

## ARTICLE

# Received knowledge of elective surgical patients and their trust in hospital staff: a cross-sectional multicentre study

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## Abstract

**Rationale, aims and objectives:** Trust is an essential component of the patient-physician relationship and is of relevance to all patients, including those undergoing elective surgery. Trust can be considered a collective good and there is also evidence of a positive relationship between mutual trust and numerous health benefits. Although information interventions for these patients have been studied and have several positive outcomes, little is known about the relationship between information provision and trust. The aim of this study is to investigate whether an association exists between knowledge received by elective surgical patients and their trust in hospital staff.

**Methods:** We used the following instruments in this cross-sectional multicentre study: Hospital Patients' Received Knowledge (HPRK) and a questionnaire to measure trust in an emergency department. The main variables were 40 items about received knowledge and 3 items on trust in physicians.

**Results:** There is a positive association between the patients' self-reported knowledge that they received related to the hospital stay and their trust in the physicians (Pearson's  $r$  between the knowledge index and the trust index,  $r = 0.416$ ,  $P < 0.01$ ).

**Conclusion:** The study suggests that successful patient information is positively related to patients' trust in hospital staff.

## Keywords

Communication skills, educational interventions, elective surgery, patient education, patient knowledge, patient participation, person-centered healthcare, received knowledge, shared decision-making, trust

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## Introduction

Trust is an essential component of the patient-physician relationship [1], a collective good (similar to social capital) that is necessary for an effective healthcare system [2]. Definitions of this concept tend to emphasize different aspects or features, but they usually have in common an element of agency, that is, the belief that health professionals are working in the best interests of patients [3]. Trust is usually measured in three domains: how patients' perceive health professionals in terms of (1) technical competency, (2) interpersonal competency and (3) agency [2]. Trust may be described as the willingness to leave something significant to another person's care. Some degree of risk is involved, but the advantage is that the truster does not need to spend resources on precautions [4]. Trust in physicians has attracted more attention over the past few years, but there is a growing concern that trust is declining [3].

It is argued that a major element of trust involves having expectations of someone's behaviour. Furthermore, healthy trust and distrust require a good understanding of which expectations are reasonable and which are not [5]. Research has shown that for patients with type 2 diabetes, trust is increased with the use of decision aid tools and is associated with knowledge [6]. Studies have also shown that the gender of patients or surgeons does not affect patients' trust in their surgeons [7] and that the gender of patients does not affect their expectations of the outcomes of surgical procedures [8]. In addition, research has suggested that increasing patient age is associated with reduced trust in general practice registrars [9] and that age is associated with lower expectations of the outcomes of surgery [8]. Research has also indicated that training oncologists in communication skills improves their patients' trust in them [10]. However, there is insufficient evidence to conclude that any intervention may increase or decrease trust in doctors [3].

Evidence exists to demonstrate a positive association between trust and treatment adherence and between trust and continuity in the patient-physician relationship. A lack of trust may help to explain lower rates of care seeking, preventive services and surgical treatments [2]. Research has also shown that the establishment of a trustful relationship can reduce needle phobia during pregnancy [11] and that a high level of trust may make patients more accepting of the presence of residents during risky operations [12].

## Educational interventions

Educational interventions are delivered before surgical procedures in an effort to improve patients' knowledge, perspectives, health behaviors and health outcomes.

Regarding patient knowledge related to total hip arthroplasty and total knee arthroplasty, Santavirta and colleagues [13] did not find significant improvement related to knowledge about complications. By contrast, Johansson and colleagues [14] found that patients who were offered pre-admission education and written educational material had significantly better knowledge and certainty of care-related issues than the control group. Elective surgical patients received less knowledge than they had expected in a study comparing what expectations patients had concerning information and what they felt they had received at the time of admission [15].

