Nurses` Knowledge and Practice Regarding Care for Patients Undergoing Cholecystectomy

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Abstract

Background: Cholecystectomy is the treatment of choice for symptomatic gallstones. Laparoscopic cholecystectomy (LC) is the golden standard approach for benign gallbladder disease requiring surgery, added to its feasibility as a day case procedure. **Aim of the study:** was to assess nurses' knowledge and practice regarding care for patients undergoing cholecystectomy. **Subjects and Method: Research design:** A descriptive exploratory design was utilized. **Setting:** The study was conducted at three surgical departments at Zagazig University Hospitals, hepatic surgery and endoscopy department, general surgery department and vascular surgery department. **Subjects:** A convenient sample of 55 nurses was included in the study. **Tools of data collection:** Two tools were used; An Interviewing questionnaire and an observational checklist to assess nurses' knowledge and practice regarding patients undergoing cholecystectomy. **Results:** More than two thirds of the studied nurses had satisfactory knowledge, 83.6% of studied nurses had unsatisfactory practice regarding patients undergoing cholecystectomy. There was no statistically significant relation between nurses' total practice I and nurses' total knowledge **Conclusion:** can be concluded that the studied nurses had satisfactory knowledge and unsatisfactory practice. **Recommendations:** In-service training programs are recommended to improve nursing performance regarding care for patients undergoing cholecystectomy.

Keywords: Cholecystectomy, Nurses` knowledge and Practice.

Introduction

Cholecystectomy is the surgical removal of gallbladder that can be done via open or laparoscopic surgeries. Cholelithiasis and cholecystitis are common disorders that can lead to this operation. Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. This technique essentially has replaced the open technique for routine cholecystectomies since the early 1990s [1].

At this time, laparoscopic cholecystectomy is indicated for the treatment of cholecystitis (acute/chronic), symptomatic cholelithiasis, biliary dyskinesia, acalculous cholecystitis, gallstone pancreatitis, and gallbladder masses/polyps. These indications are the same for an open cholecystectomy. Cases of gallbladder cancers are usually best treated with open cholecystectomy [2].

Currently the gold standard treatment for gallstones is laparoscopic cholecystectomy. Given the many advantages that laparoscopic surgery has over open surgery, such as limited incisions, short hospital stay, no drainage and gastric tube use, fewer painkillers and fewer complications, and faster resumption of surgery, the use of this method has been growing increasingly as an alternative to the open surgical procedure. One of the most important complications after laparoscopic cholecystectomy is postoperative pain due to smaller incisions; lack of intercostal nerve and abdominal wall muscles is less pain than open method [3].

The surgical nurse must possess substantial knowledge, judgment and skill based on principles of the biological, physiological, behavioral and social sciences in order to meet the needs of the patient who is undergoing surgical intervention. The surgical nurse provides direct care to

the surgical patients, with primary emphasis on the intra-operative period and responsibility for pre-operative assessment and care planning and post-operative evaluation [4].

There are several important considerations in the postoperative period. These include laboratory testing, pain management, respiratory management, venous thromboembolism (VTE) prophylaxis, diet progression, wound care, and postoperative follow-up. After the patient reaches to the surgical unit several complications can occur, so the nurse has an important role in this period to prevent occurring of these complications [5].

It is vital before discharge patients are provided with information about their analgesic regimen, wound care, returning to daily activities and dietary advice. Providing patients with practical discharge advice will improve their confidence in managing their care at home. They should also be warned of the possible complications and what to do if such complications occur [6].

Significance of the study:

Cholecystectomy is a common treatment of symptomatic gallstones and other gallbladder conditions. Available statistics indicated that approximately 1.2 million cholecystectomies done annually in the United States and 92% of all cholecystectomies are done laparoscopically [7]. In Egypt, the number of sufferers who performed cholecystectomy during the period 2019 to 2020 was approximately 288 patients in Zagazig University Hospital according to statistical department at Zagazig University Hospital (Zagazig Hospital Records, 2020).

Aim of the study:

The current study aimed to assess nurses' knowledge and practice regarding care for patients undergoing cholecystectomy.

