

## **Knowledge expectations of surgical orthopaedic patients: A European survey**

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No conflict of interest has been declared by the authors

#### Author contributions

KV, HL-K were responsible for the study conception and design. KV, PC, ÅJS, AC, EP, BI, SC, AKS performed the data collection and JK the data analysis. KV and SK were responsible for the drafting of the manuscript. Translation of the questionnaire and obtaining ethical permissions for the data collection in their own country was performed by KV, PC, MU, ÅJS, AC, EP, BI, AKS, EC, AZ and cultural adaptation by PS, CL, AC, EP, BI, AKS, MU, ÅJS, EC, AZ. All authors have made their critical revisions and approved the final version.

## Abstract

Ageing population entails a growing international problem of osteoarthritis. Best practices for education of these patients are lacking. This study focused on empowering education in Northern (Finland, Iceland, Lithuania, Sweden) and Southern Europe (Cyprus, Greece, Spain). The aim was to analyze associations between expected knowledge and background factors. The data were collected from 1634 European arthroplasty patients with the Knowledge Expectations of hospital patients- scale, including bio-physiological, functional, experiential, ethical, social and financial dimensions.

Patients had essential bio-physiological and functional knowledge expectations. Women expected more than men, employed less than retired, unemployed or who worked at home. Generally patients in Northern countries expected more than in Southern countries. However, highest expectations were found in Sweden and Greece, lowest in Spain and Cyprus. There are differences in knowledge expectations based on patients' backgrounds. Development of common standards in European patient education needs further research.

**Keywords:** empowering patient education, knowledge expectations, orthopaedics

## 1. Introduction

In today's united Europe health care has a growing role in the European collaboration. However, there may be differences between countries in the standards of nursing care, and patient education is one of the areas with potential differences [1]. Development of internationally accepted methods, e.g. in patient education, could therefore contribute to more equal health care. Furthermore, cultural characteristics of the European regions, such as Northern and Southern Europe, may lend special richness to the collaboration and opportunities for cultures to learn from each other [2]. Increasing immigration requires health care professionals to assimilate their strategies when providing care and education to culturally diverse populations. However, in order to reach the goal of equality in health care in Europe, we need equal patterns and collaborating scientific research between different cultural areas. [3] Furthermore, The Euro Health Consumer Index [EHCI 2012, 4] indicates that European health care is not equal, although health care in Europe is better than ever and still keeps improving. Collaboration between European countries in different areas, including patient education, is desirable in order to reach the goal of equivalent health care in European countries.

Besides culturally bound ideas of the society, such as participation of significant others, differences in health care systems in Northern and Southern European countries have been explained e.g. by different stages of development of the system and nurses' educational backgrounds, employment situation or work satisfaction [e.g. 5, 6, 7]. However, research on patient education seems to be insufficient on European level. There is a gap between scientific evidence and nursing practice. National and joint European resources could therefore be a force in the creation of common standards of patient education in European nursing practice. [8]

In Europe, like in many other continents, osteoarthritis is a chronic health problem requiring active patient participation in decision-making and self-management [9]. A higher rate of hip and knee replacements has been found in Northern Europe [10]. Thus, there are differences between Northern

and Southern Europe regarding the incidences. However, a globally ageing population entails a growing problem of osteoarthritis as a common burden [11]. Furthermore, it seems that best practices for education of orthopaedic patient, specifically in the surgical context, are lacking worldwide.

Patient education for orthopaedic patients undergoing surgery is important for several reasons. First and foremost, patients have the right to be informed in the field of their health problem or treatment. In some countries, such as Finland, Greece, Iceland and Sweden, this right is even statutory [12, 13, 14, 15, 16]. Second, increasing numbers of surgical osteoarthritis patients in the area of European Union (EU) [17, 18, 19, 20, 21], among the growing older population [22, 23, 24, 25] with short hospital stays [22, 23, 24], put more focus on education of the patients. There are arthritis self-management programmes [26], the treatment of osteoarthritis of the knee and hip [27], as well as the requirements for orthopaedic implants [28]. The principles of orthopaedic surgeries are commonly identified in the Nordic countries [29], and on national level there are recommendations for hip and knee osteoarthritis treatment, including surgical treatment, [30, 31, 32]. Third, there is a high emphasis on national and international health care strategies on patients' self-management, self-care and self-responsibility for their own health and care [33]. Fourth, the availability of health and care-related information has increased due to easy access to databases (e.g. via the Internet), where patients can easily find information [34]. Fifth, the importance of patient education is stated in the curricula of health care professionals on both national [35, 36, 37, 38] and European level [39]. However, patients have their own expectations about providing patient education [40].