Patient perspectives, in the context of the emotional factors associated with undergoing surgical treatment, has been studied and reduced anxiety is well documented, especially pre-operatively [16-19] where post-operative anxiety can also be reduced by pre-operative education [20]. Gammon and Mulholland [16], for example, found increased self-esteem, greater sense of control and a better coping ability in the intervention group as part of their own studies [16,21]. A common finding is that patients' expectations regarding the post-operative situation is an important issue for them [22] and can be modified significantly through the use of educational interventions [13,23,24]. For children who suffer the loss of an adult relative to cancer, information provided before their loss increases their trust in the care provided [25]. There are certain groups of patients that benefit greatly from educational services regarding individual psychological tendencies or social conditions [26,27]. This is underlined in two review papers. They both stress the need for screening patients at an early stage and for tailoring pre-operative programs to patients [18,19].

On health behavior, the objective of the educational interventions is often improved patient participation [28]. Studies have shown that the provision of information affects patients' decision-making regarding treatment. For example, one study found that in cases of stable angina, the provision of explicit pre-operative information about operation techniques can prompt patients to choose more relevant treatment [29]. Another study found that patient education before child delivery can influence mothers to choose a natural delivery over a caesarean section [30]. To

ensure proper informed consent is obtained from surgical patients, the informational efforts should be started early and patients should be given the opportunity to engage in a discussion with a clinician who is not only well informed, but also has the communication skills necessary to convey information effectively [28]. It should be noted that decision-making is different for patients suffering from chronic conditions and for those in acute care. In acute care, as elective surgery is often categorized, the patient chooses the treatment and the members of the clinical team to execute it. When undergoing treatment for a chronic condition, the patient plays a much more essential role in the plan of care [31]. Another finding relevant to health behaviour is that patient education may also stimulate patients to practise physiotherapy prior to hospitalization [17].

Health outcomes studies have shown that education can reduce the length of hospitalization for orthopaedic patients [16,27,32,33], but not in all cases [17,19]. Cook and colleagues [33] reported the average hospital stay for patients undergoing total knee arthroplasty operations to be 2.5 days, which is lower than the US average and attributed this finding to intensive pre-habilitation and patient education ahead of the surgery. In addition, an association between patient education and a reduction in pain has been found in some trials [34], but not significantly in all [23]. Research has shown that providing patient education to patients with denial tendencies can result in a reduction in pain medication use [26]. A reduction in the use of post-operative services has also been found in patients receiving patient education [33], but this finding is not always significant [32]. In addition, studies have indicated that patient educational interventions maintain complications at a minimal level [33] and improve physical function [34]. Education can improve the quality of life measured nine months after surgery [34].

Overall, patient educational interventions for elective surgery seem to be especially influencing patients' perspectives and behavioral aspects. There seems to be an effect on knowledge and health outcome also, but evidence is conflicting in these dimensions. The aim of this study was to investigate whether an association exists between knowledge received by elective surgical patients and their trust in hospital staff.

## Methods

### Settings and sample

This cross-sectional multi-centre survey was conducted in surgical wards at 3 hospitals in Norway. These hospitals are located in districts that comprise rural areas and small urban centres. The criterion for inclusion was admittance of elective surgical patients to hospital for at least one night for orthopaedics or soft tissue surgical operations. The criteria for exclusion were inadequate Norwegian language skills and an inability to give consent and/or a lack of cognitive skills needed to respond adequately.

## Procedures

The patients were given information throughout the treatment process from various sources and in various ways. Some information was provided by their general practitioner (GP) and some by a surgeon, orthopaedist, nurse, physiotherapist or other health professional at the hospital ahead of their admission. They were also provided with information during their hospital stay. In their admission letters for examinations, policlinic examinations and operative admissions, they were also given written information. This information covered issues related to their health situation, treatment, treatment options, choice of preferred hospital for their operation, financial matters and practical details of where to arrive and what to bring. For some trajectories, group-based education was offered. The patients' relatives were usually invited to take part in most information activities.

The questionnaires were distributed post-operatively by staff members in the surgical departments and were collected before discharge. The department staff members responsible for distributing and collecting the questionnaires also kept a list of how many patients were asked to respond so that the response rate could be calculated. As soon as the questionnaires and the forms of consent were filled in, they were sent by internal mail to the project manager, who is also the first author of this article (SC). They were kept in accordance with the research regulations. Of the 148 returned questionnaires, 1 questionnaire was excluded from the analyses because less than 50% of the items had been answered; hence, the sample size is 147.