Research Questions:

1. What is the level of nurses' knowledge regarding care for patients undergoing cholecystectomy?
2. What is the level of nurses' practice regarding care for patients undergoing cholecystectomy?

Subjects and methods:
Research design:
A descriptive exploratory design was used
Study setting:
The current study was conducted in three surgical departments at Zagazig University Hospitals, hepatic surgery and endoscopy department, general surgery department and vascular surgery department.

Study subjects:
A convenience sample of all available nurses (55) who worked at the surgical wards and caring for patient undergoing cholecystectomy at Zagazig University Hospital and accept to participate in the study.

Tools of data collection:
Two tools were used to collect data pertinent to this study.
Tool I: An Interviewing questionnaire was written in a simple Arabic language to avoid misunderstanding. It was designed by the researcher after reviewing of related literature (Dooley et al., 2018; Hodler, 2018) which consisted of two parts;
Part 1: Demographic characteristics of the nurses which included nurses' age, gender, marital status, department, qualification, years of experience and training courses about cholecystectomy.
Part 2: Questionnaire to assess nurses' knowledge regarding care for patients undergoing cholecystectomy: included questions about anatomy and physiology of gall bladder, definition of cholecystitis and cholelithiasis, risk factors, manifestations, investigations, surgical management, complications of surgical management, wound care,

pain management, health education and discharge instruction

Tool II: An observational checklist: will be used to assess nurses' practice regarding care for patients undergoing cholecystectomy, include pre and post operative care, pain management, exercices and wound care.

Content validity and reliability:

The tools were revised by a panel of five jury of expertise from nursing, who reviewed the tool's content for clarity, relevance, comprehensiveness, understandable and applicable. All recommended modifications were done. Reliability statistics of the study, Cronbach's Alpha that used to measure the internal consistency (reliability of used tool) was 0.78 for knowledge, 0.95 for Observational Chick list for nurses' practice.

Fieldwork

Field work of this study was executed in six month from July, 2019 to December, 2019. During this stage all the data were collected from the study subjects.The first phase of the work is the preparatory phase that done by meeting with head units after obtaining the official permission, to clarify the objective of the study and applied methodology. The second phase that done by observation of nurses' practice under the study before meeting, got a full explanation about the aim of the study and was invited to participate. The nurse who gave his/her verbal informed consent to participate was handed the interviewing questionnaire and was instructed during the filling.

The data were collected two days a week (Saturday and Sunday) in the morning and afternoon shift, the time used for finishing the questionnaire ranged between 20- 30 minutes for each nurse according to nurses' physical and mental readiness and for nurses' practice, also the researcher was observing nurses` practical skills three times about studied procedures. The time needed to complete the checklist varied ranged between 30-45 minutes.

Pilot study:

A pilot study for tools of data collection was performed to test the clarity, applicability, relevance and feasibility of the tools. For this study the researcher selected six (10%) nurses random to participate in the pilot testing of the questionnaire sheet, checklist and factors that affect nursing performance sheet and not excluded from the study sample because of no modifications in the tool.

Administrative and ethical considerations:

An official permission for data collection in Zagazig University Hospitals was obtained from the hospital responsible administrative personal by the submission of a formal letter from the Dean of the faculty of Nursing Zagazig University explaining the aim of the study in order to obtain permission and help.

At the interview, each nurse was informed about the purpose, benefits of the study, and they were informed that their participation is voluntary and they have right to withdraw from the study at any time without given any reason. In addition, confidentiality, and anonymity of the nurses were assured through coding of all data. The researcher assured that the data collected was confidential and would be used only to improve their knowledge and practice for the purpose of the study.

Statistical analysis:

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean ± SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. All tests were two sided. p- value < 0.05 was considered

statistically significant (S), and p-value ≥ 0.05 was considered statistically insignificant (NS).

