



THE EFFECT OF PRE-ADMISSION EDUCATION ON DOMICILIARY RECOVERY FOLLOWING LAPAROSCOPIC CHOLECYSTECTOMY

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Key words: post-operative self-care, information recall, education intervention

ABSTRACT

Objectives:

The objectives of this randomised controlled study were to determine if pre-admission patient education affects post-operative pain levels, domiciliary self-care capacity and patient recall following a laparoscopic cholecystectomy (LC). Participants were randomised to receive the standard preadmission program (SP) or an individualised, education intervention (EI).

Design:

A pre-operative questionnaire was administered in the pre-admission clinic to determine participants' knowledge of LC and post-operative management. Telephone follow-up and post-operative questionnaire were conducted approximately 14 days post discharge.

Setting:

Preadmission clinic of a Sydney, Australia, tertiary referral hospital.

Sample:

Ninety-three elective LC patients.

Results:

EI participants experienced lower pain levels and had significantly greater recall of provided information. However, no significant differences were found between the control and intervention groups for domiciliary self-care.

Conclusion:

Pre-admission education intervention helps reduce post-operative pain levels following LC and significantly increases patients' knowledge of self-care and complication management.

INTRODUCTION

As the length of hospital stay continues to reduce for laparoscopic cholecystectomy (Hobbs et al 2004) with many now performed as day-only (Fleming et al 2000), it is imperative that patients are self-caring in the domiciliary setting. Knowledge of usual post-operative outcomes and management is essential for patient self-care and to enable patients to recognise when professional intervention and/or advice is required. It is the nurse's role to ensure that pre-admission education is directed at patient domiciliary self-care capacity.

OBJECTIVE

The main objective was to determine if a pre-admission education intervention reduced pain intensity scores, increased domiciliary self-care capacity and resulted in fewer reported post-operative symptoms following LC by comparison with patients who received the standard pre-admission program. A secondary objective was to ascertain patients' ability to recall provided information and the adequacy of information to meet their care requirements.

LITERATURE REVIEW

Much literature has been published regarding the benefits of health education for patients and their carers (Paff and Fox 2002). These include the reduction in patient anxiety (Hughes 2002; Shulldham 2001; Malkin 2000; Lee and Lee 2000; Dunn 1998; Mitchell 1997; Nelson 1996) and an improvement in post-operative outcomes (Dunn 1998; Nelson 1996). Systematic reviews indicate, however, that pre-admission education is more effective than pre-operative education (Hodgkinson et al 2000), although no significant correlations between pre-operative education, knowledge and enhanced self-care capacity have been demonstrated (Scherer and Bruce 2001; Oetker-Black et al 1997). Teaching methods employed have been shown to affect patients' knowledge (Forster et al 2002; Posel 1998; Dunn 1998; Nelson 1996).

Patients' informational needs generally relate to post-operative expectations (Mordiffi et al 2003) about pain management, wound care and food and fluid intake (Henderson and Zernike 2001; Young and O'Connell 2001). Nurses' perceptions of informational needs often differ to those of patients (Mordiffi et al 2003; Burney et al 2002; Lee and Lee 2000). Consequently, standard educational programs provided by nurses may not address individual patients' needs.

Further, patient adherence with post-operative instructions is related to information comprehension, recall ability (Correa et al 2001) and attitude (Scherer and Bruce 2001). Information recall is affected by attention span, memory capacity (Kriwanek et al 1998), age, past experiences, educational level (Posel 1998; Dunn 1998), stress (Mitchell 1997), and, individual coping styles (Malkin 2000; Mitchell 1997). Poor recall is more likely in patients following uneventful surgery indicating information selectivity (Kriwanek et al 1998). As these factors are 'givens' in patients coming to hospital for surgical treatments health professionals should consider these factors during information provision.

Pre discharge, patients are generally satisfied with delivered information about self-care (Henderson and Zernike 2001; Gillies and Baldwin 2001; Malkin 2000; Kriwanek et al 1998; Dunn 1998; Nelson 1996). However, the need for additional information to support self-care capacity in an optimal way may only arise post-discharge (Scott 2001; Mitchell 1997).

It is known that much of the research evidence is not experimental and of questionable validity. What is known is that information provided during preadmission is preferable to that provided pre-operatively. Nurses should not assume patients' information needs, but ensure that existing knowledge is individually assessed and built upon. These issues lead to further research being conducted based on this status.

METHOD

Design

This study used a two-group randomised, comparative design to compare post-operative self-reported measures of patients having inpatient LC. Patients who attended the pre-admission clinic (PAC) for LC were invited to consent to participate in the study, allocated a study number and randomly assigned (using randomisation tables) to the standard pre-admission program (provided by PAC staff) or standard program plus education intervention. Telephone follow-up by questionnaire of all participants was conducted approximately two weeks post-operatively. The area health human research ethics committee gave ethics approval for this project.