## Measurements

### Hospital Patients' Received Knowledge (HPRK)

The Hospital Patients' Received Knowledge is a 40-item questionnaire that uses a 4-tier response scale. It makes a distinction between 6 dimensions of knowledge: biophysiological, functional, experiential, ethical, social and financial [15]. The copyright holders granted us permission to use it in the present study.

### Questionnaire to measure trust in an emergency department [1]

Of the 18 questions on the questionnaire to measure trust in an emergency department (QMTED), 3 questions were used in the present study. Although the questionnaire was originally meant to be used in emergency units, it is relevant for other trajectories that exist for a specific period of time. The copyright holders had no objection to the fact that we restructured the formulations on the form to make it fit for a surgical department and not an emergency department. They also allowed us to use the instrument in whatever way we found relevant for our study.

Because the QMTED [1] had not been previously translated into Norwegian, we contacted the group that had developed the instrument and obtained their permission to

create a Norwegian version. After we had translated it into Norwegian (the first ever version in Norwegian) ourselves, we elicited the help of a professional Norwegian-English translator to create an English version based on our Norwegian version. A comparison of the 2 English versions (the original English version and the English version based on the Norwegian translation) revealed only a few differences; hence, we initially saw no reason to alter the first Norwegian version. However, when we consulted a professor of social medicine, we decided to alter the Norwegian version, based on his suggestions.

## Ethical considerations

In accordance with the regulations of the Health Research Act of 1 July 2008 [35], the research project was presented to the Regional Committees for Medical and Health Research Ethics (REC), but formal consent was not required from the REC (Case no. 2012/2306). We followed the guidelines from the committee, which are based on the Norwegian Health Research Act 2008 [35]. In accordance with the research regulations, the project is registered with the privacy policy officer in the hospital trust.

## Analysis

In accordance with the analysis of Rankinen and colleagues [15], summative variables were constructed on the 6 dimensions of knowledge - biophysiological, functional, experiential, ethical, social and financial - by calculating the mean values of the corresponding items. In addition, a total index of the knowledge was calculated from the mean values of the 6 summative variables. The response category 'does not apply' was scored as 0 and excluded. It is important to note that we coded the scoring differently than did Rankinen and colleagues.

In our study, 'Fully agree' = 4 and 'Fully disagree' = 1, whereas 'Fully agree' = 1 and 'Fully disagree' = 4 in their study. We coded the scores on this scale because it seems to be an intuitively more relevant style of scoring when it is to be compared with the trust scale, which is scored on a scale of 1 to 10, with 10 as the most positive reply. The data were analysed using Pearson's correlation. The analysis centred on the association between the trust index (based on the 3 trust-related questions) and the indexes of received knowledge (both the 6 dimensions of knowledge and the total knowledge index).

## Results

The sample consisted of 147 patients. The mean age of the sample was 56 years (SD 15.5, range 19-88 years). There were 91 females (64.1%) and 51 males (35.9%) and 5 missing values. Of these 142 patients (147 patients - 5 missing values), 24 patients (16.9%) completed lower secondary school; 15 patients (10.6%), upper secondary school or trade school; 42 patients (29.6%), vocational training; 27 patients (19.0%), < 4 years at the university

Table 1 Patients' received knowledge

| Received knowledge | Mean | SD   | Median | Minimum | Maximum | n   |
|--------------------|------|------|--------|---------|---------|-----|
| Biophysiological   | 3.53 | 0.5  | 3.63   | 1.5     | 4       | 146 |
| Functional         | 3.34 | 0.63 | 3.5    | 1.13    | 4       | 147 |
| Experiential       | 3.15 | 0.81 | 3.33   | 1       | 4       | 126 |
| Ethical            | 2.92 | 0.83 | 3      | 1       | 4       | 146 |
| Social             | 2.79 | 0.97 | 2.83   | 1       | 4       | 133 |
| Financial          | 2.38 | 1.05 | 2.37   | 1       | 4       | 120 |
| Total knowledge    | 3.06 | 0.67 | 3.09   | 1.1     | 4       | 147 |