Results:

Table 1 illustrates that, 69.1% of the studied nurses their age less than 30 years old with mean ±SD 34.8±9 and the most of studied nurses were females (96.4%). In addition 85.5% of studied nurses were married and 61.82% of studied nurses had nursing diploma. Also 80% of studied nurses had five years of experience. Meanwhile only 18.2% of studied nurses had previously attended training courses regarding patient undergoing cholecystectomy. 52.7% of studied nurses worked in general surgery department.

Table 2 clarifies that the studied nurses had satisfactory level of knowledge regarding anatomy and physiology of gallbladder, cholecystitis and gallstones, the symptoms and signs of cholecystitis and gallstones, pre-operative nursing care, laparoscopic cholecystectomy wound care, open surgical cholecystectomy wound care, counseling patient wound care after hospital discharge and counseling follow up guide (85.5%, 83.6%, 85.5%, 83.6%, 90.9%,83.6%,85.5%) respectively

Table 3 identifies that 69.1% of the studied nurses had satisfactory total knowledge regarding cholecystectomy. Meanwhile 30.9% had unsatisfactory total knowledge regarding cholecystectomy with mean± SD (87±19) and range from 3 to 118.

Table (4) illustrated that only 30.9% of studied nurses had satisfactory level of practice regarding removal of drain with mean score (4.86±2.86). Meanwhile, the studied nurses had unsatisfactory level of practice regarding pre -operative day, day of surgery, post-operative care, in hospital post cholecystectomy care, hemovac drain care, tube drain without suction care, pain Management, and wound care (100.0%, 81.8%, 80%,

98.2%, 74.5%, 85.5%, 96.4%, 76.4%) respectively

Table 5 presents that only 16.4% of the studied nurses had satisfactory total level of practice regarding patient undergoing cholecystectomy. Meanwhile 83.6% of the studied nurses had unsatisfactory total level of practice with mean± SD 73.13±29.18 and range from 16 to 131.

Table 6 demonstrates that, there was statistically significant relation between nurses' level of knowledge and age p=0.04, department p=0.026.

Table 7 clarifies that, there was statistically significant relation between nurses' level of practice and age p=0.019, department p=0.007, qualification p=0.0001 and training course p=0.047.

Table 8 demonstrates that, there was no statistically significant relation between total nurses' practice level and their total knowledge level p>0.05

Table 9 shows that there was a positive correlation coefficient between total knowledge score and years of experience at r= 0.275 with statistical significant difference p- value at 0.042. Also there was a positive correlation coefficient between practice score, age with r= 0.387 and years of experience with r= 0.377 with statistical significant difference p value at 0.004 and 0.005 respectively.

Discussion:

The results of the current study revealed that more than two thirds of the studied nurses their age less than 30 years old. In addition the majority of studied nurses had less than five years of experience and more than half of the studied nurses had nursing diploma. This finding in the same line with Menlah et al. [8] who reported that 68.5% of respondents were aged 20 to 30 years, most nurses had below 5 years surgical nursing experience and majority of the respondents had diploma in nursing.

Finding of this study clarified that the majority of the studied nurses had not previously attended training courses regarding patient undergoing

cholecystectomy. These findings in the same line with Said & Desouky [9] who illustrated that the majority of the studied nurses hadn't previously attend any training courses regarding cholecystectomy. This contraindicated with Saied et al. [10] who found that most of nurses attended previous training programs.

The current study clarified that more than two thirds of the studied nurses had satisfactory level of knowledge regarding patient undergoing cholecystectomy. This might be due to more than two thirds of the studied nurses their age less than 30 years old, so they have remember most of knowledge they have studied. This findings in the same line with Saied et al. [10] who revealed that the most of nurses had good level of knowledge regarding cholecystectomy, but disagreed with Ahmed [6] who that more than half of nurses had poor level of knowledge for cholecystectomy patient's care.

According to nurses' knowledge regarding anatomy and physiology of gallbladder, definitions, symptoms and signs of cholecystitis and gallstones the present study showed that the majority of the studied nurses had satisfactory level of knowledge. This contraindicated with Abdelhafiez [11] who found that more than half of the studied nurses had unsatisfactory level of knowledge about anatomy and physiology of gallbladder, definitions, symptoms and signs of cholecystitis and gallstones.