Subjects

One hundred and twenty-eight LC patients who attended the surgical PAC at a Sydney tertiary referral

hospital, between June 2000 and February 2002 were recruited for the study. Exclusion criteria included day-only bookings and age younger than 14 years. Non-English speaking patients were included if a registered interpreter or proficient English-speaking companion was present while interpreters were utilised for the post-operative telephone follow-up where necessary. Fourteen participants were part of the pre-operative questionnaire pilot study and excluded from final analyses.

Ninety-three participants were followed up post-operatively. Twelve participants were lost to follow-up (minimum of three telephone attempts), eight were withdrawn while one remained on the surgical waiting list. Study withdrawals were due to surgical cancellation (patient or hospital initiated, $n=6$), self-withdrawal ($n=1$) and conversion to open cholecystectomy ($n=1$).

Instruments

The pre-operative questionnaire, consisting of 42 questions, aimed to determine participants' knowledge of post-operative pain management (including pharmaceutical alternatives), control of nausea and vomiting, post-operative diet, self-care and complication management. A pilot study with 14 patients was conducted to assess the instrument's content validity.

The post-operative questionnaire, consisting of 43 questions was designed to identify participants' recall of information (delivered at pre-admission) on pain management, wounds, diet, elimination and whether the participant believed they received sufficient information for self-care post discharge. The instruments with established face validity were used previously to assess day surgery patients' outcomes pre and post operatively (Donoghue et al 1998, 1997). The reliability of the instruments have not been determined due to the mixed response format. In this study, the instruments were modified to include a question that asked participants' capacity to self-care following discharge from hospital.

Pain intensity score

The standard 0-10 visual numerical pain intensity scale with verbal anchors was used to record post-operative pain scores 12 hours post-operatively and post discharge.

Procedure

Pre-admission clinic staff informed the nurse researchers when people were attending clinic prior to LC. Consenting participants were randomly allocated to the standard pre-admission procedure (SP) or an additional, individually determined education intervention (EI). The researchers administered the pre-operative questionnaire to all participants to determine their knowledge of LC self-care and post-operative symptom management. EI participants were provided with verbal and written information on pain management, wound care, diet and elimination. For Non-English speaking persons an interpreter was present and written

information was provided in the relevant language. The intervention took approximately 30 minutes.

Education intervention

Following assessment of participants' knowledge of LC and related self-care, verbal education covering wound care, diet, activity, bowel management and management of medical complications was given with opportunity for participants to ask questions. The researchers' contact details and printed literature on LC were provided.

Follow-up

Most participants were seen within a day of surgery by one of the nurse researchers and post-operative pain intensity questions administered. Participants were telephoned at home within two weeks of surgery (range 3-83 days, standard deviation 13.7 days) and the post-operative questionnaire repeated.

Analysis

Fisher's Exact test was used to compare recall information and post-operative behaviours. Repeated measures were utilised to analyse post-operative pain scores using Microsoft Access and SPSS version 10 software packages.

RESULTS

Ninety-three participants completed the post-operative follow-up questionnaires with 52 participants receiving the SP and 41 the EI. The sample consisted of 78 females and 15 males. Males were significantly older ($p=0.037$) with an average age of 60 years (range 29-86) compared to females who averaged 49 years (range 14-80) (table 1).

Fifty-nine percent of participants lived with a spouse or partner, 35% lived alone and 6% did not specify. Thirty-four participants had dependents living with them (dependents' age ranged from one month to 80 years). Sixty two percent ($n=58$) were English speaking while 37.6% ($n=35$) spoke a language other than English; 7.5%

were bi or tri-lingual in the home. Sixteen languages were reported.

The duration from pre-admission to surgery was on average 24.4 days (range 1-167, standard deviation 29.6 days). There was no significant difference between the SP and EI groups in terms of gender, age, and hospital length of stay or initial knowledge levels.

Post-operative pain intensity

EI participants recorded lower mean pain intensity scores during post-operative hospitalisation and domiciliary recovery when compared to SP participants, however these were not significantly different (refer to table 2).

Pain management

Following discharge from hospital, 79.6% ($n=74$) preferred analgesics for pain management whilst 67.7% ($n=63$) complemented medications with rest. Although alternative methods of pain relief (relaxation, hot packs, gentle walking) were discussed with the EI group there was no significant difference between the groups in the use of alternative methods.

