Fulfilment of knowledge expectations and emotional state among people undergoing hip replacement: A multi-national survey

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Abstract

Background: Patient education in connection with hip replacement is intended to prepare patients for surgery, discharge and postoperative recovery. Patients experience symptoms and emotions due to disease or upcoming surgery which can affect how their knowledge expectations are fulfilled.

Objectives: To describe the differences between received and expected knowledge in patients undergoing elective hip replacement in three Nordic countries, and to analyse how these differences are related to patients' characteristics, preoperative symptoms and emotions.

Design: A descriptive, prospective survey with two data collection points; before admission and at hospital discharge after surgery.

Settings: Two Finnish, three Icelandic and two Swedish hospitals.

Participants: The population consisted of patients on a waiting list for hip replacement. Of the consecutively included patients, 320 answered questionnaires both before admission and at discharge and were included in the study. The mean age of the patients was 64 years, and 55% were women.

Methods: Structured questionnaires were used; the Knowledge Expectations of hospital patients scale and self-reported scales for symptoms and emotions before admission and Received Knowledge of hospital patients scale at discharge. Fulfilment of knowledge expectation was assessed by calculating the difference between received and expected knowledge with a paired sample t-test. A multiple stepwise regression model was used to explain the variance of fulfilled knowledge expectations.

Results: Patients expected more knowledge than they received ($p<0.001$) and 77% of them had unfulfilled knowledge expectations. Patients with a higher level of education were more

likely to have unfulfilled knowledge expectations. A higher level of education was also related to a greater difference between received and expected knowledge. The difference was more correlated with patients' emotions than their symptoms. A depressive state was the major predictor of the variance in the difference between received and expected knowledge.

Conclusions: In order to better support patients by education it is necessary to assess their emotional state, educational level and knowledge expectations before surgery.

Keywords: Emotions, Empowering knowledge, Hip replacement, Knowledge expectations, Orthopaedic Nursing, Patient education, Symptoms

What is already known about the topic?

- Education benefits patients but the educational practices in hospital care need to be further developed.
- Patients have unfulfilled knowledge expectations.

What this paper adds?

- Seventy-seven percent of the patients undergoing hip replacement have unfulfilled knowledge expectations
- To a greater extent than other patients, patients in a depressive state receive less knowledge than they expect.
- The knowledge expectations of patients with a higher level of education are less fulfilled than those of patients with a lower level of education.

1. Background

There is limited knowledge about whether patients undergoing elective hip replacement have their knowledge expectations fulfilled during a hospital stay. To support patients' empowerment through education there is therefore a need to be aware of these expectations and the factors that influence them.

Hip replacement is an effective and common treatment for people with osteoarthritis and has become a high volume surgery throughout Europe (Learmonth et al., 2007, Rasanen et al., 2007). The annual incidences in Finland, Iceland and Sweden are similar (Lohmander et al., 2006). During 2011 the incidence rates in these three countries were between 173-238/100,000 inhabitants, which were above the average for the OECD countries (OECD, 2013).

Nordic co-operation has strong traditions in politics, economy and culture. The health care systems are public and have well-developed hospital services (Nordic Statistical Yearbook, 2011). This was also verified in the Euro Health Consumer Index which ranked the health care systems in Finland, Iceland and Sweden among the top ten of 34 European countries (Björnberg, 2012).

The number of hip replacements performed is increasing, and there is a higher incidence rate, 160 per 100,000 inhabitants, compared with knee replacement (119/100,000) in the OECD countries (OECD 2013). Patients undergoing hip or knee replacement are often included in the same study although studies have reported differences in postoperative function (Choi et al., 2012, Ethgen et al., 2004, Wylde et al., 2009), self-perceived recovery and distress (Caracciolo and Giaquinto, 2005). Patients undergoing different kinds of arthroplasty may also have different knowledge expectations. In order to fulfil individual knowledge expectations of patient's undergoing elective hip replacement it is therefore important to

identify the factors which make it unlikely for these patients to have their knowledge expectations fulfilled.