Based on the finding of the current study less than three quarter of the studied nurses had unsatisfactory level of knowledge regarding risk factors, investigation and the majority of them had unsatisfactory level of knowledge regarding medical treatment of cholecystitis and gallstones. This findings in the same line with Abdelhafiez [11] who reported that more than half of the studied nurses had unsatisfactory level of knowledge about risk factors, investigation and medical treatment of cholecystitis and gallstones.

The results of the current study revealed that the majority of the studied nurses had unsatisfactory level of knowledge regarding cholecystectomy. This result in the same line with Bhagirathee [12] who stated that nurses had unsatisfactory level of knowledge regarding cholecystectomy related to indication of conversion from laparoscopic to open surgery and the advantages of laparoscopic surgery. This contraindicated with Gamar-eldeen [13] who reported more than half of nurses known of Cholecystectomy.

The results of the present study illustrated that the majority of the studied nurses had unsatisfactory level of knowledge regarding complications of laparoscopic cholecystectomy. This result in the same line with Urban [14] who stated that the nurses demonstrated a sufficiently high level of knowledge regarding complications of laparoscopic cholecystectomy.

Concerning preoperative nursing care regarding patients undergoing cholecystectomy, this study clarified that more than three quarter of the studied nurses had unsatisfactory level of knowledge. This result in the same line with Hussein & Rada [15] who stated that the nurses ' knowledge were poor in all items concerning preoperative care because there were no update of their knowledge.

In relation to post-operative care regarding patients undergoing cholecystectomy, the present study clarified that majority of the studied nurses had satisfactory level of knowledge regarding cholecystectomy wound care. This result in the same line with Alaa Eldin [16] who found that majority of the studied nurses had satisfactory level of knowledge regarding cholecystectomy wound care.

Concerning pain relieve after laparoscopic cholecystectomy, the present study clarified that more than half of the studied nurses had satisfactory level of knowledge. This result in the same line with van Dijk et al. [17] that nurses had high knowledge

and more positive beliefs toward pain management.

Concerning nurses' knowledge regarding guidelines of discharge for patients undergoing cholecystectomy, the present study clarified that half of the studied nurses had unsatisfactory level of knowledge regarding post-operative feeding. This result agreed with Kadous et al. [18] who found that majority of the studied nurses had unsatisfactory level of knowledge regarding post cholecystectomy diet regimen.

Related to counseling patient about wound care after hospital discharge and follow up guide, the present study clarified that majority of the studied nurses had satisfactory level of knowledge. This finding contraindicated with Kadous [18] who reported that majority of the studied nurses had unsatisfactory level of knowledge regarding counseling patient about wound care, signs and symptoms of wound infection, pain management and follow UP guide after hospital discharge.

The present study reported that majority of the studied nurses had unsatisfactory total level of practice regarding patient undergoing cholecystectomy. This might be related to the majority of studied nurses had less than five years of experience, more than half of the studied nurses had diploma in nursing and not attended any training courses. Moreover shortage of nurses' number and lack of facilities like, unavailability of guideline books, procedure book about care of patient in surgical wards, lack of job description, unavailability of online books nursing library, uninteresting of nurses to attend workshops and conferences, all these factors contributed to the unsatisfactory practice level. This findings in the same line with Ahmed [6] who found that all of nurses had an inadequate (poor) level of practice regarding nursing care for patients with cholecystectomy and need developing nursing care standards to improve nurses` knowledge and practice.

Concerning nurses' practice regarding preoperative day and day of surgery, the present study revealed that all the studied nurses had unsatisfactory total level of practice regarding preoperative day and the majority of them had unsatisfactory practice regarding day of surgery. This findings agreed with Lee [19] who reported that nearly half of nurses did not provide all the necessary preoperative information to patients. These findings were in agreement with This finding contraindicated with Hamid [20] who illustrated that all of nurses do good preparation to the patient regarding to explanation of the procedure, write consent of the patient to the operative procedure, preparation of the file, check the pre-operative vital sign (blood pressure, pulse rate, and temperature) ECG, HB, fasting of the patient and changing in to the theater gown and skin preparation.

