Effect of Educational Program on Nurses` Performance Regarding Patients Undergoing Cholecystectomy

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Abstract

Cholecystectomy is the surgical removal of the gallbladder and is a standard treatment of symptomatic gallstones and other gallbladder conditions. Nurses have a very important role for patients who underwent cholecystectomy This study aimed to evaluate the effect of an educational program on nurses' performance regarding care for patients undergoing cholecystectomy. A quasi-experimental design was utilized. The study was conducted in three surgical departments at Zagazig University Hospitals, hepatic surgery and endoscopy department, general surgery department and vascular surgery department. The study was conducted on convenience sample of available nurses working in surgical departments and caring for patients undergoing cholecystectomy. Three tools were used; an interviewing questionnaire, an observational checklist and nurses' attitude questionnaire. More than half (52%) of studied nurses aged less than 30 years old, 92% of the studied nurses were females and married, 40% of the studied nurses had diploma degree and 44% of the studied nurses worked in general surgery department, 52% of studied nurses had less than ten years of experience in surgical departments and 100% of studied nurses didn't receive any training program about cholecystectomy. Total satisfactory nurses' knowledge and practices regarding patients undergoing cholecystectomy was improved post program compared to preprogram. Total nurses` positive attitude regarding patients undergoing cholecystectomy was improved post program compared to preprogram. There was a statistical significant relation between nurses' attitude and their social status and department. There was a statistical significant relation between satisfactory nurses' knowledge and their practice pre and post program phases. There was a statistical significant relation between nurses' attitude and their knowledge and practice. There was a statistically positive correlation between nurses' knowledge score, and their attitude score, and practice score, nurses' age and years of experience. There was statistically positive correlation between nurses' attitude score, and their practice score. The researcher can concluded that the educational program significantly improved nurses' knowledge and practices, which reflected on improving their positive attitude regarding patients undergoing cholecystectomy. Continuous in-service training programs are recommended to improve and maintain nurses' performance regarding patients undergoing cholecystectomy.

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1. Introduction

Cholecystectomy is the surgical removal of the gallbladder and is one of the most common abdominal surgical procedures today; the two basic types of this procedure are open cholecystectomy and the laparoscopic approach. It is estimated that the laparoscopic procedure is currently used for approximately 80% of cases. Performed to treat cholelithiasis and cholecystitis that is recommended when symptoms become frequent, recurrent, or more severe. Cholecystectomy is established as the therapy of choice for symptomatic cholelithiasis [1]. Open cholecystectomy (OC) is major surgery that is performed to many cases. Most often, open cholecystectomy is performed because of complications such as perforation, infection, or adhesions from previous surgery, Patients with suspect cancer, very large stones, end stage liver disease, or bleeding disorders may also require open cholecystectomy. Open Cholecystectomy is performed under general anesthesia, which renders the patient unconscious. After the anesthesia is administered, a 5- to 8-inch right or midline incision is made in the abdomen, and the

abdominal cavity is opened to expose the gallbladder, the artery to the gallbladder and the cystic duct leading from it are tied off and cut, and the gallbladder is removed [2].

Absolute contraindications to proceeding with an open cholecystectomy are few. The only absolute contraindications to the open approach are severe physiologic derangement or cardiopulmonary disease that prohibits general anesthesia. In cases of terminal illness, temporizing procedures such as percutaneous transhepatic cholangiography or percutaneous cholecystostomy should be considered. Complications can be classified to complications common to all operations as post anesthesia nausea and vomiting, atelectasis, deep venous thrombosis, wound infection and incisional hernia. In addition, complications, which are specific to cholecystectomy as hemorrhage, bile duct injury, biliary leakage, jaundice and post cholecystectomy syndrome [3]. Laparoscopic cholecystectomy is a gold standard procedure for the management of gallbladder stone. Gallstones (cholelithiasis) are the most common biliary disorder. The formation of stones in the biliary duct is due to excessive secretion of cholesterol into bile, while biliary deposits can form in the gallbladder and in the extrahepatic and intrahepatic bile ducts. Gallstones are usually composed of bile pigments, cholesterol, and mixed structures, e.g. combining proteins and calcium salts. Worldwide, the prevalence of gallbladder disease is between 10 and 20 percent, with women being affected three times more often than males [4]. Compared to other healthcare professionals, nurses spend more time with patients having cholecystectomy procedures, and the standard of nursing care influences patient condition and help hospitalized patients recover more quickly. The specialty practice area of medical-surgical nursing, also known as adult health nursing, involves nurses promoting, restoring, or maintaining patients' optimum health. Specialized knowledge, clinical skills, and good attitude are required to manage actual or potential health issues that affect patients. Preoperative and postoperative care is crucial to enhancing healing without complications, lowering hospital stays, and controlling costs. Pre-operative care has led to the identification, assessment, testing and teaching of patients undergoing cholecystectomy [5].