The length of hospital stay for patients undergoing hip replacement has decreased (Gulotta et al., 2011, Husted et al., 2010) which has put greater demands on perioperative practice, including patient education. This can be a challenge for the patients and it is therefore important to take their own resources, e.g. existing knowledge, into account when planning patient education (Johansson et al., 2005). Earlier studies have shown that patient education results in better preparation for surgery, better pain control (Kearney et al., 2011) and a shorter hospital stay (Yoon et al., 2010). It also reduces patients' anxiety and increases their knowledge level (Johansson et al., 2005).

Patients' rights to education and information are statutory in Finland (Act 785/1992), Iceland (Act 74/1997) and Sweden (Act 1982:763). In many countries, including the Nordic countries, education is provided to prepare patients for surgery, discharge and postoperative recovery but it still needs to be further developed (Blondal et al., 2011, Friberg et al., 2012), especially in hospital care (Bergh et al., 2012). With more fast track treatment followed by early discharge it is vital to improve patient education. This requires international studies, and including patients from Finland, Iceland and Sweden, which have similar health care systems, may generate knowledge that can support theory development and clinical practice of patient education.

Empowering patient education emphasizes the power of patients and their self-care as a goal of the education and is a relevant subject to study since patients need to be responsible for their own recovery (Johansson et al., 2005). Empowering patient education can take place when health care providers support patients in finding, constructing and using their own resources (Leino-Kilpi, 2009). Empowering knowledge is based on a model that has six

dimensions: bio-physiological, functional, experiential, social, ethical and financial (Leino-Kilpi et al., 2005, Rankinen et al., 2007). These aspects are important, as patients need to be prepared for both the surgical procedure as well as their recovery (Heikkinen et al., 2007). Patients that have their knowledge expectations fulfilled will have the opportunity to become empowered during the whole process, from preparation to recovery (Kuokkanen and Leino-Kilpi, 2000, Suhonen and Leino-Kilpi, 2006) and will therefore improve their self-care (WHO, 2012). This assumption is based on theories that focus on individuals' own cognitive processing and use of knowledge (Kuokkanen and Leino-Kilpi, 2000, Thomas and Velthouse, 1990). To be able to support patients' empowerment by education it is therefore necessary to be aware of patients' knowledge expectations and the factors that influence them.

Studies on the difference between received and expected knowledge, i.e. fulfilled and unfulfilled knowledge expectations, show that patients have unfulfilled knowledge expectations in all dimensions of empowering knowledge (Rankinen et al., 2007, Ryhänen et al., 2012). Unfulfilled knowledge expectations are associated with being female, younger or having a higher level of basic education (Rankinen et al., 2007). Not only patients' characteristics but also their symptoms and emotions may affect the extent to which their knowledge expectations are fulfilled. Patients have reported fear of the overall surgery outcome or of specific problems with surgery and rehabilitation, which explains why the specific content of patient education is important (Soever et al., 2010). On the other hand, a study has shown that patient education did not affect patients' emotional state during the orthopaedic surgical process (Heikkinen et al., 2012). No studies have been found describing how differences between received and expected knowledge are related to patient's symptoms and emotions.

The aim of this study was to describe the differences between received and expected knowledge in patients undergoing elective hip replacement in three Nordic countries, and to

analyse how these differences are related to patients' characteristics, preoperative symptoms and emotions.

2. Method

2.1. Design

This survey is a prospective study with data collected by questionnaires before hospital admission and at discharge after hip replacement. It is a part of a European project on empowering patient education for osteoarthritis patients undergoing hip or knee replacement (EEPO, 2009, Valkeapää et al., 2013).

2.2 Sample and settings

The study population consisted of patients with osteoarthritis on a waiting list for elective hip replacement at two Finnish, three Icelandic and two Swedish hospitals. The hospitals were non-randomly selected except for Iceland where all hospitals performing arthroplasty were included. Two of the included institutions were university hospitals and the others were community hospitals. The inclusion criteria for the patients were: age ≥ 18 years and being able to complete the questionnaires. The sample resulted in 446 consecutively included patients of which 320 (72%) answered questionnaires both before admission and at discharge, and the results of these questionnaires will be reported in this paper (Fig 1).

Figure 1 Flow chart of participant recruitment.

