

Preoperative effect of information and nurse's role on postoperative patient recovery in laparoscopic cholecystectomy

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ABSTRACT

Introduction: Patient education is defined as the process of influencing patient behavior and producing the changes in knowledge, attitudes and skills necessary to maintain or improve health. Preoperative education should include all the information in order for the patient to understand the process.

Objective: Aim of this study is the evaluation of the impact of structured preoperative information on patient's undergoing elective Laparoscopic Cholecystectomy (LC) preoperative knowledge, anxiety and postoperative recovery.

Methods: In this empirical quantitative study conducted from 2005 to 2006 one hundred and twenty consecutive candidates for elective LC were randomly assigned to four groups. Group A included 30 patients preoperatively informed regarding LC through a multimedia CD (MCD) presented by a Registered Nurse (RN). Patients in group B (n=30) were informed through a leaflet. Patients in group C (n=30) were informed verbally by a RN. Finally, the control group D included 30 patients informed conventionally by the attending surgeon. Preoperative assessment of knowledge about LC was recorded after each informative session using a questionnaire. Preoperative anxiety was assessed using Amsterdam Preoperative Anxiety Scale (APAIS). Postoperative pain was measured using a Numerical Rating Scale (NRS).

Results: In multiple regression analysis, group C achieved the lower Knowledge score comparing with Group A and B ($p=0,009$ $r^2=0.3$) while group D expressed the highest pain score comparing to all other groups ($p=0,013$ $r^2=0.0.147$)

Conclusions: It is believed that multimedia should be incorporated and do not replace the traditional relationship between health professional and patient. Finally, doctors especially in Greece should inform their patients adequately.

Keywords: Laparoscopic Cholecystectomy, Patient education, Preoperative anxiety, Postoperative pain

HIGHLIGHTS/KEY POINTS

- Preoperative information can reduce patient anxiety undergoing laparoscopic cholecystectomy
- A multimedia CD is the best way to inform patients compared to conventional methods.
- Preoperative information can reduce postoperative pain
- Nurse's role has a positive effect in preoperative patient knowledge

INTRODUCTION

Patient education is defined as the process of influencing patient behavior and producing the changes in knowledge, attitudes and skills necessary to maintain or improve health. Simple and comprehensive information is something that patients and their families are not reluctant to it. On the contrary patients and their families express the need to communicate and understand the events that occur throughout the course of their disease (Hannah 1989). The more educated a patient is, the more likely he is actively engaged in communication (Enzenhofer 2004, Campbell 2004). Patients who acquire inadequate information usually show increased anxiety according to Garrud (2001) and Stoop (2004) (Garrud, 2001, Stoop 2004). Patient education can empower patients to become full participants in their care through enhanced communication and a strong patient-provider relationship. Studies show that patients can evaluate the quality of care. So if doctors seem uncertain about the process operation, patient satisfaction is reduced (DiMatteo1985, Johnston 1988). Educational materials designed to deliver information and promote active participation in health care decisions can be effective tools for empowering patients. Consumers are faced with an economic climate that scrutinizes health care services in terms of their outcomes (Helene 2001, Knee 2003).

Preoperative education should include all the information in order for the patient to understand the procedure; starting from the hospital entrance to discharge and postoperative rehabilitation at home. The Royal College of Anesthetics has created written materials for preoperative procedure, while New York Crouse Hospital created system information for patients and relatives who would like to be informed (Oldman, 2004, Stevens, 2004). There are various similar educational programs which, on one hand, can sometimes worry patients and lead them to increased preoperative anxiety when they are fully informed about operations' risk (Lim, 1999). On the other

hand, a high standard preoperative education program can reduce hospital stay and provide fast recovery, as it did in Holland (Lim 1999). Conclusively patient preoperative education benefits are summarized to savings in hospital expenses, increased patient satisfaction along with hospital rules compliance, reduced preoperative anxiety and postoperative pain (Jones 2001, Enzenhofer 2004).

The aim of this study was the evaluation of the impact of structured preoperative information on patient's undergoing elective Laparoscopic Cholecystectomy (LC). The study focuses on the impact of preoperative informing on (a) patient's preoperative anxiety and (b) patient's postoperative pain (Van de Bosch 2005).