Significance of the study:

Cholecystectomy procedure is performed annually in the United States, and 80% to 90% of them are candidates for laparoscopic cholecystectomy[6]. In Egypt, there is increasing incidence and prevalence rate of patients treated by cholecystectomy, it was observed that there is insufficient information to promote nursing care before, during and after surgery. In Benha, the number of patients who performed cholecystectomy during the year of 2021 and admitted to general surgery department of Benha University Hospital was approximately 142 case, 89 case performed open Cholecystectomy and 53 case performed laparoscopic Cholecystectomy [7]. Available statistics indicated that the number of patients who performed cholecystectomy during the year of 2020 was approximately 288 patients in Zagazig University Hospital according to statistical department at Zagazig University Hospital [8]. Surgical nurses play an important in caring of patients undergoing cholecystectomy during pre/ postoperative time. They should also have proper

knowledge, practices and attitude to provide proper nursing care, prevent complications and decreases coast of treatment. Therefore, there is need to conduct this study to evaluate the effect of educational program on nurses' knowledge, practices and attitude regarding patients undergoing cholecystectomy.

Aim of the study

The aim of this study was to evaluate the effect of an educational program on nurses' performance regarding care for patients undergoing cholecystectomy.

Research Hypotheses:

This study was based on achieving the following hypotheses:

H_1 Nurses' level of knowledge will be higher after the educational program than before.

H_2 Nurses' level of practice will be higher after the educational program than before.

H_3 Nurses' attitude will improve after the educational program than before.

2. Subjects and Methods

A quasi-experimental design was utilized. The study was conducted at three surgical departments at Zagazig University Hospitals, hepatic surgery and endoscopy department, general surgery department and vascular surgery department. The study was conducted on all available nurses working in surgical departments and caring for patients undergoing cholecystectomy.

Tools of data collection*:*

Tool I: An Interviewing questionnaire (Pre-Post test) was written in a simple Arabic language to avoid misunderstanding. It was designed by the researcher after reviewing of related literature **[9-12]** to assess nurses` knowledge regarding patients undergoing cholecystectomy, and included the following:

Part 1: Demographic characteristics of the studied nurses: were composed of seven closed ended questions including nurses' age, sex, social status, education, department, years of experience and training courses about cholecystectomy.

Part 2: Nurses' knowledge Questionnaire: was used to assess nurses' knowledge regarding patients undergoing cholecystectomy.

Scoring System for Nurses' Knowledge:

Scoring system for the knowledge items, the correct answer was scored one and the incorrect zero. For each area of knowledge, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into percent scores. Knowledge was considered satisfactory if the percent score was equal or above 60% and unsatisfactory if, less than 60% based on statistical analysis and importance of nurses` knowledge regarding patient undergoing cholecystectomy.

Tool II: An Observational Checklists (Pre-Post test): was used to assess nurses' practice regarding patients undergoing cholecystectomy. Included 197 items developed by the investigator guided by Iseda et al, Vincent et al , Potter et al and Harding et al [13-16].

Scoring system interpretation: Scoring system for the observational checklist items, score "one" given for done step and score "zero" for the not done. For each checklist of practice, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into percent scores. Practice was considered satisfactory if the percent score was equal or above 60% and unsatisfactory if, less than 60% based on statistical analysis and importance of nurses` practice regarding patient undergoing cholecystectomy.

Tool III: Nurses' Attitude Questionnaire: (pre/post test): was used to assess nurses' attitude regarding patients undergoing cholecystectomy. It was developed by the researcher after reviewing the pertinent literature review [5-17-18]. The attitude questionnaire included 19 statements on 2- point. The attitude questionnaire included both (11) positive statements and (8) negative statements with two response options: agree and disagree.