2.3. Measurements

The structured instruments Knowledge Expectations of hospital patients (KE_{hp}) and Received Knowledge of hospital patients (RK_{hp}) (Leino-Kilpi et al., 2005, Rankinen et al., 2007) are two 40-item scales with parallel questions which measure what empowering knowledge patients expect to get, and what they perceive they have actually received. Empowering knowledge is defined as six dimensional: bio-physiological (eight items e.g. knowledge about illness, symptoms, treatment, complications), functional (eight items e.g. mobility, rest, nutrition, bodily functions), experiential (three items e.g. emotions, hospital experiences), ethical (nine items e.g. rights, duties, participating in decision-making, confidentiality), social (six items e.g. support from family or community, social contact, patient organizations) and financial (six items e.g. costs, financial benefits). Response options for each item were categorized from 1= fully disagree to 4 = fully agree and 0 = not applicable. The scores for each dimension and the total scale are the mean values of included items, with a possible range of 1-4. When calculating these means the response option 'not applicable' was excluded. High scores indicate high knowledge expectations or a high level of received knowledge. KE_{hp} and RK_{hp} were found to have good content validity (Heikkinen et al., 2007, Leino-Kilpi et al., 2005) and internal consistency with a Cronbach's alpha ranging between 0.87 to 0.94 (Rankinen et al., 2007, Valkeapaa et al., 2013). In the present study the Cronbach´s alphas for the total scale of KE_{hp} and RK_{hp} were 0.97, the dimensions ranged from 0.87 to 0.92 for the KE_{hp} scale, and from 0.83 to 0.95 for the RK_{hp} scale.

Self-reported scales were administered to assess the prevalence and frequency of symptoms (eight items) and emotions (nine items) (Heikkinen et al., 2012). Response options for each item ranged from 1 = not at all to 4 = very often.

Patients' characteristics were collected on age, sex, present employment status, earlier employment in social or healthcare, and whether patients were undergoing their first joint replacement or not. Educational levels were identified; basic education and different levels of

vocational training after basic education were defined as professional education. Patients were also asked two questions about the length of their present hospital stay and if it had been as expected.

The translation procedure, including back-translation, of instruments and questionnaires was performed. The questionnaires were piloted in each country in a corresponding group of 30 patients per country (Figure 1) and were found to be understandable and easy to complete.

2.4. Procedures

Data was collected between 2009 and 2011. Staff nurses at the participating hospitals sent written information about the study to each patient's home within a month before admission to hospital. The information covered informed consent, the KE_{hp} scale, and self-reported scales for symptoms and emotions. Patients sent the completed questionnaires by prepaid envelope to a member of the research group or returned it during a preoperative meeting prior to surgery and prior to formal preoperative education. After surgery and before discharge, the RK_{hp} scale was distributed to all included patients and they returned these to mailboxes placed on the wards or sent them back by prepaid envelope to a member of the research group.

The hospitals' standardised educational practices were used, including providing written information about the hospital stay.

2.5. Ethical considerations

All relevant permissions and ethical approval were obtained and good ethical research praxis based on the Helsinki Declaration was followed (WMA, 1964). Patients were informed of the purpose of the study, about the principles of voluntary participation and confidentiality, and they gave written informed consent.

2.6. Data analysis

Descriptive statistics were used to describe the sample characteristics. Differences between groups were calculated with Chi-2 for nominal data, Kruskal-Wallis for ordinal data and One-Way ANOVA for continuous data. For statistically significant analysis, further tests were done; Kruskal-Wallis was followed by post hoc Mann-Whitney test, and the ANOVA was followed by post hoc Students *t*-test with Bonferroni correction (Polit and Beck, 2012).

Differences between perceptions of received knowledge and knowledge expectations were calculated with a paired sample t-test (RK_{hp}-KE_{hp}). The distribution of this difference was tested by Kolmogorov-Smirnov. If the difference was negative the patients had higher expectations than received knowledge, and were defined as having unfulfilled knowledge expectations. Patients with no or a positive difference were defined as experiencing fulfilled expectations. Differences between patients with unfulfilled and fulfilled knowledge expectations were calculated using a chi-2 or t-test for independent samples when appropriate.

The associations of the 'difference between received and expected knowledge' with patients' characteristics was tested by one-way ANOVA (country, professional education), by Student's t-test (hospital stay as expected), or by Pearson's correlation coefficient (length of hospital stay). Spearman's correlation coefficient was used to analyse the relationship between the differences in received and expected knowledge for each symptom and emotion.