Scale 1–4. SD, standard deviation

Table 2 Measurement of trust

| Trust  | Mean | SD   | Median | Minimum | Maximum | n   |
|--|------|------|--------|---------|---------|-----|
| I had confidence in the doctors who looked after me in the department.         | 9.25 | 1.34 | 10     | 1       | 10      | 140 |
| The doctors in the department put my interests above all other considerations. | 8.21 | 2.13 | 9      | 1       | 10      | 118 |
| I trusted the doctor's judgement about my medical care.                        | 9.29 | 1.36 | 10     | 1       | 10      | 141 |
| Trust total  | 9.01 | 1.42 | 9.01   | 2.33    | 10      | 141 |

Scale 1–10, SD, standard deviation

level and 34 patients (23.9%), ≥4 years at the university level. The response rate was 47%.

The knowledge dimension with the highest score is the biophysiological dimension (8 items, mean 3.53 of 4). These questions are about the information that the patients reported having received on medical subjects and treatment-related issues of relevance to the condition for which they were being treated. This dimension also has the lowest standard deviation. The financial dimension (4 items) has the lowest score in this sample (mean 2.38 of 4) and the highest standard deviation (1.05). The total score of received knowledge is 3.06 of 4 (SD 0.67) (Table 1).

All knowledge dimensions correlate positively with the trust dimension (Table 2). The biophysiological knowledge dimension is the one that correlates the strongest with trust in physicians ( $r = 0.415, P < 0.01$ ). The questions (8 items) are related to medical aspects of their condition and to the treatment offered. The financial dimension has the weakest - but significant - correlation with trust ( $r = 0.196, P = 0.035$ ). These questions (6 items) are about to what degree the participants received knowledge about certain aspects, including costs, insurance and sickness benefits. As shown in Table 3, a positive correlation exists between trust and the total knowledge index ( $r = 0.416, P < 0.01$ ).

Table 3 Associations between trust and received knowledge

| Variable         | R     | P-value |
|------------------|-------|---------|
| Biophysiological | 0.415 | <0.01   |
| Functional       | 0.371 | <0.01   |
| Experiential     | 0.399 | <0.01   |
| Ethical          | 0.358 | <0.01   |
| Social           | 0.339 | <0.01   |
| Financial        | 0.196 | 0.035   |
| Total knowledge  | 0.416 | <0.01   |

Pearson's correlation coefficient (R)

## Discussion

The aim of this study is to investigate whether an association exists between knowledge received by elective surgical patients and their trust in hospital staff. The results

demonstrate a positive association between the two indexes.

The main finding of the present study is the existence of a positive relationship between patients' received knowledge and their trust in physicians. Previous studies have also shown a positive association between patient knowledge and trust in physicians for patients with type 2 diabetes [6]. This similarity cannot be taken for granted, as there are of course major differences between elective surgical treatment and medical care for patients with type 2 diabetes [31]. The similarity of these findings for patients undergoing different types of treatment is interesting, because it helps shed light on how trust is created for patients receiving medical care.

The notion that trust is to a great extent related to patient expectations is of relevance. Research has shown that informing patients enables them to prepare themselves for their hospital treatment [5]. Hence, the correlation between received knowledge and trust may be explained by the concept of *expectations*, which corresponds well with the forward-looking nature of trust [2]. A number of studies have demonstrated how patient education affects patients' choices [28]. Successful patient education may enable patients to establish realistic views about their treatment process. The establishment of these realistic views may be linked to trust.

Several studies have demonstrated associations between patient education interventions and psychological benefits such as reduced anxiety [16,17,19], enhanced sense of control [16], improved quality of life [34] and better coping abilities overall [16,21]. Because trust is a complex and multi-dimensional phenomenon [2], it could be argued that all these issues are related. Research has also shown that trust is related to health professionals' communication skills [2,10] and to patients' communication experiences with physicians and other hospital staff members. The role of trust in interactions between patients and physicians may explain the present study's results. If so, then this finding underlines the emotional aspect of trust [2].