Concerning nurses' practice regarding drain removing, the current study revealed that more than two third of the studied nurses had unsatisfactory total level of practice regarding drain removal. This finding contraindicated with Atiyah, & Khudhur [21] who found that the results of the study show that the mean of score are high on items (Apply dry sterile dressing to the drain, Remove gloves and dispose in bag, Apply tape over drain) and moderate on items (Clean site of drain, Cut and remove suture, Instruct the patient to take a deep breath hold it, Grasping the drain by its full width at the level of skin, Pull the drain out by its required length, Apply tape over dressing (separate from drain), Wash hands, Dispose of supplies, Assist patient to comfortable position)

Concerning nurses' practice regarding pain management, the present study illustrated that most of the studied nurses had unsatisfactory total level of practice regarding pain management.This finding was in the

same line with Mahama, & Ninnoni, [22] who reported that nurses have never used any pain assessment tool due to lack of standard tool for assessing postoperative pain. Majority of nurses reported that managing pain by using medication was the norm especially in the first 24 hours after surgery.

Concerning nurses' practice regarding wound care, the current study reported that three quarter of the studied nurses had unsatisfactory total level of practice regarding wound care. This finding supported by Ding et al. [23] who reported that despite surgical wound care guideline recommendations on aseptic technique compliance, patient education, wound assessment and documentation practices, there is a clear gap between recommended and observed wound care practice. This finding contraindicated with Eskander, Morsy, & Elfeky [24] who reported that more than half of the studied sample had satisfactory performance level in surgical wound care, especially in relation to dressing frequency, and following principles of aseptic techniques during dressing.

Result of the current study showed that there was statistically significant relation between total nurses' knowledge regarding patients undergoing cholecystectomy and age. This finding was in the same line with Shoqirat et al. [25] who found that nurses' knowledge and attitudes toward pain management were associated positively with the age of the participant, years of experience in the surgical area, and academic degree of participants.

The result of the current study showed that there was statistically significant relation between total nurses' knowledge regarding patients undergoing cholecystectomy and department. This finding disagreed with Arab [26] who reported that despite the increase of knowledge in general and orthopedic surgery units compared with other units, there was no significant relationship between

hospital units and increased levels of knowledge and attitudes.

The result of the present study showed that there was statistically significant relation between nurses' level of practice and age, department, qualification and training course. This finding was in the same line with Lee [19] who reported that nurses who had participated in surgical or perioperative training courses were detected to have greater satisfaction towards preoperative teaching. Also, this finding was supported by Rafati et al. [27] who found that bachelor prepared nurses had good pain management practices to patients better than nurses with lower qualifications. In congurent with Kadous [18] who clarified that there was a statistical significant relation between nurses' total knowledge scores and total practices scores as regards their socio-demographic characteristics. Moreover, a highly positive correlation was indicated between patients' knowledge and practices.

The current study illustrated that there was a positive statistically significant correlation between knowledge score and years of experience. This explained that increase years of experience in surgical units promote nurses knowledge as a result of increased number of follow up cases and dealing with them. Also, nurses with more years of experience become more expert and knowledgeable. Similarily with Zarchi et al. [28] found that nurses had a good knowledge of wound care and the number of years of experience had a positive impact on the level of knowledge

The current study showed that there was a positive statistical significant correlation between practice score and age. Also there was a positive statistical significant correlation between practice score and years of experience. This finding was in the same line with Eskander, Morsy, & Elfeky [24] who reported that positive correlations were found between mean practice scores; age and years of

experience. But, contraindicated with Lee [19] who found that Nurses' perceptions and their satisfaction with preoperative teaching had no correlation with the other demographic variables.

Conclusion:

The results of the present study concluded that more than two thirds of the studied nurses had satisfactory total level of knowledge regarding patient undergoing cholecystectomy and the majority of the studied nurses had unsatisfactory total level of practice regarding patient undergoing cholecystectomy.