Expectations are defined as cognitions about experiences in the future [41] which often exist before substantial information. Expectations about some phenomena influence patient's behaviour and attitudes which in turn influences subsequent expectations. [42.] Patients' expectations have also been divided in two different ways: as probabilities, what the patient believes to occur, and as values, what the patient wants and needs [43] and they are affected by background factors. For

example, elderly females, patients with low educational level and retired people expect more knowledge [44, 45, 46]. Furthermore, differences in cultural backgrounds in different countries cause variation in standards and prevailing practices in health care [47, 3, 47], responsiveness of which may predict patients' expectations about the care they are going to get [47]. The orthopaedic patients undergoing joint replacement surgery have knowledge expectations related to issues such as arthritis, rehabilitation and functional recovery, which issues could be alleviated through patient education. [48] Patient education has a demanding challenge to create interventions and ensure that patients' informational needs, expectations and received knowledge will meet [40, 45, 49, 50, 51, 52].

In this study, the theoretical basis is empowering patient education, where the emphasis is on assessing patients' knowledge expectations and measuring the knowledge they receive [53, 54, 55, 56, 46]. It is assumed that the more patients' expectations of preoperative knowledge, are met with the received knowledge, the more possibilities there are for empowerment [46], self-management and the best possible recovery [57, 58]. This theoretical approach is based on social-psychological theories and constructive learning theory. The main emphasis is on the individual's own cognitive processing and use of knowledge. It has its roots in the empowerment theory [59], but has been specifically developed for nursing care purposes [53, 54] and is used particularly in the education of long-term patients [60], health counseling [61] and in some specialised fields, such as orthopaedic health care [56, 46].

The focus of this study is on the knowledge expectations of orthopaedic patients in the surgical context in Northern (Finland, Iceland, Lithuania, Sweden,) and Southern (Cyprus, Greece, Spain) Europe. The aim of this study was to describe and compare the patients' expected knowledge before knee and hip replacement in seven European countries and analyze associations between expected knowledge and background factors.

The study questions were:

- 1) What knowledge do orthopaedic patients expect to have prior to the surgical procedure?
- 2) What background factors are connected with these expectations?

## 2. Methods

### 2.1 Design and participants

A descriptive survey of orthopaedic patients in the surgical context in seven European countries was carried out, and data collected during the years 2009-2012. The required sample size, at least 1.540 patients, was based on power calculation [62] with a power level of 0.90 and 0.8 difference of mean scores with 0.95 standard deviation within groups at the significance level of 0.01. The following inclusion criteria were applied: The patients must: 1) be able to understand Finnish/ Icelandic/ Lithuanian/ Swedish / Cypriot / Greek/ or Spanish, 2) be able to complete the questionnaires independently or with help from others, 3) be 18 years of age or older, 4) have volunteered to participate in the study and signed informed consent, and 5) be attending elective knee or hip replacement surgery for osteoarthritis. The study is a part of a larger European project on empowering patient education of osteoarthritis patients in the surgical context [63].