Traditionally, hospitals have directed most of their patient education efforts to biophysiological issues [15] and, in the present study, this is the dimension that has the strongest association with trust. The biophysiological dimension is also the one with the highest mean score, both in this study and in the study by Rankinen and colleagues [15]. Knowledge about financial issues has a relatively low mean score (2.38 on a 1-4 scale) and the weakest association with trust. This finding could indicate that financial issues are not very important to most patients in this study, with the most likely explanation being that they expect financial matters related to health to be taken care of by the public healthcare system in Norway.

The pattern of received knowledge in the present study is similar to that of a previous study using the same instrument in a different setting. That is, the scoring order of the indexes is identical: in both studies, the biophysiological dimension has the highest score and the financial dimension has the lowest score. The level of scoring is, however, different, with the scoring in our study being in general higher than the scoring in the other study

[15]. In our study, the total score is 3.06 - in comparison to 2.04 when recalculated to a 1 to 4 scale, with 1 as the lowest score and 4 as the highest score ( $P < 0.001$ ). The difference may be explained by methodological differences: our material was collected from three different hospitals, whereas material for the other study was collected from only one hospital. Other details regarding data collection are very much alike. A plausible explanation for the difference is simply the setting of the studies. It is still worth noting that the order of the dimensions is similar in the two studies in terms of the mean score in each dimension.

Regarding the trust measures, the level of scores seems relatively high. This finding may be explained by the ceiling effect, which is a challenge when it comes to trust measurement instruments in general [3].

Because the instrument of measuring trust is limited to questions about trust in physicians, conclusions cannot be drawn regarding patients' views on trust in other health professionals, nor trust in the hospital trust, the hospital or the surgical department. Another limitation is the already mentioned weakness of most validated instruments in measuring trust - that is, the ceiling effect [3]. This study was conducted in three different departments, but within the same hospital trust and within a limited geographical area. These departments have their own management systems and it is therefore assumed that differences exist in their clinical work, thus making the project a valid multi-centre study. The instruments used are valid, the findings contribute new knowledge and the theme should be of interest to the field of trust in surgical care and in healthcare more broadly.

## Conclusion

This study suggests that received knowledge is associated with patients' trust in hospital staff. This association may be explained in terms of patients' realistic expectations and the emotional aspect of health professionals' communication skills. As biomedical knowledge seems to be the dimension of knowledge that is the most strongly associated with trust, hospitals should focus on providing patients with accurate and reliable information about the disease in question and its treatment, including treatment options, so as to achieve patient trust. Re-designing patient education programmes in an effort to enhance patients' trust in hospital units and health professionals may also be beneficial. Further research is needed to investigate how trust can be increased through interventions that aim to explore the impact of doctors' specific training or the use of a person-centered or decision-sharing approach on patients' trust [3].