The Scoring System: The attitude scale included both positive and negative statements. Total score is 19 grades, the positive attitude statement was scored as 1= agree, 0= disagree, conversely negative attitude statements were scored 0= agree, 1= disagree. The attitude was considered "positive" if the percent score was ≥60% and "negative" if <60% based on data entering and statistical analysis.

Administrative and ethical consideration:

An Official permission for data collection in three surgical departments at Zagazig University was obtained from the hospital administrative personnel by the submission of a formal letter from the Dean of the Faculty of Nursing. Before collecting data, oral consent was obtained from participating nurses who were informed of the nature, purpose, and methods of the study to ensure maximum cooperation as well as to make arrangements for the attendance of the participants. The participants were also informed of their right to participate or withdraw at any time from the study. Strict confidentiality was ensured throughout the study process, and all nurses were assured that their data was used for research purposes only.

Pilot study: was performed to test the clarity, applicability, relevance, comprehensiveness, understanding and feasibility of the tools. For this study the researcher selected five (10%) nurses random to participate in the pilot testing of the questionnaire, checklist and not excluded from the study sample because of no modifications in the tool.

Field work:

Upon securing all necessary official permission were obtained, fieldwork of the study was implemented from the beginning of March 2023 to the end of December 2023 where the researcher was available three days weekly from 9 am to 2 pm. The educational program was conducted through assessment, planning, implementation, and evaluation phases.

Content validity& Reliability:

It was used to modify the tools and design education program (booklet) to determine whether the tools covered the aim or not. It was ascertained by five juries of expertise (nursing professors), the faculty of nursing, Zagazig University, who reviewed the tools for clarity, relevance, comprehensive, understandable and applicability. Reliability statistics of the study, Cronbach's Alpha that used to measure the internal consistency (reliability of used tool) was 75% for knowledge, 95% for practice. While 75% for attitude.

Statistical analysis:

All data were collected, tabulated and statistically analyzed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp. Quantitative data were expressed as the mean ± SD & median (range), and qualitative data were expressed as number & (percentage). Wilcoxon sign rank test was used to compare between paired of non-normally distributed variables. Percent of categorical variables were compared using, Chi square test or Fisher Exact test when appropriate. MCNemar Test was used to compare between paired categorical data. Pearson' correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. Multiple linear regressions is a predictive analysis. Multiple linear regression is used to describe data and to explain the relationship between one dependent continues variable and one or more independent variables. All tests were two sided. p-value < 0.05 was considered statistically significant, p-value ≥ 0.05 was considered statistically insignificant.

3. Results and discussion

Table (1) clarifies that 52% of studied nurses aged less than 30 years old with mean ± SD 30±5.83, 92% of the studied nurses were females and married, 40% of the studied nurses had Diploma degree and 44% worked in general surgery department. Also 52% of studied nurses had less than ten years of experience in surgical departments with mean ± SD10.9±6.63. Additionally, 100% of studied nurses didn't receive any training program about cholecystectomy.

Table (2) demonstrates that nurses had total satisfactory level of knowledge regarding patients undergoing cholecystectomy post program 86% with mean ±SD (93.48±17.94) than preprogram. Also table show a highly statistical significant difference as P value 0.0001. Table (3) indicates that nurses had total satisfactory level of practice regarding patients undergoing cholecystectomy post program 82% with mean ±SD (161.92±32.09) than preprogram. Also, the same table shows that there was a highly statistically significant difference pre and post program as P value 0.0001. Table (4) demonstrates that nurses had total positive attitude regarding care of patients undergoing cholecystectomy post program 78% with mean ±SD (15.82±3.46) than preprogram. Table (5) clarifies that there was a statistical significant relation between nurses' attitude regarding patients undergoing cholecystectomy and their social status and department post program as P value equal (0.008, 0.009) respectively. Table (6) reveals that there was a statistical

significant relation between nurses' knowledge regarding patients undergoing cholecystectomy and their total practice post program as P value equal 0.015.