The calculated difference between received and expected knowledge was entered into a multiple stepwise regression model as a dependent variable. Independent variables were symptoms and emotions with a prevalence of ≥50% and significant correlations with this difference (pain, tiredness or fatigue, sleeplessness, sense of weakness, concern, impatience, uncertainty, fear, anxiety, depressive state), together with variables associated with the

difference between received and expected knowledge (country, professional education) and sex.

Internal missing data ranged between 0-13%, and imputation was not carried out. The level of statistical significance was set at $p< 0.05$. Data were analysed using SPSS® version 20.

3. Results

3.1. Characteristics of the sample

There were no significant differences between the 320 respondents and the 125 non-responders at hospital discharge in any of the patient's characteristics presented in table 1, ($p>0.05$) or knowledge expectations ($p = 0.92$ for the total scale). Of the 320 included patients, 177 (55%) were women (table 1). The mean age was 64 ($\pm$ SD 11) years. For 76% of the patients this was their first arthroplasty. Half of the patients had no professional education or a secondary level, and 43% had college or academic level education. When comparing the countries, Swedish patients had a higher level of both basic and professional education compared with Finland and Iceland ($p<0.01$ and <0.05 respectively). A majority (91%) of the patients evaluated the hospital stay as meeting expectations. No significant differences were found between patients with unfulfilled or fulfilled knowledge expectations for length of hospital stay.

Table 1, here

3.2 The difference between received and expected knowledge

Of the 320 patients, 247 (77%) had unfulfilled and 73 (23%) had fulfilled knowledge expectations (table 1). More Swedish patients had unfulfilled knowledge expectations than

Finnish and Icelandic patients (*p*<0.01). The level of basic education was related to whether patients' knowledge expectations were fulfilled or not (*p*<0.05). Of patients with fulfilled expectations, 54% had the lowest level of basic education (primary school).

Patients perceived that they received less knowledge than they had expected in all dimensions and for the total scale of empowering knowledge (Table 2). The difference between received and expected knowledge of the total scale was normally distributed (Kolmogorov-Smirnov *p*=.639) with a range between -2.95 to 2.27. The smallest mean difference was in the bio-physiological and functional dimensions -0.3 (SD 0.6) and greatest in the financial dimension, -1.3 (SD 0.8). The proportions of patients with unfulfilled knowledge expectations ranged between 55% (bio-physiological dimension) and 81% (financial dimension).

Table 2, here

3.3. The difference between received and expected knowledge related to patients' characteristics

The difference between received and expected knowledge for the total scale was related to country, professional education and whether the hospital stay was as expected. This difference was larger in Sweden -0.9 (SD 0.7) compared with Finland -0.4 (SD 0.8) and Iceland -0.5 (SD 0.6) (*p* <0.001). Patients with professional education on an academic level showed a greater difference between received and expected knowledge -0.9 (SD 0.8) than patients with no professional education -0.5 (SD 0.7), education on a secondary level -0.5 (SD 0.7) or college level -0.6 (0.9) (*p* <0.05). Patients who experienced the hospital stay as meeting expectations showed a smaller difference between received and expected knowledge, -0.5 (0.7) than those who did not -1.0 (0.9) (p <0.001). No correlation was found between length of hospital stay and the difference between received and expected knowledge, r_p .029 (p>0.05).

3.4. Symptoms and emotions before hospital admission, and their relationship to the difference between received and expected knowledge

The most common symptoms patients experienced before admission to hospital were pain, 'tiredness or fatigue', sleeplessness and a sense of weakness with a prevalence between 77-100% (table 3). The least common symptom was 'nausea or vomiting' (19%). The most common emotions before admission were hope, concern, impatience and uncertainty (73-96%) and the least common were grief and despair or hopelessness (44-45%). The prevalence for depressive state was 55% in the total sample. The proportion of patients with depressive state in each country was 31 (35%) for Finland, 42 (45%) for Iceland and 97 (78%) for Sweden.

The differences between received and expected knowledge of the total scale correlated significantly with the frequency of the following symptoms; pain, 'tiredness or fatigue', sleeplessness and sense of weakness and the emotions; concern, impatience, uncertainty, fear, anxiety, depressive state, 'despair or hopelessness' and grief before admission to hospital (table 3).