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## References

- [1] Kelly, J.J., Njuki, F., Lane, P.L. & McKinley, R.K. (2005). Design of a questionnaire to measure trust in an emergency department. *Academic Emergency Medicine* 12 (2) 147-151.
- [2] Thom, D.H., Hall, M.A. & Pawlson, L.G. (2004). Measuring patients' trust in physicians when assessing quality of care. *Health Affairs* 23 (4) 124-132.
- [3] Rolfe, A., Cash-Gibson, L., Car, J., Sheikh, A. & McKinstry, B. (2014). Interventions for improving patients' trust in doctors and groups of doctors. *Cochrane Database of Systematic Reviews* 3, CD004134.
- [4] Skirbekk, H. (2009). Negotiated or taken-for-granted trust? Explicit and implicit interpretations of trust in a medical setting. *Medicine, Health Care, and Philosophy* 12 (1) 3-7.
- [5] Hawley, K. (2015). Trust and distrust between patient and doctor. *Journal of Evaluation in Clinical Practice* 21 (5) 798-801.
- [6] Nannenga, M.R., Montori, V.M., Weymiller, A.J., Smith, S.A., Christianson, T.J., Bryant, S.C., Gafni, A., Charles, C., Mullan, R.J., Jones, L.A., Bolona, E.R. & Guyatt, G.H. (2009). A treatment decision aid may increase patient trust in the diabetes specialist. The Statin Choice randomized trial. *Health Expectations* 12 (1) 38-44.
- [7] Dusch, M.N., O'Sullivan, P.S. & Ascher, N.L. (2014). Patient perceptions of female surgeons: how surgeon demeanor and type of surgery affect patient preference. *Journal of Surgical Research* 187 (1) 59-64.
- [8] Jourdan, C., Poiraudou, S., Descamps, S., Nizard, R., Hamadouche, M., Anract, P., Bolsgard, S., Galvin, M. & Ravaud, P. (2012). Comparison of patient and surgeon expectations of total hip arthroplasty. *PloS ONE* 7 (1) e30195.
- [9] Bonney, A., Phillipson, L., Reis, S., Jones, S.C. & Iversen, D. (2009). Patients' attitudes to general practice registrars: a review of the literature. *Education for Primary Care* 20 (5) 371-378.
- [10] Tulskey, J.A., Arnold, R.M., Alexander, S.C., Olsen, M.K., Jeffreys, A.S., Rodriguez, K.L., Skinner, C.S., Farrell, D., Abernethy, A.P. & Pollak, K.I. (2011). Enhancing communication between oncologists and patients with a computer-based training program: a randomized trial. *Annals of Internal Medicine* 155 (9) 593-601.
- [11] Searing, K., Baukus, M., Stark, M.A., Morin, K.H. & Rudell, B. (2006). Needle phobia during pregnancy. *Journal of Obstetric, Gynecologic and Neonatal Nursing* 35 (5) 592-598.
- [12] Knifed, E., July, J. & Bernstein, M. (2008). Neurosurgery patients' feelings about the role of residents in their care: a qualitative case study. *Journal of Neurosurgery* 108 (2) 287-291.
- [13] Santavirta, N., Lillqvist, G., Sarvimaki, A., Honkanen, V., Kontinen, Y.T. & Santavirta, S. (1994). Teaching of patients undergoing total hip replacement surgery. *International Journal of Nursing Studies* 31 (2) 135-142.
- [14] Johansson, K., Salantera, S. & Katajisto, J. (2007). Empowering orthopaedic patients through preadmission education: results from a clinical study. *Patient Education and Counseling* 66 (1) 84-91.
- [15] Rankinen, S., Salantera, S., Heikkinen, K., Johansson, K., Kaljonen, A., Virtanen, H. & Leino-Kilpi, H. (2007). Expectations and received knowledge by surgical patients. *International Journal for Quality in Health Care* 19 (2) 113-119.
- [16] Gammon, J. & Mulholland, C.W. (1996). Effect of preparatory information prior to elective total hip replacement on psychological coping outcomes. *Journal of Advanced Nursing* 24 (2) 303-308.
- [17] Butler, G.S., Hurley, C.A., Buchanan, K.L. & Smith-VanHorne, J. (1996). Prehospital education: effectiveness with total hip replacement surgery patients. *Patient Education and Counseling* 29 (2) 189-197.
- [18] Lucas, B. (2007). Preparing patients for hip and knee replacement surgery. *Nursing Standard* 22 (2) 50-56.
- [19] McDonald, S., Page, M.J., Beringer, K., Wasiak, J. & Sprowson, A. (2014). Preoperative education for hip or knee replacement. *Cochrane Database of Systematic Reviews* 5, CD003526.
- [20] Priya, P. & Roach, E.J. (2013). Effect of pre-operative instruction on anxiety among women undergoing abdominal hysterectomy. *The Nursing Journal of India* 104 (6) 245-248.
- [21] Marcinkowski, K., Wong, V.G. & Dignam, D. (2005). Getting back to the future: a grounded theory study of the patient perspective of total knee joint arthroplasty. *Orthopedic Nursing* 24 (3) 202-209.
- [22] Jacobson, A.F., Myerscough, R.P., Delambo, K., Fleming, E., Huddleston, A.M., Bright, N. & Varley, J.D. (2008). Patients' perspectives on total knee replacement. *American Journal of Nursing* 108 (5) 54-63.
- [23] Thomas, K.M. & Sethares, K.A. (2008). An investigation of the effects of preoperative interdisciplinary patient education on understanding postoperative expectations following a total joint arthroplasty. *Orthopedic Nursing* 27 (6) 374-381.
- [24] Mancuso, C.A., Graziano, S., Briskie, L.M., Peterson, M.G., Pellicci, P.M., Salvati, E.A. & Sculo, T.P. (2008). Randomized trials to modify patients' preoperative expectations of hip and knee arthroplasties. *Clinical Orthopaedics and Related Research* 466 (2) 424-431.