### 2.2 Instrument and data collection

A previously tested, validated and inductively developed, structured instrument on empowering knowledge, **Knowledge Expectations of hospital patient-** scale [**KE<sub>hp</sub>**, 55, 46] was used. This 40-item instrument measures empowering knowledge from the point of view of knowledge expectations and includes six subscales: bio-physiological (8 items, e.g. illness, symptoms, examinations, treatment, complications), functional (8 items, e.g. mobility, rest, nutrition, body hygiene), experiential (3 items; emotions, experiences), ethical (9 items; e.g. rights, duties,

participation in decision-making, confidentiality), social (6 items; e.g. significant others, support persons, patient organizations) and financial (6 items; e.g. costs, benefits, insurances) knowledge. Statements were ranked on a 4-point scale (1= fully disagree – 4= fully agree, 0= not applicable in my case). The higher the score is the more knowledge expectations the patient had. In a previous study the internal consistency of **KE<sub>hp</sub>** with Finnish surgical patients was satisfactory [Cronbach's alpha, total scale = 0.91, 38]. In the present study, Cronbach's alpha for each of the dimensions ranged between 0.87- 0.94, which further supports its reliability. The **KE<sub>hp</sub>** has been used and tested before with surgical patients [45, 46], this is the first time it has been used internationally.

The background factors of the patients included age, gender, basic education, and vocational education, employment status, employment in health care or social services, having chronic illness, having hip or knee arthroplasty, having first or more arthroplasties, having been in this hospital before, as well as country. The data were collected preoperatively from hip or knee arthroplasty patients prior to scheduled preoperative counseling. The questionnaire was attached to the patient's surgery appointment letter, delivered otherwise prior to surgery or handed out during admission, depending on the prevailing practice at the hospital. Patients returned the questionnaire at admission or posted it to researchers prior to surgery. The instruments with cover letters to respondents, as well as informed consent forms, were piloted in each country with a similar group of patients.

### 2.2.1 Statistical analysis

In **KE<sub>hp</sub>**, each dimension of expected knowledge was constructed by calculating the means of the corresponding items, including the patients who had answered at least 50% of items. The scores for each dimensions is the mean scores for included items with a range between 1 and 4. The connections between the background factors and total scale of **KE<sub>hp</sub>** were tested using the



multifactor analysis of variance. Statistically significant background factors of multifactor analysis were further tested with two-sample t-test (gender) and one-way ANOVA (employment status) for each dimension. In all tests, statistical significance was set at 0.05 [62]. The statistical analyses were performed using SPSS 19.0.

### 2.2.2 Ethical issues of the study

The study was approved by the ethical authorities based on national standards in each country (reference numbers of ethical approvals: Iceland 09-084-SI; Spain 2010/5955; Sweden Dnr. M69-09; Greece 3029/17.08.2010; Cyprus Y.Y.15.6.17.9 (2); Finland ETMK:102/180/2008; Lithuania Sv 14,17/04/2009). Patients were informed about the purpose and procedures of the study and the principles of voluntariness and confidentiality. A written consent was obtained from all patients prior to completing the questionnaire. [64]

## 3 Results

### 3.1 Characteristics of the sample

A total of 1634 orthopaedic surgery patients were enrolled in the study from seven countries. Most of the patients were women, retired and had lower education, their mean age was 67 years (SD 10,7 / range 25-91). The number of participants from different countries ranged between 172 (11%) and 279 (17%). The majority of patients came for knee arthroplasty and for the majority this operation was also their first arthroplasty. (Table 1.)

Table 1. here

### 3.2 Patients knowledge expectations prior to their surgical procedure

The patients had high expectations [mean 3.558, range 3.426 – 3.724 in all dimensions]. The highest knowledge expectations were on the bio-physiological and functional knowledge dimensions while the lowest expectations were on the experiential as well as social dimension (Table 2).

Table 2. here

### 3.3 Patients' background factors related to the knowledge expectations

There were statistically significant relationships between patients' knowledge expectations and gender, employment status and country (Table 3, Table 4).

Significant differences in patients' knowledge expectations among the seven European countries were found. Significantly most expectations had patients in Sweden and Greece and the least patients in Spain and Cyprus. Differences between Northern and Southern Europe were found but also among Northern and among Southern European countries. Patients in Northern countries expected significantly more than patients in Southern countries, except for Greece. In Finland patients had significantly less expectations than patients in the other Northern countries but more in comparison with the Southern countries. (Table 3.)

Table 3 here

Female patients had significantly more *ethical* and *social* expectations than males. Retired patients had significantly more *experiential*, *ethical* and *social* expectations than employed patients. Patients who worked at home had significantly more *social* expectations in comparison with employed

patients. Others, whose employment status was not defined, had significantly more social expectations, but also more experiential expectations than employed patients. (Table 4.)