3.5 Predictors explaining the difference between received and expected knowledge

Multiple regression analysis showed that the predictor variables explained 22.1% of the variance in the difference between received and expected knowledge (table 4). Depressive state was the major predictor and could explain 16.2% (adjusted R^2) of the variance. The difference between received and expected knowledge was greater when patients reported a higher occurrence of depressive state and anxiety, and for patients with higher professional

education. The Swedish patients showed a greater difference between received and expected knowledge than the Finnish and Icelandic patients.

Table 4 here

4 Discussion

In this study, negative emotions such as fear, depressive state, concern and anxiety were related to unfulfilled knowledge expectations, and depressive state was the major predictor of the variance in the difference between received and expected knowledge. Patients' knowledge expectations were most fulfilled in the bio-physiological dimension which includes items about symptoms related to the illness but less fulfilled in the experiential dimension including items about their emotions. Therefore, patient education should address how the illness and its treatment could affect patients emotionally, and who the patient can talk with about these. In addition, assessment of patients' emotional state before surgery would help nurses to identify those at risk of having their knowledge expectations unfulfilled. In qualitative studies exploring experiences of orthopaedic surgery, patients' emotions such as hope, fear, feeling safe and loss of independence seem to be more important than their symptoms (Gustafsson et al., 2010, Heine et al., 2004, Perry et al., 2012).

Level of education seems to be an important factor as patients with higher basic education had more unfulfilled knowledge expectations, and patients with higher professional education showed a larger difference between received and expected knowledge. Professional education could also predict some of the variance of the difference between received and expected knowledge. This was also verified in a study on surgical patients which found that patients with a higher level of basic education showed a larger difference between received and expected knowledge (Rankinen et al., 2007). In contrast, in a study in our European project on

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patients undergoing knee replacement, no such difference was found for level of professional education (Ingadottir et al., 2014). However, it has also been found that when patient education increases, patients' knowledge expectations increase as well while their perceptions of received knowledge decrease (Ryhänen et al., 2012). More patient education or a higher level of education seems to be associated with more unfulfilled knowledge expectations. Patient education therefore needs to be customised to meet patients' level of education and their knowledge expectations.

Swedish patients had a higher level of professional education compared with the Finnish and Icelandic patients. The proportion of patients having a depressive state was also highest in Sweden. These factors may explain why Swedish patients showed a greater difference between received and expected knowledge and had more unfulfilled knowledge expectations than Finnish and Icelandic patients.

Patients' knowledge expectations were highest in the bio-physiological and functional dimension and those were also the best fulfilled, as in earlier studies (Heikkinen et al., 2007, Montin et al., 2010, Valkeapaa et al., 2013). Consistent with earlier research (Ingadottir et al., 2014, Rankinen et al., 2007, Ryhanen et al., 2012) our results showed that patients undergoing hip replacement also had unfulfilled knowledge expectations in all dimensions of empowering knowledge. It seems that patient education about bio-physiological and functional aspects is prioritised. Therefore, it is important to raise the awareness of patients' need for education from the other dimensions. An interesting question for further research is how large the difference between received and expected knowledge has to be in order to be considered clinical relevant.

In this study, 91% of the patients found the hospital stay to be as they had expected, and this factor was related to a smaller difference between received and expected knowledge. The

same result was shown in a study on patients undergoing knee replacement (Ingadottir et al., 2014). These results indicate that patients who had their knowledge expectations fulfilled also found the hospital stay to be as expected. It seems that fulfilled knowledge expectations and general expectations of the hospital stay are related to each other. This may strengthen the main assumption for empowering patient education; patients that have their knowledge expectations met have a greater possibility for empowerment and thus for self-care.

This study focused on whether patient's knowledge expectations are being fulfilled. Patients have their own individual expectations of patient education and a positive correlation between individualised care and patient satisfaction has been found (Suhonen et al., 2012). Person-centred care has recently been defined as a holistic approach to delivering care that is respectful and individualised, allowing negotiation of care, and offering choice through a therapeutic relationship where persons are empowered to be involved in health decisions at whatever level is desired by the individual who is receiving the care (Morgan and Yoder, 2012). Three routines are proposed to facilitate a person-centred approach to care; first establishing a partnership by asking for the patients' narrative; second, shared decision-making build on the partnership; and third, the documentation of the patient's narrative in the patient record to empower the value of the partnership (Ekman et al., 2011). Nurses have an important role in patient education (Nolan et al., 2001). By choosing person-centred care as a guiding model in nursing practice an individualised education, where the patient is empowered to be involved and have his/her desired knowledge expectations fulfilled, can be achieved.

