	16%	67%
6. Get rid of limp (N=186)	53%	27%	4%	1%	29%	55%	17%	72%
7. Getting in or out bed, chair or car (N=208)	53%	28%	5%	1%	30%	52%	18%	70%
8. Eliminate need for medication (pain) (N=120)	56%	11%	3%	1%	23%	64%	13%	77%
9. Be able to independently put on shoes and socks (N=192)	62%	17%	4%	0%	26%	60%	15%	75%
10. Be able to do paid work (N=55)	28%	5%	2%	0%	11%	84%	6%	89%
11. Join recreational activities (dancing, going out on trips) (N=154)	44%	23%	6%	1%	20%	61%	20%	81%
12. Improve ability daily activities in and around the house (gardening, housework) (N=204)	53%	25%	6%	2%	30%	53%	17%	70%
13. Improve ability to do sports (N=155)	30%	32%	11%	2%	26%	56%	19%	74%
14. Improve ability to cut toenails (N=175)	45%	22%	8%	4%	38%	43%	19%	62%
15. Social life (being able to take care for someone else or play with children) (N=164)	48%	25%	4%	2%	20%	60%	20%	81%
16. Sexual activities (N=122)	43%	14%	4%	1%	16%	64%	21%	84%
17. Psychological wellbeing (N=144)	52%	12%	3%	2%	23%	63%	14%	77%

**Table 2b. TKA: Baseline expectations and fulfilment of expectations**

	Baseline expectations					Fulfilment of expectations				
	Back to normal	Much improved	Moderate improvement	Slightly improved	Unfulfilled	Fulfilled	Exceeded	Fulfilled + exceeded		
1a. Relieve of pain during the day (N=216)	26%	52%	7%	1%	29%	49%	23%	71%		
2a. Improvement walking ability: during short distances (in house) (N=210)	34%	41%	6%	2%	33%	49%	18%	67%		
2b. Improvement walking ability: middle long distances (up to 1,5 km's) (N=199)	24%	44%	12%	3%	40%	44%	16%	60%		
2c. Improvement walking ability: long distances (more than 1,5 km's) (N=185)	19%	40%	16%	5%	37%	40%	23%	63%		
3. Not in need of stick, crutch, walker (N=84)	51%	10%	6%	1%	14%	71%	15%	86%		
4. Be able to stretch the knee (N=221)	46%	30%	7%	2%	21%	54%	25%	79%		
5. Improve walking upstairs (N=236)	43%	35%	9%	2%	37%	46%	18%	63%		
6. Improve walking downstairs (N=233)	39%	37%	10%	2%	38%	45%	17%	62%		
7. Being able to kneel down (N=167)	16%	29%	23%	13%	47%	26%	26%	54%		
8. Being able to squat (N=186)	17%	26%	24%	16%	44%	31%	25%	56%		
9. Being able to travel by public transport (bus, tram or train) (N=147)	41%	21%	5%	4%	21%	61%	17%	79%		
10. Be able to do paid work (N=58)	25%	7%	1%	2%	34%	57%	8%	66%		
11. Join recreational activities (dancing, going out on trips) (N=150)	33%	24%	10%	2%	39%	42%	19%	61%		
12. Daily activities in and around the house (getting dressed, housework) (N=217)	57%	18%	6%	1%	29%	56%	1%	71%		
13. Being able to do sports (N=160)	22%	39%	12%	4%	35%	44%	21%	65%		
14. Being able to change position (getting up, sitting down) (N=237)	39%	40%	9%	2%	35%	45%	20%	65%		
15. Social life (being able to take care for someone else or play with children) (N=181)	36%	26%	12%	2%	32%	46%	22%	68%		
16. Sexual activities (N=108)	33%	8%	6%	2%	25%	60%	16%	75%		
17. Psychological wellbeing (N=148)	42%	12%	7%	2%	25%	55%	20%	75%		

## Discussion and conclusion

### Discussion

The observation from the present study is that, despite the overall favourable results, for some specific outcomes of THA or TKA relatively large proportions of patients have unfulfilled expectations. Our results are in concordance with those of Scott et al<sup>7</sup>. Palazzo et al<sup>1</sup> however found larger proportions of unfulfilled expectations for THA patients. Nilsson<sup>3</sup> found that unfulfilled expectations for THA are primarily present for sports and recreational activities, which was in our study only the case for TKA, not for THA. Furthermore, to our knowledge our study is the first that assessed whether, and more specifically, which expectations were exceeded for THA and TKA. Also in other medical fields little attention has been given to this phenomenon. Investigating the role of exceeded expectations in outcomes like 'satisfaction' and 'general perceived effect' on a treatment (whether surgical or conservative) may bring us one step closer to resolving the debate on what the most optimal expectation is; high or low expectations that may be easily exceeded.

Limitations of our study include the somewhat selective drop-out. Despite the effort to prevent loss to follow-up (sending reminders and contacting patients by phone) in THA patients 20% and in TKA patients 23% of the patients were lost to follow-up after one year. Study completers had statistically significantly higher expectations preoperatively compared to non-completers for some of the items.

### Practice implications

Our results may have implications for preoperative management as findings underscore the need for patient education focussed on realistic expectations specifically for those items (i.e. walking stairs, cutting toenails, walking ability, kneeling down and squatting) that were found to be unfulfilled in many patients. Discussing these patient' expectations pre-operatively may support patient-clinician communication, shared decision making and might influence postoperative outcome as well<sup>6</sup>.

### Conclusion

In conclusion, this study shows that THA and TKA patients have relatively high expectations for various aspects of outcome of surgery. For THA patients most of these expectations are met or even exceeded. Specifically in the pain related domains and the 'simple' function related items THA surgeries are fulfilling patients' expectations. However, for TKA, expectations regarding daily activities and sports and recreation functions were less often fulfilled. The results of this study are relevant for preoperative patients' education. It would be of value to pay more attention to patients 'expectations and setting realistic goals and aims.



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