Table (7) clarifies that there was a statistical significant relation between nurses' attitude regarding patients undergoing cholecystectomy and their knowledge post program. Table (8) shows that there was a statistical significant relation between nurses' attitude regarding patients undergoing cholecystectomy and their practice post program. Table (9) presents that there was a positive correlation coefficient between nurses' knowledge score, and their attitude score, practice score, and their age and years of experience with statistical significant difference p-value at (0.005, 0.0001, 0.023, 0.01) respectively post program. Also, the same table shows that there was a positive correlation coefficient between nurses' attitude score, and their practice score with statistical significant difference p-value at 0.027 post program.

Discussion:

The results of the current study revealed that more than half of studied nurses aged less than 30 years old. Most of the studied nurses were females and married. About more than one third of the studied nurses had diploma degree and worked in general surgery department. Also more than half of studied nurses had less than ten years of experience in surgical departments. According to the researcher opinion, the majority of nurses working in surgical departments were females, and this conclusion may be related to the fact that nursing education used to be exclusively for females. Additionally, the fact that the least number of nurses at surgical departments possessed a bachelor's degree in nursing may have something to do with the hospital's chronic lack of highly qualified nurses due to their constant administrative workload. This study finding was in the same line with Elmansy et al [19] , who presented in a study about "Nurses' Level of Practice and Attitude Toward Care of Patients Pre/Post Laparoscopic Cholecystectomy at Ismailia Medical Complex" that more than half of the study sample were in the age between (20-<30 years old), and more than two thirds of the study sample were females, while, half of studied sample had from 5 to less than 10 years of experience in surgical department. Similarly, with AbdElhafiez et al [20] , who reported in a study entitled "Developing Nurses Performance Guidelines for Patients Undergoing Cholecystectomy based on Needs Assessment at El demerdash surgical Hospital" that half of studied nurses had diploma degree in nursing. In congruent with Kreem et al [21] , who stated in a study about "Effectiveness of Educational Program on Nurses' Knowledge regarding Pre and Post-Operative Nursing Management at Al-Sadder Medical City in Al-Najaf City" that most of the sample in study group were married and 40% of the sample in study group are graduated from nursing secondary school. This finding disagreed with Ibrahim et al [22] who found in a study about "Assessment of Nurses Knowledge toward Pre and Post Nursing Interventions Laparoscopic Cholecystectomy at AL-Imam AL-Hussein Teaching Hospital in AL-Nasiriya City" that almost half of the studied sample are from technical institutes and the majority of the study sample ranges between (1-5 years) years of experience in surgical department. Conversely with AbdElhafiez et al [20], who reported that three quarters of

studied nurses had more than 10 years of experience in surgical department. Also Kadhim et al [23], found in a study entitled "Assessment of postoperative nurses' interventions for the patients with laparoscopic cholecystectomy at Baghdad teaching hospitals" that the majority of the studied nurses were males.

The Finding of the current study clarified that all of the studied nurses didn't receive any training programs regarding patient undergoing cholecystectomy. This result may be due to shortage of nurses' number that did not let nurses have time to attend courses or lack of awareness about the effect of training courses on performance of the nurses regarding patients undergoing cholecystectomy. In the same line with [20], who found that most of the studied nurses had not previously attend any training courses regarding patient undergoing cholecystectomy. Similarly, Kareem et al [24] found in a study about "Assessment of Nurses' Knowledge Regarding Management of Patient's with Cholelithiasis Disease at Al-Sadder Medical City in Al-Najaf City" that most of the studied nurses had not previously attend any training courses regarding Management of Patient's with Cholelithiasis. This result was contradicted with Saied et al [25] , who found in a thesis entitled "Assessment of Nurses' Performance Competency for Patients Undergoing Cholecystectomy at Assiut" that most of nurses attended previous training programs. Regarding total nurses' knowledge about cholecystectomy throughout the study phases, there was a highly statistically significant improvement in satisfactory nurses' knowledge regarding patients undergoing cholecystectomy post-program compared to pre-program. This might be related to the provision of educational booklet and verbal information, added to curiosity of the studied nurses. This result was supported by Awad and Talaat [26] found that highly statistically significant improvement in the total nurses' knowledge in the post-test than that reported of the pre-test. Similarly, Abd ElKareem et al [27], reported in a study about "Effect of the Training Program on Nurses' Performance Regarding Surgical Wounds Management at Zagazig University Hospitals" that there was improvement in nurses' total knowledge of surgical wound care after program implementation compared to preprogram. This finding disagreed with the finding from a study conducted by Voutilainen et al [28], who showed that after the intervention with a short-term program, there were no significant difference between before and after intervention. Supporting this study finding, Nguyen et al [29], revealed that a well-structured education program have a significant positive impact on nurses' knowledge. As regard to total nurses` practices throughout the study phases the current study revealed that, there was a highly statistically significant difference and improvement in total satisfactory nurses' practice regarding patients undergoing cholecystectomy at post program compared to preprogram. This finding in the same line with Romeeh et al [30], who illustrated that more than half of nurses had a satisfactory level of practice post intervention. In addition, this agreed with Gijare [31], who found a significant difference between results of pre and post guidelines implementation, which clarified that skills had improved when linked with scientific base of knowledge. The current study revealed that total nurses' positive attitude regarding care of patients undergoing cholecystectomy was