Experience of other post-operative symptoms

Post-operative symptoms were experienced by 60.2% ($n=56$) of participants post-discharge. These ranged from common LC related symptoms of nausea, vomiting and elimination problems (Barthelsson et al 2003; Coloma et al 2002; Talamini et al 1999) to chest pain and depression. In this study, 34.4% ($EI n=12$, $SP n=20$) of participants experienced nausea but only 7.5% ($n=7$) vomited. Nausea management was not significantly different between groups with the majority ($n=23$) preferring distraction therapy and/or food restriction while nine used anti-emetic medications. Ten participants experienced constipation ($EI n=6$, $SP n=4$) while five had diarrhoea ($EI n=2$, $SP n=3$).

Eleven participants (11.8%) developed wound infections ($EI=1$, $SP=10$).

Table 1: Post-operative participants' characteristics by group

	Standard pre-admission (n)	Education Intervention (n)
Mean age (range)	49.1 (14-80)	60.0 (29-86)
Females	46	32
Males	6	9

Table 2: Comparison of mean VAS pain intensity scores between SP and EI groups during the post-operative stage in hospital, following discharge and following treatment ($p=0.079$)

Pre-admission education	Mean inpatient pain intensity scores	Mean post-discharge pain intensity scores	Mean score following pain management
SP ($n=47$)	6.66	4.80	2.38
EI ($n=35$)	5.05	4.19	1.90

Table 3: Significant comparisons between standard pre-admission education and education intervention groups for recall of pain and nausea management advice ($p=0.000$)

Type of pre-admission education	Recall of pain management advice (n=47)	No recall of pain management advice (n=43)	Recall of nausea advice (n=40)	No recall of nausea advice (n=53)
SP	17 (32.6%)	32 (61.5%)	11 (21.2%)	41 (78.8%)
EI	30 (73.2%)	11 (26.8%)	29 (70.7%)	12 (29.3%)

Table 4: Comparison between standard pre-admission program and education intervention groups for adequacy of self-care and symptom management information

Pre-admission education	Adequate self-care advice (n=66)	Inadequate self-care advice (n=27)	Adequate symptom management advice (n=55)	Inadequate symptom management advice (n=38)
SP	30 (57.7%)	22 (42.3%)	22 (42.3%)	30 (57.7%)
EI	36 (87.8%)	5 (12.2%)	33 (80.5%)	8 (19.5%)

Findings demonstrated that most participants in both groups could manage their own symptoms. Seventeen participants (37%) required additional professional health care post-discharge, however there was no significant difference ($p=0.22$) between EI ($n=6$) and SP ($n=11$) participants.

Information recall

There was a significant difference ($p=0.000$) in the two groups for recall of self-care information. The majority ($n=32$, 61.5%) of SP participants did not recall being given any pain management advice. In comparison, 30 (73.2%) EI participants recalled receiving pain management advice although 11 (26.8%) could not remember any information being given despite researchers' documentation of information provision (refer to table 3).

There was a significant difference ($p=0.000$) between the groups for provision of nausea management advice. Most SP participants ($n=41$, 78.8%) could not recall any nausea management advice while the majority ($n=29$, 70.7%) of EI participants stated they received this.

Adequacy of information

A significant difference was reported between the groups for information adequacy to support domiciliary self-care capacity ($p=0.002$) and symptom management (0.000). Thirty (57.7%) SP participants and 36 (87.8%) EI participants stated they received adequate information for self-care while 22 SP participants and five EI participants said self-care advice was insufficient. Twenty-two (42.3%) SP participants and 33 (80.5%) EI participants received adequate information to manage post-operative pain, nausea, diarrhoea or constipation (see table 4).

Additional information

Participants were asked what additional information to support self-care efficacy would have been advantageous. Sixty participants (65%) indicated they received adequate

information on all aspects of this experience. Thirty-three participants (35%), (EI $n=10$; SP $n=23$) required more information ($p=0.05$) however, some requests for health related information were outside the scope of this procedure (see table 5).

Table 5: Requested information topics and the numbers of participants by groups

Information topics requested	SP (n=23)	EI (n=10)
General information	8	1
Wound related	5	2
Pain management	7	0
Dietary advice	4	2
Bowel management	2	3
Nausea and vomiting	2	0
Activity	2	0
Medications	2	0

Footnote: Some participants selected information from more than one category

DISCUSSION

In this study there were a greater number of women compared to men than is usual with a ratio of 5:1. Clinical information on LC from the hospital demonstrated the usual ratio of women to men was 2:1, and women were significantly younger than men ($p<0.05$) (Donoghue et al 2002). Investigation of the high proportion of females in the sample identified no selection bias.