In our study no relation was found between the length of hospital stay and whether patients had their knowledge expectations fulfilled or not. Therefore, we cannot state that a shorter hospital stay means fewer knowledge expectations fulfilled. Earlier studies have contradictory results; preoperative education was found to reduce length of hospital stay (Yoon et al., 2010)

but also to have no effect on hospital stay (Sjöling, 2003, Vukomanovic et al., 2008). We did not study the existing patient educational routines and therefore cannot state if they are adequate or not. It is possible that patients expect or need improved patient education before admission to hospital, during the hospital stay, and after discharge when the hospital stay is shorter. Further studies are needed to gain new knowledge within this area.

One of the strengths of the study is the large sample size. The non-random choice of hospitals means that the results may not be generalised to more than participating hospitals except for Iceland, where all hospitals performing arthroplasty were included. The instruments, KE_{hp}, RK_{hp} and the self-reported scales for symptoms and emotions have been developed and used in Finland, and content validity and reliability has been tested in a Finnish context (Heikkinen et al., 2012, Leino-Kilpi et al., 1998, Leino-Kilpi et al., 1999). Even though the Nordic countries have a similar cultural context and comparable health care, there may have been some difficulties in the translation and cultural validation (Cha et al., 2007). There might for example have been different perceptions about what a depressive state means in the different languages. It may be difficult to compare different levels of education between the Nordic countries (Nordic statistical yearbook 2011). In addition, the educational systems in each country have changed over time, including the length of time spent at each level. However, the educational systems are similar and have developed in coordination in the Nordic countries. Low internal missing data and the result of the pilot study indicated that patients found the questionnaires relevant and easy to understand. The reliability for the KE_{hp} and RK_{hp} scales, tested by Cronbach´s alphas, indicated good consistency (Beckstead, 2013, Tavakol and Dennick, 2011). Despite this support for the reliability, further validation of the instruments is needed both in the Nordic and European contexts.

5. Conclusion

The conclusions from this study emphasize the importance of identifying anxious patients, patients in a depressive state, and also those with a higher level of education, and then focusing on fulfilling their knowledge expectations. The most important implication is that nurses should identify patients undergoing elective hip replacement who are at risk of having unfulfilled knowledge expectations. In addition support them in fulfilling their individual knowledge expectations in all dimensions of empowering knowledge by implementing person-centred care in nursing practice. The challenge may be to change focus from "doing for" the patient to "doing with" the patient.

Ethical approval

Conflict of interest

There are no conflicts of interest to declare.

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Table 1

Sample characteristics and comparison between patients with unfulfilled and fulfilled knowledge expectations

	Total sample n=320	Unfulfilled expectations n=247	Fulfilled expectations n=73	$p <$
Countries n (%)				<0.01[a]
Finland	97 (30)	69 (28)	28 (38)	
Iceland	98 (31)	70 (28)	28 (38)	
Sweden	125 (39)	108 (44)	17 (23)	
Age in years, mean (±SD)	64 (11)	64 (12)	66 (11)	
Sex n (%)				
Female	177 (55)	142 (58)	35 (48)	
Basic education n (%)				<0.05[a]
Primary school (or less)	117 (40)	80 (36)	37 (54)	
Secondary/comprehensive school	82 (28)	65 (29)	17 (25)	
Matriculation examination	81 (28)	68 (30)	13 (19)	
Other	12 (4)	11 (5)	1 (1)	
Professional education n (%)				
None	77 (26)	56 (24)	21 (33)	
Secondary level	71 (24)	52 (22)	19 (30)	
College level	74 (25)	59 (26)	15 (23)	
Academic level	53 (18)	48 (21)	5 (8)	
Other	20 (7)	16 (7)	4 (6)	
Employment status n (%)				
Employed	146 (46)	119 (49)	27 (38)	
Retired	154 (49)	112 (46)	42 (58)	
Other	16 (5)	13 (5)	3 (4)	
Employed in social/health care n (%)				
Yes	81 (26)	66 (27)	15 (21)	
No	233 (74)	177 (73)	56 (79)	
Earlier arthroplasty n (%)				
First arthroplasty	244 (76)	188 (76)	56 (77)	
Second or more arthroplasty	76 (24)	59 (24)	17 (23)	
Hospital stay as expected n (%)				
Yes	282 (91)	216 (90)	66 (93)	
Hospital stay in days Mean (±SD)	6 (5)	6 (5)	6 (2)	