- [25] Grenklo, T.B., Kreicbergs, U.C., Valdimarsdottir, U.A., Nyberg, T., Steineck, G. & Furst, C.J. (2013). Communication and trust in the care provided to a dying parent: a nationwide study of cancer-bereaved youths. *Journal of Clinical Oncology* 31 (23) 2886-2894.
- [26] Daltroy, L.H., Morlino, C.I., Eaton, H.M., Poss, R. & Liang, M.H. (1998). Preoperative education for total hip and knee replacement patients. *Arthritis Care and Research* 11 (6) 469-478.
- [27] Crowe, J. & Henderson, J. (2003). Pre-arthroplasty rehabilitation is effective in reducing hospital stay. *Canadian Journal of Occupational Therapy* 70 (2) 88-96.
- [28] Kinnersley, P., Phillips, K., Savage, K., Kelly, M.J., Farrell, E., Morgan, B., Whistance, R., Lewis, V., Mann, M.K., Stephens, B.L., Blazeby, J., Elwyn, G. & Edwards, A.G. (2013). Interventions to promote informed consent for patients undergoing surgical and other invasive healthcare procedures. *Cochrane Database of Systematic Reviews* 7, CD009445.
- [29] Rothberg, M.B., Scherer, L., Kashef, M.A., Coylewright, M., Ting, H.H., Hu, B. & Zikmund-Fisher, B.J. (2014). The effect of information presentation on beliefs about the benefits of elective percutaneous coronary intervention. *JAMA Internal Medicine* 174 (10) 1623-1629.
- [30] Sanavi, F.S., Ansari-Moghaddam, A., Shovey, M.F. & Rakhshani, F. (2014). Effective education to decrease elective caesarean section. *Journal of the Pakistan Medical Association* 64 (5) 500-505.
- [31] Reach, G. (2013). Patient autonomy in chronic care: solving a paradox. *Patient Preference and Adherence* 8, 15-24.
- [32] Beaupre, L.A., Lier, D., Davies, D.M. & Johnston, D.B. (2004). The effect of a preoperative exercise and education program on functional recovery, health related quality of life, and health service utilization following primary total knee arthroplasty. *Journal of Rheumatology* 31 (6) 1166-1173.
- [33] Cook, J.R., Warren, M., Ganley, K.J., Prefontaine, P. & Wylie, J.W. (2008). A comprehensive joint replacement program for total knee arthroplasty: a descriptive study. *BMC Musculoskeletal Disorders* 9, 154.
- [34] Nuñez, M., Nuñez, E., Segur, J.M., Macule, F., Quinto, L., Hernandez, M.V. & Vilatta, C. (2006). The effect of an educational program to improve health-related quality of life in patients with osteoarthritis on waiting list for total knee replacement: a randomized study. *Osteoarthritis and Cartilage* 14 (3) 279-285.
- [35] Lov om medisinsk og helsefaglig forskning (The Health Research Act of Norway). (2008). [cited 08.09.2015]. Available from: <https://lovdata.no/dokument/NL/lov/2008-06-20-44?q=helseforskning>