Intervention group participants reported lower pain intensity scores during post-operative hospitalisation than SP participants. These findings are consistent with literature that suggests effective pain education lowers pain intensity scores and patient anxiety (Dunn 1998). Post-discharge pain intensity scores remained surprisingly high for all participants although LC pain is reported to

last seven days (Watt-Watson et al 2004; Cason et al 1996). Pain is exacerbated by increased domiciliary activity when carers return to work (Young and O'Connell 2001), while LC patients with young children face particular difficulty (Barthelsson et al 2003). This may explain the high post-discharge pain scores, as some participants were caring for children within three days of surgery while others confirmed walking to the shops.

EI participants reported lower pain intensity scores following personal management of pain than SP participants. Most participants preferred oral analgesics with few using adjunct therapy despite these options being discussed with EI participants. This finding, consistent with other research (Watt-Watson et al 2004), is not surprising considering that discharge prescriptions for analgesics are routinely provided.

In this study, the overall incidence of common post-operative symptoms was lower than that reported by Dunn (1998) and Margovsky (2000). The incidence of nausea, vomiting and dietary problems was significantly lower in EI participants compared to SP participants. All participants were treated similarly in terms of surgical procedures, indicating that information provision shapes patient expectations, increases patient confidence to self-care effectively and helps them manage likely symptoms. It is believed that specific dietary advice to EI participants contributed to their lower incidence of post-operative nausea as three SP participants reported feeling nauseous after consuming oily or acidic foods.

The number of participants with elimination problems was similar between the EI ($n=8$) and SP ($n=7$) groups. However, SP participants were more likely to utilise medication for elimination problems and again demonstrated limited dietary knowledge. This was evidenced by one participant's consumption of fruit and fizzy drinks despite having diarrhoea.

The findings demonstrate that pre-admission intervention significantly increased participants' ability to recall information on self-care and symptom management. One EI participant who experienced a serious complication (biliary leakage) recalled that she acted on information provided by the researcher to contact a health professional if pain was persistent, severe and not alleviated by analgesics.

Literature indicates that formal, individualised education programs (Mordiffi et al 2003; Forster et al 2002; Guruge and Sidani 2002) have a more positive effect on patient knowledge than informal education provision. The provision of information to SP participants was likely to be less formal due to pre-admission rostering practices, variable in content limiting information being provided and conducted in conjunction with routine assessments due to time constraints. In addition, there was no guarantee that SP participants were provided with written information. All of these factors

would impact upon participant knowledge, comprehension and recall ability.

The researchers attempted to identify why some EI participants could not recall information that had been documented as provided. Analysis demonstrated that 12 individuals consistently 'forgot' if information was provided on two or more topics. Pre-operative anxiety levels were not assessed, so reasons for poor recall cannot be fully explained, but multiple factors may be implicated. The 'forgetful' participants were (with one exception) female, slightly older (average 56.5yrs) and generally experienced a longer delay from pre-admission to surgery (average 30.3 days, range 1-106 days) giving weight to literature recommendations to conduct education within one week of surgery (Dunn 1998; Mitchell 1997; Cupples 1991). In all instances, surgical outcomes were optimal possibly supporting the selective recall theory (Kriwanek et al 1998).

Standard pre-admission participants although satisfied overall with information received, were significantly more likely to request additional information about symptom management in comparison to EI participants. Additional information required by study participants was similar to that previously identified including general post-operative expectations (Mitchell 1997) wound care, pain management, dietary advice and bowel management. The provision of such self-care information is mainly the responsibility of nurses. Initially patients may be satisfied with the information given. However, if patients do not know how to manage a situation that arises following discharge, initial satisfaction will change. This result in conjunction with the significantly better recall of the EI group indicates it is worthwhile for health professionals to provide surgical patients with relevant and adequate verbal and written information at PAC to improve their self-care.

LIMITATIONS

Many studies that identify the importance of patient education do not randomise patients to conditions or compare outcomes. This study focused on patients having the same surgical procedure, attending the same PAC and having the same researchers deliver the informational intervention. The major limitation was a reduction in LC numbers due to the introduction of day-only LC at this hospital and one surgeon on extended leave. This resulted in fewer patients being recruited than planned in the research time frame. In addition, there was an over-representation of women in the study (5:1) relative to that usually reported for this procedure (2:1).

CONCLUSION

LC patients who received education intervention reported lower pain intensity scores and had significantly lower incidences of post-operative symptoms than patients

who did not receive this intervention. These patients also had significantly greater recall of information to support their self-care capacity and symptom management following discharge from hospital, while reporting that the provided information was adequate to support their needs.

The current method of managing many surgical patients by admitting them on the day of surgery combined with shortened length of post-operative hospital stays leads to expectations that patients will be self-caring on discharge. It is therefore imperative that information provision at pre-admission is individually tailored and helps patients achieve optimal self-care capacity in relation to the experience.

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