improved from preprogram to post program, in addition to there was a statistically significant difference in total nurses' positive attitude regarding care of patients undergoing cholecystectomy post application of educational program compared to preprogram. This may be related to the insufficient scientific courses related to cholecystectomy, and this may be attributed to lack of continuous education and in-service training program preprogram.

This interpretation was supported by Ayaz and Sherman [32], who suggested in a study about "Understanding Attitudes, Social Norms, and Behaviors of a Cohort of Post-Operative Nurses Related to Pain and Pain Management at Florida International University, USA" that nurses on the post-operative unit need continuing education seminars, to provide patient-centered individualized care. Also Dickerson and Chappell [33],stated that nurses need to participate in educational courses continuously to improve knowledge, skills, and attitude of nurses, additionally improving quality of care given to the patients. This study finding was in the same line with Saied and Mansour [34], who showed that the total mean score was unacceptable level for both study and control groups before giving intervention, while a good level for the study group post-intervention, regarding the attitude of pain assessment and management. Highly statistically significant differences in post-test for the study group as compared with the control groups for attitude domains. Contrary with Elmansy [19], who presented that nearly two thirds of the studied nurses had a moderate level of positive attitude. Also EYİ [35], demonstrated in a study about "Nurses' Knowledge and Attitudes in Relation to Wound Infection and Wound Culture: A Quasi-Experimental Study in Eskişehir Osmangazi University, Türkiye" that nurses' attitude scores were found to be low before and after training and did not affected by training. Regarding relation between nurses' attitude regarding patients undergoing cholecystectomy and their demographic characteristics in post program, the result of the present study showed that there was a statistical significant relation between nurses' attitude regarding patients undergoing cholecystectomy and their social status and department. The present study result agreed with Bahnasawy et al [18], who reported in a study about "Nurses Attitude and Practice Regarding Patient Undergoing Abdominal Surgery at Zagazig university hospitals", that there was a statistical significant relation between nurses' attitude and their social status. It apparent that married nurses had positive attitude for patient care at surgical department. Regarding relation between nurses' knowledge and their practice, the result of the present study showed that there was a statistical significant relation between nurses' knowledge regarding patients undergoing cholecystectomy and their total practice pre and post program. The current study result agreed with Awad and Talaat [26], who revealed that, a statistically positive relation among total knowledge score levels and practices of the studied nurses throughout the self-learning package that ensures that adequate knowledge effects directly in the nurses' practice. Similarly, with Ismail et al [36], who indicated in a study about "Nurses' performance and postoperative outcome among patients undergoing gastrointestinal surgery at Zagazig university hospitals" that there was highly a statistical positive relation between nurses' total knowledge and total practice. Regarding relation between nurses' attitude and their

knowledge regarding patients undergoing cholecystectomy, the result of the present study showed that there was statistically significant relation between nurses' attitude regarding patients undergoing cholecystectomy and their total knowledge pre and post program. The current study result disagreed with EYİ [35], who found that increasing the knowledge level of nurses did not affect their attitudes and there was no statistically significant relationship between knowledge scores and attitudes scores. Regarding relation between nurses' attitude and their practice regarding patients undergoing cholecystectomy, the result of the present study showed that there was statistically significant relation between nurses' attitude regarding patients undergoing cholecystectomy and their total practice post program. The current study result agreed with Elmansy [19], who found that there was statistically significant relation between total nurses' practice adequacy level and attitude level of the studied nurses.