METHODOLOGY**1. Study design and data collection**

From July 2005 to July 2006, 120 consecutive patients, candidates to elective LC for cholelithiasis, were considered for enrollment in this randomized experimental trial. Exclusion criteria were: (a) patients older than 75 years and younger than 18, (b) patients with an American Society of Anaesthesiologists (ASA) physical status score greater than 2, (c) patients unable to understand Greek, (d) patients with serious sight and deaf impairment, and (e) patients undergoing LC combined with another laparoscopic or open procedure, simultaneously. Informed consent for participation in the trial was obtained and the trial was approved by the Administrative and Scientific Council of the Patras University Hospital, Patras, Greece and the "Attikon" University Hospital, Athens, Greece. Patients were assigned randomly to four groups: Group A included 30 patients, preoperatively informed about the scheduled operation through the MCD, presented by a Registered Nurse (RN). Group B included 30 patients preoperatively informed through the leaflet delivered to the patients without the presence of a RN. In Group C, there were 30 patients who were informed verbally from a RN and finally, the control Group D included 30 patients, who had the conventional preoperative information by the attending surgeon and anesthesiologist, as every other patient included in groups A, B, C. The information leaflet and the MCD were available to patients for as long as they wished (usually, 20-30 minutes). Four hours after the completion of each informative session of each group, RN collected the completed patients' questionnaires. Patients in group D filled the same questionnaire without the presence of a RN, leaflet or the MCD. All the data were collected in a randomized order.

2. The Multimedia CD

The Multimedia CD is a specifically developed multimedia health educational product based on Toolbook Asymetrix, version 8.5, Macromedia Company on an AMD 2000+ 1,6GHz multimedia computer under Windows XP professional.

Table1. Multiple regression analysis for the variable "Knowledge score".

Variable	Knowledge score P value (Adj.R ²) A ¹ , B ² (CI of B) ³
Group C	0.009(0.30) 9.119,- 0.662 (-1.156_-0.168)
Age	0.05 (0.30) 9.119, -0.490 (-0.980_0.00)

¹constant, ²regression coefficient(slope), ³confidence interval

Table2 - Multiple regression analysis for the variable "APAIS II Score".

Variable	APAIS II Score P value (Adj.R ²) A, B (CI of B)
Group C	0.001 (0.206) 2.697, -1.667 (-2.595_-0.739)
Educational level	0.001 (0.206) 2.697,0.331 (0.140_0.523)

¹constant, ²regression coefficient(slope), ³confidence interval

Table3 - Multiple regression analysis for the variable "APAIS Score"

Variable	APAIS Score P value (Adj.R ²) A, B (CI of B)
Group D	0.003 (0.133) 19.279,3.561 (1.215_ 5.907)
Age	0.007 (0.133) 19.279, -2.353 (-4.064_0.642)
Gender	0.03(0.133) 19.279,-2.341 (-4.452_-0.23)

¹constant, ²regression coefficient(slope), ³confidence interval

Table4 - Multiple regression analysis for the variable "Pain score".

Variable	Pain score P value (Adj.R ²) A, B (CI of B)
Group D	0.013(0.147) 4.028, 0.658 (0.144_1.172)
Gender	0.000 (0.147) 4.028,- 0.899 (-1.363_0.434)

¹constant, ²regression coefficient(slope), ³confidence interval

The preoperative session took place in the patient ward with the use of a laptop computer. The MCD contained animation, narration and photographs which could reinforce patient's understanding and decrease anxiety.

3. Statistical analysis

Assessment of preoperative knowledge about cholelithiasis and LC, was performed, using "closed, true-false" questionnaire, specifically developed. Each question was scored equally with the others yielding a maximum score of eleven. Evaluation of preoperative anxiety was conducted using the six items of the translated Amsterdam Preoperative Anxiety Scale and Information Scale (APAIS)- subdivided by Anxiety Scale (APAIS I) and the Need-for-Information Scale (APAIS II) (Moerman 1996, Boker 2004). Postoperative pain score were measured using a Numerical Rating Scale (NRS) scale, 16 hours after the patient had returned

to the wards. The NRS scale consists of 11-points (where 0 indicates no pain at all, and 10 the most severe pain imaginable) (Jensen 1993, Wiens 1998).

RESULTS

There were 77 (64,2 %) women and 43 (35,8 %) men enrolled in the trial. Eighty one patients (67,5%) had a previous operation in their medical history. Seventy nine (65.8%) patients with ASA I and 41 (34.2%) with ASA II were included in the study, respectively. The mean age of patients was 53.07 years (ranging from 18 to 75). Thirty six patients (30 %) were familiar with the use of computers. All patients were informed preoperatively about the procedure, by their surgeon and signed an informed consent for the procedure. The collected data were inserted firstly in a backward model of linear regression analysis and then, the variables that followed statistical

significance of p value < 0.05 in the single linear regression, were inserted in the backward model of multiple regression analysis (Table 1 to 4). In multiple regression analysis, the dependent variables "Knowledge score", "APAIS II", "APAIS", "Pain Score", were inserted. Those dependent variables were related with the independent variables in order to seek for any statistical significance. The statistical System SPSS 13 for Windows was used for statistical analysis.