Table 4 here

#### 4. Discussion

The aim of this study was to describe the expected knowledge and related background factors of preoperative orthopaedic patients at European level. The results showed that orthopaedic surgery patients had high knowledge expectations prior to their surgery. They had higher knowledge expectations about probable occurrences during the surgical process but wanted also attention to their needs and fears. The highest expectations were related to the bio-physiological and functional dimensions of knowledge, but also other rather essential dimensions of knowledge were represented.

Most participants in this study were women, older retired patients and patients with lower education, characteristics that are similar to those of participants in previous studies [44]. Thus, these patients are in need of intensive and effective patient education. Furthermore, bio-physiological and functional dimensions are reported to be the most essential issues among surgical patients in accordance with previous studies [45, 46]. One possible explanation for this is that surgical patients, especially those about to undergo demanding procedures, such as knee or hip arthroplasties, have focused on bio-physiological and functional issues preoperatively. If the patients are older, retired people, it is no wonder if those dimensions concern them before surgery. They may be considering, what is going to happen during and after their surgery, how they will recover and then manage postoperatively [48]. In addition, according to the results of this study, it is confirmed that women have significantly more expectations than men regarding all dimensions of knowledge related to the surgical procedure. This merits more investigation in order to explore if

this is the result of women's more demanding responsibilities in everyday life or higher anxiety regarding the whole procedure.

Employed patients had significantly less knowledge expectations than patients who were retired, worked at home or were unemployed. The patients who work outside their homes are probably younger, in better physical condition and have many other things on their mind. Surgery is just one event in their lives. [45] Retired patients, in comparison to employed patients, seemed to be more concerned about experiential issues, issues concerning values: quality of their social life, ethical details and being treated well. In comparison to employed patients, patients who were working at home were also more concerned about social issues. Their lives might be particularly dependent on the success of the surgery and they may be more involved in everyday life with significant others than employed patients. Bio-physiological and functional knowledge expectations may have been the most essential dimensions for surgical orthopaedic patients because if there are problems in those areas [48], it probably affects the long term recovery of the patient experientially, socially, financially as well as ethically. In the present study, financial issues did not seem to be on top of the list of worries of the participating patients. However, patients' preoperative fears can and should be relieved by adequate, empowering education [12, 13, 14, 15, 16].

The data were collected on European level and there were some differences in patients' total knowledge expectations between the countries [2, 3, 47]. Among these countries there are some that do not yet have established a National Plan for Health Care, as is the case with countries that are in a stage of transition, such as Cyprus [10]. Furthermore, differences in health care systems between Northern and Southern European countries, cultural issues as well as differences in educational systems for health care professionals may cause variation in patients' satisfaction, which in turn is connected to knowledge expectations [1]. Differences may be caused by the fact that hip fracture and joint replacement rates are higher in Northern Europe where the degree of experiences of professionals may be different. However, if patients are satisfied, they probably do not expect more.

On the other hand, if patients have had good experiences in the past, it may increase their expectations. Thus, when patients are within a health care system, they apparently do not think about the system. They have knowledge expectations concerning their own care, their own recovery and their own significant others from the point of view of their own background. In national and international health care strategies, high emphasis on patients' self-management, self-care and self-responsibility for their own health [33] is crucial. This corresponds with the theoretical basis of empowering patient education.

As mentioned earlier, there might be some cultural differences in patients' concerns and expectations between different European countries or patients have otherwise different informational needs. However, disappointment rises when expectations are not fulfilled. Patients' unfulfilled preoperative expectations are significant predictors of their dissatisfaction. [50] Furthermore, expectations of health care and health care providers are increasing which makes it important to understand patients' expectations, even more than before, when the goal is relevant decision making for the patients and clinical practice. Surveying of patients' expectations profiles the quality of health care system. [42]

Available information on the Internet is increasing. Many patients in different countries search for information via Internet. Internet based patient education offers many advances but also demands on-going development to respond to the patients' knowledge expectations. [49, 52.] Development of preoperative patient education requires knowledge about patients' expectations. Although patients' informational needs are individual, there are common characteristics and dimensions which are related to patients' background factors. [45, 46]. Measurement and closer examination of patients' expectations produces knowledge for further research and development of interventions for constructing and developing preoperative educational programs for patients, as well as for educating of nurses. [3, 51]. When Internet based information is available for potential patients and health care professionals, e.g. at European level, collaboration between European countries in

patient education is worth achieving. Furthermore, it seems that the technical skills of surgical nurses are rather similar in different European countries but there is variation in their abilities to meet the informational needs of patients [40]. This makes collaboration in scientific nursing research even more important.