The current study demonstrated that, there was a positive correlation between nurses' knowledge score, and nurses' attitude score and nurses' practice score with statistical significant difference pre and post program. The current study result agreed with Abd ElKareem et al [27], who illustrated that there was a statistically significant positive correlation of nurses' knowledge score regarding surgical wounds management with their practice score of wound care at pre- and post-program implementation phase. In addition, post-program implementation phase, found that a statistically significant relationship between nurses' age, number of years of nursing experience, and overall nurses' knowledge level regarding surgical wounds management. Also Abdelgilil et al [5], found that there was a positive correlation between knowledge scores and practice scores. The current study result disagreed with EYİ [35], who found that knowledge and attitude scores were found to be unaffected by years in the profession and wound care experience. Also Mashbari et al [37], illustrated in a study about "Knowledge, attitude and practices towards surgical wound care and healing among the public in the Jazan Region, Saudi Arabia" that there was a significant inverse relationship between age and knowledge level. Moreover, these findings are consistent with Lobo et al [38] , who reported in a study about "Correlation between health professionals' knowledge, attitude and practice about infection control measures at A. J. Hospital, India" that there was a linear correlation between knowledge and attitude as well as between knowledge and practice scores of surgical site infection prevention measures. Also Abu Awwad et al [39], who reported in a study about "Knowledge, attitudes and practice of infection prevention and control in the CT suite, Australia" that knowledge and practice were positively correlated with attitudes for nurses. The study finding was not consistent with Lobo et al [38], who found that there was no correlation between attitude and practice scores of individuals.

Table 1: Frequency and Percentage Distribution of Demographic Characteristics for Studied Nurses (n=50)

Variables	No.	%
Age per years		
<30 years	26	52.0
>30 years	24	48.0
Mean ±SD	30±5.83	
Median(range)	29(20-40)	
Sex		
Males	4	8.0
Females	46	92.0
Social status		
Married	46	92.0
Single	4	8.0
Education		
Diploma	20	40.0
Technical institute	18	36.0
Bachelors	12	24.0
Department		
Liver endoscopy	16	32.0
General surgery	22	44.0
Vascular surgery	12	24.0
Experience in surgical department		
<10 years	26	52.0
>10 years	24	48.0
Mean ±SD	10.9±6.63	
Median(range)	9(2-22)	
Training program		
No	50	100.0

Table 2: Total Nurses' Knowledge Regarding Care for Patients Undergoing Cholecystectomy throughout Study Phases (n=50)

Item	Study phases				Percent of improvement	Mp-value
	Pre		Post			
	No.	%	No.	%		
Total Nurses` Knowledge						
Satisfactory	9	18.0	43	86.0		0.0001*
Unsatisfactory	41	82.0	7	14.0		
Mean ±SD	47±15.55		93.48±17.94		98.89	

M:McNemar test,* p<0.05:significant

Table 3: Total Nurses` Practices Regarding Care for Patients Undergoing Cholecystectomy throughout Study Phases (n=50)

Nurses` performance	Study phases				Percent of improvement	Mp-value
	Pre		Post			
	No.	%	No.	%		
Total Nurses` practices						
Satisfactory	4	8.0	41	82.0	84.69	0.0001
Unsatisfactory	46	92.0	9	18.0		
Mean ±SD	87.28±24.16		161.92±32.09			

M:McNemar test,* p<0.05:significant

Table 4: Total Nurses` Attitude Regarding Care for Patients Undergoing Cholecystectomy (n=50)

Nurses' attitude	Study phases				Percent of improvement	Mp-value
	Pre		Post			
	No.	%	No.	%		
Total Nurses` attitude						
Positive	5	10.0	39	78.0	73.09	0.0001
Negative	45	90.0	11	22.0		
Mean ±SD	9.14±2.65		15.82±3.46			
Median(range)	7(4-16)		17(8-19)			

M: McNemar test,* p<0.05: significant

Table 5: Relation between Nurses' Attitude Regarding Care for Patients Undergoing Cholecystectomy and their Demographic Characteristics Post program (n=50)