Recommendations:

Based on the results of the current study, the following suggestions for future research and practice are proposed:

- Continuous in-service training programs are recommended to improve and maintain nursing performance regarding care for Patients Undergoing Cholecystectomy.
- Implementing an educational program for nurses to improve their performance regarding management of patients before and after surgery, surgical units should be supplied by a protocol regarding nursing performance for patients undergoing surgical procedures.

Further studies:

- study should be replicated on large sample and in different hospitals settings in order to generalize the result.

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Table 1: Demographic characteristics for studied nurses (n = 55):

Demographic Characteristics	No.	%
Age per years		
≥30	17	30.9
<30	38	69.1
Mean ±SD	34.8±9	
Range	20-59	
Sex		
Male	2	3.6
Female	53	96.4
Social status		
Married	47	85.5
Single	8	14.5
Experience per year		
>5	11	20.0
≤5	44	80.0
Mean ±SD	14 ±10.7	
Range	0-40	
Department		
Liver endoscopy	23	41.8
General surgery	29	52.7
Vascular surgery	3	5.5
Qualification		
Diploma	34	61.82
Technical institute	13	23.64
Bachelors'	8	14.54
Training		
Yes	10	18.2
No	45	81.8

Table 2: Frequency distribution of nurses' knowledge regarding care for patients undergoing of cholecystectomy (n = 55):

Nurses` knowledge items	Satisfactory		Unsatisfactory		Mean ± SD
	No.	%	No.	%	
The gallbladder anatomy and physiology	47	85.5	8	14.5	5.5±1.8
Definitions of cholecystitis and gallstones	46	83.6	9	16.4	5.9±2
Risk factors of cholecystitis and gallstones	15	27.3	40	72.7	4.6±2
The symptoms and signs of cholecystitis	47	85.5	8	14.5	7.7±2.2
Complications of cholecystitis	32	58.2	23	41.8	2.7±1.2
Investigations of cholecystitis	14	25.5	41	74.5	0.8±1
Treatment methods of cholecystitis	10	18.2	45	81.8	0.18±0.4
Cholecystectomy	16	29.1	39	70.9	0.89±0.96
Complications of LC	6	10.9	42	76.4	3.1±1.6
Complications of OC	33	60.0	22	40.0	3.8±1.9
Preoperative nursing care	13	23.6	9	16.4	6.8±2.6
wound care in LC	46	83.6	49	89.1	5.1±1.8
wound care in OC.	50	90.9	54	98.2	6.7±1.8
Signs of wound infection.	37	67.3	5	9.1	0.67±0.47
Pain relief after LC	33	60.0	22	40.0	4.7±2.3
Pain relieve after OC.	1	1.8	21	38.2	0.02±0.13
Period of stay	34	61.8	20	36.4	1.7±0.82
Post -operative movement	35	63.6	18	32.7	1.9±1
Post- operative drainage	37	67.3	40	72.7	1.6±0.69
Postoperative fluid intake	15	27.3	19	34.5	0.27±0.4
Post-surgery symptoms	36	65.5	18	32.7	3.2±1.5
Feeding instructions	27	49.1	28	50.9	1.4±0.96
daily activity instructions	22	40.0	33	60.0	2.4±1.4
wound care instructions	46	83.6	9	16.4	7.7±2
pain relief instructions	32	58.2	23	41.8	2.7±1.1
follow up instructions	47	85.5	8	14.5	5.6±1.8

Table 3: Total nurses' Knowledge regarding care for patient undergoing cholecystectomy:

Variable	No.	%	Mean ± SD	Range
Total Nurses' knowledge regarding cholecystectomy			87±19	3-118
Unsatisfactory	17	30.9		
Satisfactory	38	69.1		

Table 4: Frequency distribution of nurses' practice regarding care for patients undergoing cholecystectomy (n = 55):

