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Multimedia Effect on Preoperative Knowledge and Postoperative Recovery of Patients Undergoing Laparoscopic Cholecystecomy

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Abstract

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

Methods: 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 the 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 from a RN. Finally, the control group D included 30 patients informed conventionally by the attending surgeon. Preoperative assessment of knowledge about LC was performed after each informative session through a questionnaire. Evaluation of preoperative anxiety was conducted 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 ($p=0,009$ $r^2=0.3$).

Conclusions: It is believed that multimedia should be incorporated and not replace the traditional relationship between health professional and patient.

Keywords:

Laparoscopic Cholecystectomy, Multimedia CD, Patient education, Preoperative Information

Introduction

Patient education

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. As it is well known patients and their families express the need to communicate and understand the events that occur throughout the course of their disease as Hannah et al say.[1] The more educated a patient is, the more likely he is actively engaged in communication. [3],[4]. Patient education can empower patients to become full participants in their care through enhanced communication and a strong patient-provider relationship. 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. [4],[5].

Materials and methods

Aim of this study is the evaluation of a structured informative session using a Multimedia CD (MCD) in patients undergoing elective LC. The study focuses on the impact of preoperative informing on (a) patient's preoperative anxiety and (b) patient's postoperative pain [6].

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. The preoperative session performed in the patient ward with the use of a laptop computer. The MCD contains animation, narration and photographs which can reinforce patient's understanding and decrease anxiety.

Participants and data collection

From July 2005 to July 2006, 120 consecutive patients, candidates to elective LC for cholelithiasis, were considered for enrolment in the 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. 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 "Attiko" 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 the Registered Nurse (RN). **Group B** included 30 patients pre-

operatively informed through the leaflet which was delivered to the patients without the presence of the RN. In **Group C,** there were 30 patients who were informed verbally from the 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 was available to patients for 20-30 minutes. Four hours after the completion of each informative session of each group, RN collected the completed patients' questionnaires which had given to them, earlier. Patients in group D fulfilled the same questionnaire. All the data were collected in a randomized way.

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) [7],[8]. 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) [9],[10].

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 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 (range: 18-75). Thirty six patients (30 %) were familiar with the use of computers. 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.

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, ($p<0.009$, $r^2=0.3$). This finding suggests that knowledge gain during conventional informative sessions is suboptimal. Not surprisingly, patients older in age, achieved lower knowledge score than younger patients independently of the educational tool used with p value=0.05 and $r^2=0.3$. In the current paper, there was no extra study for long-term benefits of patient education as it was believed that according to the study of Triggs et al, there would be none [11]. 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 SKS et al[12] found that provision of preoperative information regarding the recovery process leads to significant anxiety reduction. It is also known that preoperative information would reduce preoperative anxiety[13]. 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 ($p<0.05$, $r^2=0.133$). Also older and male patients expressed lower anxiety levels than the younger female ones with p value=0.007 and p value=0.03 respectively. Higher APAIS score means that the patient felt more preoperative anxiety. Choi-Kwon et al [14] underlines in his study that health professionals do not know what exactly patients want to know about stroke. Specifically, the Need-for-Information Scale (APAIS II) is lower in patients informed verbally by the RN ($p=0.001$, $r^2=0.206$) and higher in patients who were better educated (pvalue=0.001, $r^2=0.206$). 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 of control group D. We can assume that at least in Greece, patient's preoperative need for information is not full filled during conventional informative sessions. It is widely accepted that preoperative information induces rapid postoperative recovery. Giraudet et al[15] 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 (p=0,013 $r^2=0.147$). It is also mentioned that in multiple linear regression analysis men appear to feel less pain than women ($p<0.001$, $r^2=0.147$). This aspect is strongly suggested by Keogh et al[17] also confirming significant differences in pain responses regarding gender. Morin et al [16] 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 persitent pain.

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 transfer. On the other hand, 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 personalised needs. However, the impact of MCD on preoperative anxiety and postoperative pain is less obvious. As this study has not finished yet, we feel that this significant relationship will become more evident in the near future.