Demographic Characteristics	Nurses' attitude Post program				χ^2	p-value
	Positive n.39		Negative n.11			
	No.	%	No.	%		
Age per years						
<30 years	20	76.9	6	23.1	0.037	0.848
>30 years	19	79.2	5	20.8		
Sex						
Males	3	75.0	1	25.0	f	0.99
Females	36	78.3	10	21.7		
Social status						
Married	38	82.6	8	17.4	f	0.008*
Single	1	25.0	3	75.0		
Education level						
Diploma	13	65.0	7	35.0	3.574	0.167
Technical institute	15	83.3	3	16.7		
Bachelors	11	91.7	1	8.3		
Department						
Endoscopy	12	75.0	4	25.0	9.472	0.009*
Surgical	21	95.5	1	4.5		
vascular surgical	6	50.0	6	50.0		
Experience in surgical department						
<10 years	20	76.9	6	23.1	0.037	0.848
>10 years	19	79.2	5	20.8		

χ^2:Chisquare test, f:fisher exact test p>0.05 no significant,   p<0.05: significant

Table 6: Relation between Nurses' Knowledge and their Practice Post Program (n=50)

Nurses' Practices items	Nurses' knowledge post program				Fp-value
	Satisfactory n.43		Unsatisfactory n.7		
	No.	%	No.	%	
Day before surgery: Satisfactory Unsatisfactory	29 14	67.4 32.6	6 1	85.7 14.3	0.659
Day of Surgery (Morning): Satisfactory Unsatisfactory	39 4	90.7 9.3	6 1	85.7 14.3	0.546
Immediate Care Satisfactory Unsatisfactory	35 8	81.4 18.6	7 0	100.0 .0	0.58
Ongoing Care Satisfactory Unsatisfactory	37 6	86.0 14.0	7 0	100.0 .0	0.576
In hospital care Satisfactory Unsatisfactory	34 9	79.1 20.9	5 2	71.4 28.6	0.641
Hemovac drain care Satisfactory Unsatisfactory	35 8	81.4 18.6	7 0	100.0 .0	0.58
Tube drain care Satisfactory Unsatisfactory	37 6	86.0 14.0	6 1	85.7 14.3	0.99
Removal of drains Satisfactory Unsatisfactory	39 4	90.7 9.3	7 0	100.0 .0	0.82
Pain management Satisfactory Unsatisfactory	31 12	72.1 27.9	7 0	100.0 .0	0.174
Wound care Satisfactory Unsatisfactory	39 4	90.7 9.3	7 0	100.0 .0	0.99
Total Nurses' practice Satisfactory Unsatisfactory	38 5	88.4 11.6	3 4	42.9 57.1	0.015*

χ^2:Chisquare test, f:fisher exact test, p>0.05 no significant, p<0.05: significant

Table 7: Relation between Nurses' Attitude and their Knowledge Regarding Care for Patients Undergoing Cholecystectomy Post Program (n=50)

Nurses' knowledge items	Nurses' attitude post program				fp-value
	Positive n.39		Negative n.11		
	No.	%	No.	%	
Gallbladder anatomy and physiology					0.12
Satisfactory	33	84.6	7	63.6	
Unsatisfactory	6	15.4	4	36.4	
Definitions of cholecystitis and gallstones					0.0001*
Satisfactory	39	100.0	7	63.6	
Unsatisfactory	0	.0	4	36.4	
Risk factors of cholecystitis and gallstones					0.059
Satisfactory	32	82.1	6	54.5	
Unsatisfactory	7	17.9	5	45.5	
Symptoms and signs of cholecystitis					0.008*
Satisfactory	38	97.4	8	72.7	
Unsatisfactory	1	2.6	3	27.3	
Complications of cholecystitis					0.248
Satisfactory	34	87.2	8	72.7	
Unsatisfactory	5	12.8	3	27.3	
Investigations of cholecystitis					0.625
Satisfactory	37	94.9	10	90.9	
Unsatisfactory	2	5.1	1	9.1	
Treatment of cholecystitis					0.037*
Satisfactory	35	89.7	7	63.6	
Unsatisfactory	4	10.3	4	36.4	
Cholecystectomy					0.037*
Satisfactory	35	89.7	7	63.6	
Unsatisfactory	4	10.3	4	36.4	
Preoperative nursing care					0.0001*
Satisfactory	39	100.0	7	63.6	
Unsatisfactory	0	0.0	4	36.4	
Post-operative nursing care					0.54
Satisfactory	38	97.4	9	81.8	
Unsatisfactory	1	2.6	2	18.2	
Instructions to the patient after surgery					0.003*
Satisfactory	36	92.3	6	54.5	
Unsatisfactory	3	7.7	5	45.5	
Guidelines of discharge					0.001*
Satisfactory	39	100.0	8	72.7	
Unsatisfactory	0	.0	3	27.3	
Total Nurses` Knowledge					0.016*
Satisfactory	36	92.3	7	63.6	
Unsatisfactory	3	7.7	4	36.4	