Nurses' Practice Items	Satisfactory		Unsatisfactoy		Mean ±SD
	No.	%	No.	%	
Pre -operative day	0	0.0	55	100.0	4.3±2.1
Day of surgery (Morning)	10	18.2	45	81.8	7.6±3
Post-operative care	11	20.0	44	80	15.66±5.15
In hospital post cholecystectomy care	1	1.8	54	98.2	3.03±5.1
Hemovac drain care	14	25.5	41	74.5	12.18±5.33
Tube drain without suction care	8	14.5	47	85.5	10.04±4.65
Removal drain	17	30.9	38	69.1	4.86±2.86
Pain management	2	3.6	53	96.4	2.49±1.64
Wound care	13	23.6	42	76.4	13.02±5.99

Table 5: Total nurses` level of practice regarding care for patient undergoing cholecystectomy (n=55):

Variables	No.	%	Mean ±SD	Range
Total Nurses' practice			73.13±29.18	16-131
Unsatisfactory	46	83.6		
Satisfactory	9	16.4		

Table 6: Relation between demographic characteristics of the studied nurses and their knowledge regarding cholecystectomy (n=55):

Demographic Characteristics	Knowledge level				Number	χ 2	p-value
	Unsatisfactory n=17		Satisfactory n=38				
Age						4.2	0.04*
≥30	2	11.76	15	88.24	17		
<30	15	39.47	23	60.53	38		
Sex						f	0.53
Male	1	50.0	1	50.0	2		
Female	16	30.19	37	69.81	53		
Social Status						f	0.99
Married	15	31.92	32	68.09	47		
Single	2	25.0	6	75.0	8		
Department						7.33	0.026*
Liver endoscopy	7	30.44	16	69.57	23		
General surgery	7	24.14	22	75.86	29		
Vascular surgery	3	100.0	0	0.0	3		
Qualification						0.81	0.67
Diploma	12	35.29	22	64.71	34		
Technical institute	3	23.08	10	76.92	13		
Bachelors'	2	25.0	6	75.0	8		
Experience						f	0.14
>5	1	9.09	10	90.91	11		
≤5	16	36.36	28	63.64	44		
Training						f	0.99
Yes	3	30.0	7	70.0	10		
No	14	31.11	31	68.89	45		

χ 2   Chi square test   f=Fisher exact test   (*) Statistically significant at p≤0.05

Table 7: Relations between demographic characteristics of the studied nurses and their practice regarding care for patients undergoing cholecystectomy (n=55):

Demographic Characteristics	Practical level				Number	χ 2	p-value
	Unsatisfied n=46		Satisfied n=9				
Age						f	0.019*
≥30	11	64.71	6	35.29	17		
<30	35	92.11	3	7.89	38		
Sex						f	0.3
Male	1	50.0	1	50.0	2		
Female	45	84.91	8	15.09	53		
Social Status						f	0.6
Married	40	85.11	7	14.89	47		
Single	6	75.0	2	25.0	8		
Department						9.8	0.007*
Liver endoscopy	15	65.22	8	34.78	23		
General surgery	28	96.55	1	3.45	29		
Vascular surgery	3	100.0	0	0.0	3		
Qualification						17.7	0.0001*
Diploma	34	100.0	0	0.0	34		
Technical institute	7	53.85	6	46.15	13		
Bachelors'	5	62.5	3	37.5	8		
Experience						f	0.36
>5	8	72.73	3	27.27	11		
≤5	38	86.36	6	13.64	44		
Training						f	0.047*
Yes	6	60	4	40.0	10		
No	40	88.89	5	11.11	45		

(*) Statistically significant at p≤0.05

Table 8: Relation between total nurses' level of knowledge regarding care for patients undergoing cholecystectomy and total level of practice (n=55):

	Total practice level				number	test	p-value
	Unsatisfied n=46		Satisfied n=9				
Total knowledge level						4.2	0.56
Unsatisfied	13	76.5	4	23.5	17		
Satisfied	33	86.8	5	13.2	38		

Table 9: Correlation between knowledge score, practice score, age of nurses and years of experience of studied nurses (n=55):

parameters	knowledge score		Practical score	
	(r)	p	(r)	p
Practical score	0.085	0.535		
Age year	0.21	0.11	0.387*	0.004
Experience year	0.275*	0.042	0.377*	0.005

(r) Correlation coefficient   **significant p<0.05*

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