This study has some limitations concerning the sample, the data collection, and the data collection instrument. The sample was collected only in one to five hospitals per country. The collection was implemented similarly in each country, but there might have been small differences depending on care practices. On the other hand, the hospitals were carefully selected so that their preoperative care practices for arthroplasty patients were as similar as possible. Moreover, we could not be sure of whether the participants had received preoperative knowledge from some other source, such as the Internet, prior to surgery. On the other hand, the main principles for data collection were granted by common protocols and guidelines. The sample size per country is considered to be adequate but we had an important limitation in the sense that our sample was not randomly selected. The results of this study cannot be generalized. Furthermore, most of the patients were admitted for knee arthroplasty (n= 1001, 61%) which may have influenced the results. However, participating patients had the same disease and indication for surgery, osteoarthritis. Most patients (n= 1174, 71.8%) had stayed earlier in the same hospital and this may have affected their attitudes about the hospital or health care professionals. On the other hand, as this operation was the first arthroplasty for most patients (n= 1103, 67%), this was a new situation for most of them.

Cultural issues might have influenced the results of the study. The data included missing values of explanatory variables. It is possible that some patients did not find the appropriate response alternative for themselves or did not want to answer the question. The data was collected in seven countries and it is possible that e.g. language based issues influenced the collection. The instrument was translated first from Finnish to English, then to the different languages and back to English. The piloting translated processes were implemented in the same way in the different countries and

the instrument was found easy to use. However, the English version has not been used previously. Thus, more testing with international data is needed.

In conclusion, significant differences in patients' preoperative knowledge expectations between the seven European countries require more focus on patient education research at a European level. Joint research projects between countries are needed in order to developing common patient education standards of prevailing practice in multicultural Europe.

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## Patients' knowledge expectations

Table 1 Characteristics of the sample (n=1634)

<b>Patients</b>		<b>n</b>	<b>%</b>
<b>Gender</b>	Female	1007	61.7
	Male	596	37
	Missing	31	1.3
<b>Basic education</b>	Primary school	766	46.9
	Comprehensive school	425	26
	Matriculation examination	327	20
	Missing	116	7,1
<b>Vocational education</b>	No vocational education	694	42.5
	Secondary vocational education	329	20.1
	College level vocational education	229	14
	Academic degree	171	10.5
	Missing	211	12.9
<b>Employment status</b>	Employed	416	25.5
	Retired	875	53.5
	Working at home	166	10.2
	Unemployed/job applicant	30	1.8
	Other	57	3.5
	Missing	90	5.5
<b>Employed in health or social care</b>	Yes	257	15.7
	No	1339	81.9
	Missing	38	2.4
<b>Chronic illness</b>	Yes	720	44.1
	No	850	52
	Missing	64	3.9
<b>Reason for hospital stay</b>	Hip arthroplasty	600	37
	Knee arthroplasty	1001	61
	Missing	33	2
	First hip/knee arthroplasty	1103	67
	Second or more hip/knee arthroplasty	322	20
	Missing	209	13
	Missing	209	13
<b>Previously in this hospital</b>	Yes	1174	71.8
	No	424	26
	Missing	36	2.2
<b>Country</b>	Finland	266	16
	Sweden	270	16
	Iceland	279	17
	Lithuanian	172	11
	Spain	263	16
	Greece	209	13
	Cyprus	175	11

## Patients' knowledge expectations

Table 2. Knowledge expectations of the patients (**KE<sub>hp</sub>**- scale\*; 1= fully disagree – 4= fully agree)