f :Fisher Exact test,   p:>0.05 no significant, *p:<0.05 significant

Table 8: Relation between Nurses' Attitude and their Practice Regarding Care for Patients Undergoing Cholecystectomy Post Program (n= 50)

Nurses' Practice	Nurses' attitude post program				fp-value
	Positive n.39		Negative n.11		
	No.	%	No.	%	
Day before surgery: Satisfactory Unsatisfactory	30 9	76.9 23.1	5 6	45.5 54.5	0.065
Day of Surgery (Morning): Satisfactory Unsatisfactory	37 2	94.9 5.1	8 3	72.7 27.3	0.064
Immediate Care Satisfactory Unsatisfactory	36 3	92.3 7.7	6 5	54.5 45.5	0.009*
Ongoing Care : Satisfactory Unsatisfactory	35 4	89.7 10.3	9 2	81.8 18.2	0.601
In hospital care Satisfactory Unsatisfactory	32 7	82.1 17.9	7 4	63.6 36.4	0.229
Hemovac drain care Satisfactory Unsatisfactory	32 7	82.1 17.9	10 1	90.9 9.1	0.666
Tube drain care Satisfactory Unsatisfactory	36 3	92.3 7.7	7 4	63.6 36.4	0.034*
Removal of drains Satisfactory Unsatisfactory	37 2	94.9 5.1	9 2	81.8 18.2	0.206
Pain management Satisfactory Unsatisfactory	31 8	79.5 20.5	7 4	63.6 36.4	0.424
Wound care Satisfactory Unsatisfactory	37 2	94.9 5.1	9 2	81.8 18.2	0.206
Total practice Satisfactory Unsatisfactory	35 4	89.7 10.3	6 5	54.5 45.5	0.017*

F:Fisher test, p>0.05 no significant,   p<0.05: significant

Table 9: Correlation Coefficient between Nurses' Knowledge, Attitude, and Practice Scores Regarding Care for Patients Undergoing Cholecystectomy and their Age and Years of Experience Post Program (n=50)

	Nurses' knowledge score		Nurses' attitude score		Nurses' practice score	
	r	P	R	p	r	P
Nurses' knowledge score	1					
Nurses' attitude score	.394**	0.005	1			
Nurses' practice score	.551**	0.0001	.313*	0.027	1	
Age	.321*	0.023	0.156	0.281	0.171	0.234
Experience per years	.360*	0.01	0.081	0.577	0.134	0.352

(r) Correlation coefficient   ** Correlation is significant at the 0.01 level (2-tailed).

4. Conclusions

Based on the findings of the present study, it can be concluded that the majority of studied nurses had satisfactory knowledge, practices and positive attitude post educational program. Also, there was a positive statistically significant correlation between nurses' knowledge score, and their attitude score, practice score post program. This findings means that the educational program effect on nurses' knowledge, practices and positive attitude regarding care for patients undergoing cholecystectomy.

Recommendations:

In view of the main results of the study the following recommendations were derived and suggested:

- Continuous in-service training programs are recommended to improve and maintain nurses' performance regarding patients undergoing cholecystectomy.
- Exerting more efforts by the continuing education units in the hospital to develop and update the nurses' knowledge, practice and improve their attitudes regarding patients undergoing cholecystectomy.
- Regular evaluation of nursing staff performance, using a motivation action as rewarding good performance and giving them feedback.

Encouraging nurses to attend scientific meetings and conferences to keep pace with the rapid growing plenty of knowledge and practice necessary for proper effective nursing service.

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