DISCUSSION

Effective informative sessions provided by the health professional, require specifically developed educational tools. In this study, we investigate the effect of MCD on patient's postoperative recovery. In the multiple regression analysis, structurally informed patients and specifically groups A and B, achieved a better knowledge score regarding LC, answering correctly to more questions comparing to study group C and of course control group D ($p < 0.009$, $r^2 = 0.3$) as it is shown in Table 1. This means that patients informed verbally did not recall all the information given as those informed by other means, such as in groups A and B. Not surprisingly, according to Table 1, patients older in age, achieved lower knowledge score than younger patients independently of the educational tool used with p value $= 0.05$ and $r^2 = 0.3$. The same is suggested both by Hekkenberg (1997), Aabakken (1997), Clark (1999) and Hogg (2004) who are reporting that young age and high-technology education enriches brain's ability to recall of information (Hekkenberg, 1997)(Aabakken 1997, Clark 1999, Hogg 2004). In the current study, there were no in-depth analysis of the long-term benefits of patient education, as it was found in the study of Triggs et al (2000), there would be none (Triggs 2000). Consequently patients who were younger in age and were informed by the leaflet and the MCD achieved greater knowledge score comparing with the older patients who were being informed by the doctor or only by the RN.

Ng et al (2004) and Maward (2004) found that provision of preoperative information regarding the recovery process leads to significant anxiety reduction. In our study higher APAIS score means that the patient felt more preoperative anxiety. It is also known that preoperative information reduce preoperative anxiety (Ng et al 2004, Maward 2004). Our results, in the multiple regression analysis, proved that conventional information provided in patients of group D increases patient anxiety. Specifically, patients informed only by their doctor had a higher APAIS score than the patients of groups A, B, C ($p < 0.05$, $r^2 = 0.133$) (see Table 3). Also older and male patients expressed lower anxiety levels than the younger females with p value $= 0.007$ and p value $= 0.03$, respectively. Abuksis et al (2001) also agrees with the previous.

Choi-Kwon et al (2005) underlines in his study that

health professionals do not know what information the patients want exactly about stroke. Specifically, the Need-for-Information Scale (APAIS II) according to Table 2 is lower in patients informed verbally by the RN ($p = 0.001$, $r^2 = 0.206$) and higher in patients who were better educated (p value $= 0.001$, $r^2 = 0.206$) (Choi-Kwon 2005). The more educated a person is, the more information he/she would prefer to obtain concerning his/her health according to Krupp (2000) and Caumo (2001). The patients with a high APAIS II score feel that they have not been informed adequately. In our study, patients who were informed through a structured informative session, and especially patients in group C, expressed smaller need for preoperative information than the patients who were informed verbally from their doctors. This is implying that nurse's role is substantially significant, and that nurses can diminish patient's need for further information.

It is widely accepted that preoperative information induces rapid postoperative recovery. Giraudet et al (2003) reports a strong positive effect of patient education to the reduction of postoperative pain. In our study, patients in groups A, B, and C reported less postoperative pain during the first 16 hours according to Table 4 ($p = 0.013$, $r^2 = 0.147$)(Giraudet et al 2003). It is also mentioned that in multiple linear regression analysis men appeared to feel less pain than women ($p < 0.001$, $r^2 = 0.147$). This aspect is strongly suggested by Keogh et al (2002) also confirming significant differences in pain responses regarding gender (Keogh, 2002). Morin et al (2000) has also shown that women seem to find post-operative pain more intense than males, although men are more disturbed than women by the low levels of persistent pain (Morin 2000).

CONCLUSION

The multiple regression analysis did confirm the statistical knowledge significance for the MCD. It seems that both MCD with the presence of the RN and the leaflet can improve the quality of health care, increasing learning process. On the other hand according to the results, women appear to feel more preoperative anxiety and postoperative pain comparing to men, while older patients achieve the smallest knowledge score and feel less preoperative anxiety than the youngest ones. Nonetheless the more educated a patient is, the more likely is to ask for better preoperative education. Additionally, specifically developed MCDs for different populations (regarding gender, age or educational level) have to be tested in clinical practice to provide a therapeutic approach to individual needs.

However, the impact of the educational program on preoperative anxiety and postoperative pain was not as obvious, as it was expected. We can assume that, at least in Greece, preoperative anxiety and postoperative pain is statistically higher in patients who were being informed

only by their doctor. Furthermore, patient's preoperative need for information was not fulfilled during conventional informative sessions in LC operations.

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