<b>Dimensions of knowledge expectations</b>	<b>n (%)</b>	<b>Mean (SD)</b>
- bio-physiological	1634 (100)	<b>3.724</b> (0.50)
- functional	1633 (99)	<b>3.650</b> (0.58)
- experiential	1585 (97)	<b>3.426</b> (0.79)
- ethical	1615 (98)	3.500 (0.65)
- social	1609 (98)	<b>3.430</b> (0.66)
- financial	1570 (96)	3.465 (0.77)
- total	1634 (100)	3.558 (0.55)

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## Patients' knowledge expectations

Table 3. Significant relationships between patients' background factors and knowledge expectations (n= 1634; **KE<sub>hp</sub>**- scale\*/ total; 1= fully disagree – 4= fully agree)

<b>Background factor</b>		<b>Mean</b>	<b>p- value</b>
<b>Gender</b>	<b>*Female</b>	<b>3.665</b>	
	vrs. male	3.537	<0.0001
<b>Employment status</b>	<b>*Employed</b>	3.442	
	vrs. retired	<b>3.580</b>	0.017
	vrs. worked at home	<b>3.693</b>	<0.0001
	vrs. unemployed	<b>3.792</b>	0.018
<b>Country</b>	<b>*Finland</b>	<b>3.490</b>	
	<b>vrs Northern Europe</b>		
	Sweden	3.781	<0.0001
	Iceland	3.843	<0.0001
	Lithuania	3.731	0.002
	<b>vrs Southern Europe</b>		
	Spain	3.312	0.041
	Greece	3.841	<0.0001
	Cyprus	3.293	0.008
	<b>*Sweden</b>	<b>3.781</b>	
	<b>vrs Southern Europe</b>		
	Spain	3.312	<0.0001
	Cyprus	3.293	<0.0001
	<b>*Iceland</b>	<b>3.843</b>	
	<b>vrs Southern Europe</b>		
	Spain	3.312	<0.0001
	Cyprus	3.293	<0.0001
	<b>*Lithuania</b>	<b>3.731</b>	
	<b>vrs Southern Europe</b>		
Spain	3.312	<0.0001	
Cyprus	3.293	<0.0001	
<b>Southern Europe</b>			
<b>*Greece</b>	<b>3.841</b>		
vrs Spain	<b>3.312</b>	<0.0001	
Cyprus	<b>3.293</b>	<0.0001	

Patients' knowledge expectations

Table 4. Significant relationships between patients' background factors and **dimensions of knowledge expectations** (n= 1634; **KE<sub>hp</sub>**- scale\*; 1= fully disagree – 4= fully agree)

<b>Dimensions of knowledge expectations</b>	<b>Background factor mean (SD)</b>	<b>Background factor mean (SD)</b>	<b>p- value</b>
	<b>Female (F)</b>	<b>Male (M)</b>	
- ethical (n= <b>F</b> 978 / <b>M</b> 591)	3.541 (0.653)	3.458 (0.639)	0.014
- social (n= <b>F</b> 973 / <b>M</b> 590)	3.471 (0.659)	3.382 (0.669)	0.010
	<b>Retired (R)</b>	<b>Employed (E)</b>	
- experiential (n= <b>R</b> 830 / <b>E</b> 403)	3.480 (0.750)	3.325 (0.783)	0.010
- ethical (n= <b>R</b> 846 / <b>E</b> 409)	3.551 (0.635)	3.414 (0.625)	0.003
- social (n= <b>R</b> 841 / <b>E</b> 410)	3.499 (0.621)	3.280 (0.697)	<0.0001
	<b>Worked at home (W)</b>	<b>Employed (E)</b>	
- social (n= <b>W</b> 161 / <b>E</b> 410)	3.569 (0.653)	3.280 (0.697)	<0.0001
	<b>Other (O)</b>	<b>Employed (E)</b>	
- social (n= <b>O</b> 56 / <b>E</b> 410)	3.519 (0.568)	3.280 (0.697)	0.051
- experiential (n= <b>O</b> 56 / <b>E</b> 403)	3.595 (0.590)	3.325 (0.783)	0.028

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