[a]Chi-2 test

Table 2

Mean differences between received and expected knowledge and number of patients with unfulfilled knowledge expectation

Dimensions	Received knowledge[a] Mean (±SD)	Expected knowledge[a] Mean (±SD)	Mean difference Mean (±SD)	p[b]	Number of patients with unfulfilled expectations n (%)
Bio-Physiological	3.5 (0.5)	3.8 (0.3)	-0.3 (0.6)	<0.001	173 (55%)
Functional	3.5 (0.5)	3.8 (0.4)	-0.3 (0.6)	<0.001	181 (57%)
Experiential	2.7 (0.1)	3.5 (0.7)	-0.8 (1.1)	<0.001	183 (64%)
Ethical	2.8 (0.9)	3.5 (0.6)	-0.7 (1.0)	<0.001	222 (71%)
Social	2.6 (1.0)	3.4 (0.6)	-0.8 (1.0)	<0.001	214 (70%)
Financial	2.2 (1.0)	3.5 (0.7)	-1.3 (1.2)	<0.001	227 (81%)
Total scale	**3.0 (0.7)**	**3.6 (0.4)**	**-0.6 (0.8)**	**<0.001**	**247 (77%)**

[a]Scores range between 1 and 4; high scores indicate high received knowledge or high expectations.
[b]p-value from paired sample t-test (received - expected knowledge)

Table 3

Symptoms and emotions before hospital admission and correlation with the differences between received and expected knowledge (n=320)

	Prevalence[a] n (%)	Distribution[b] Md (Q1, Q3)	Correlation coefficient[c] r_s
Symptoms			
pain	317 (100)	4 (3, 4)	-.162**
tiredness or fatigue	284 (88)	3 (2, 3)	-.180**
sleeplessness	242 (77)	3 (2, 3)	-.157**
sense of weakness	239 (77)	2 (2, 3)	-.265**
itching	101 (33)	1 (1, 2)	-.102
breathlessness	95 (31)	1 (1, 2)	.004
loss of appetite	90 (29)	1 (1, 2)	-.082
nausea or vomiting	58 (19)	1 (1, 1)	-.139*
Emotions			
hope	299 (96)	4 (3, 4)	-.064
concern	267 (85)	2 (2, 3)	-.277**
impatience	237 (76)	2 (2, 3)	-.240**
uncertainty	226 (73)	2 (1, 2)	-.269**
fear	205 (66)	2 (1, 3)	-.331**
anxiety	183 (59)	2 (1, 3)	-.243**
depressive state	170 (55)	2 (1, 2)	-.328**
despair or hopelessness	139 (45)	1 (1, 2)	-.247**
grief	136 (44)	1 (1, 2)	-.267**

[a]Score ≥ 2

[b]Scores range between 1 and 4, 1= not at all, 2= rarely, 3=sometimes, 4= very often

[c] Differences between received and expected knowledge range from -2.95 to 2.27

* $p < 0.05$, ** $p < 0.01$

Table 4. Variables predicting for the difference between received and expected knowledge

Variable	B	S.E.	Beta	t-value	p-value
Depressive state[a]	-.234	.064	-.260	-3.673	<.001
Professional education[b]	-.108	.039	-.156	-2.773	.006
Country[c]	.173	.057	.188	3.031	.003
Anxiety[a]	-.143	.057	-.168	-2.524	.012
Constant	-.715	.392		-1.882	.070

$R^2 = .234$, adjusted $R^2 = .221$, $F = 18.688$ df (4, 245), $p = <0.001$

[a] 1= not at all 2= rarely, 3=sometimes, 4= very often
[b] 1=none 2= Secondary level, 3= College level, 4=academic level
[c] 1=Sweden, 2=Finland, 3=Iceland