

Effect of self-learning package on nurses knowledge and practices regarding patient care undergoing laparoscopic cholecystectomy

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Abstract

Background: Nurses caring for patients undergoing cholecystectomy spend more time with patients than do any other health care providers and patient outcomes are affected by nursing care quality. Thus, improvements in patient safety can be achieved by improving nurses' practice competence. **Aim:** to assess effects of the self-learning package (SLP) on nurses' knowledge and practices regarding patient care undergoing laparoscopic cholecystectomy. **Setting:** the study was carried out in saied Galal & Elhussien hospital at the Alazhar University Hospitals. **Method:** A quasi-experimental research design was utilized to conduct this study using a pretest-posttest and follow up test approach, using two tools to conduct this study (knowledge questionnaire sheet & Observational checklist sheet regarding patient care undergoing laparoscopic cholecystectomy). A convenient sample of 60 nurses were selected to achieve the aim of the present study. **Study results:** results of this study revealed that there were highly statistically significant differences with the increase of the total scores of nurses' knowledge and practice pre/post pre/follow up and post/follow up. **The study concluded** that, there was statistically significant positive effect of SLP on nurses' knowledge and practice. As a result of this study, **the study recommended;** conduction of further researches in this area in order to enrich, improve, & update nurse's practice. Periodic in-service education program regarding nursing care for patient undergoing laparoscopic cholecystectomy and self-learning package to be performed for patients are recommended.

Keywords: self-learning package, laparoscopic cholecystectomy, post-operative care

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Introduction:

Laparoscopic cholecystectomy is a gold standard procedure for the management of gallbladder stone. Gallstones are composed of substances usually found in bile, such as cholesterol, bilirubin, bile salts, calcium, and various proteins. They are classified as either cholesterol stones or pigment stones. Cholesterol calculi form as a result of metabolic imbalances of cholesterol and bile salts. They are the most common

type found in people in the United States (*Di Ciaula, Wang & Portincasa, 2019*).

Disruption of neuro innervation, blockage of the cystic duct from gallstones, or other etiologies can cause symptoms of chronic or acute cholecystitis. Tests such as a nuclear HIDA (hepatobiliary) scan with CCK, or ultrasound are used to diagnose gallbladder disease. The gallbladder is distensible, and when the cystic duct is obstructed, it can enlarge to twice its size. This may result in infection and

inflammation requiring surgical removal (*Lammert et al., 2018*).

In any year, approximately 1% to 3% of patients with gallstones experience gallstone related difficulty. These complications can occur in patients with or without symptoms. Patients without previous symptoms from gallstones have a slightly lower 10-year cumulative risk of complications 3% to 4% vs approximately 6% in patients who have had gallstone-related symptoms (*Portincasa et al., 2016*).

Calculous cholecystitis is the most common type of cholecystitis and accounts for around 95 per cent of all cases. This happens when the cystic duct gets explicitly blocked by a gallstone or a kind of bile called biliary sludge. According to the NIH, after several attacks of pain, chronic cholecystitis may occur. This involves the gallbladder shrinking and losing its function. "Those prone to gallbladder disease usually fall into the "5 F's": fair, fat, 40, female, and flatulent!" said Knowlton (*Tsamalaidze et al., 2017*).

Laparoscopic cholecystectomy is a multiple incisions are made in the patient's abdomen, and a specialized camera is used during the procedure. Hospital stays are usually less than 24 hours, and most patients can return to normal activities within two weeks (*Lammert et al., 2018*).

Cholecystectomy is the surgical removal of the gallbladder. Cholecystectomy is a standard treatment of symptomatic gallstones and other gallbladder conditions. In 2011, cholecystectomy was the 8th most common operating room procedure

performed in hospitals in the United States. Cholecystectomy can be performed either laparoscopically, using a video camera, or via an open surgical technique (*Weiss, Elixhauser & Andrews, 2016*).

After surgery, most patients are admitted to the hospital for routine monitoring. For uncomplicated laparoscopic cholecystectomies, people may be discharged on the day of surgery after adequate control of pain and nausea. High-risk patients, those who required emergency surgery, and those undergoing open cholecystectomy usually need to stay in the hospital several days after surgery (*Kim, Jo & park 2017*).

Nurses are given the responsibility of taking care of patients undergoing laparoscopic cholecystectomy. The examination process includes the level of respiration in the patient, the level of blood pressure in the patient. This helps patients deal with any specific anxiety and helps them feel more in control. Nurses should be adequately prepared for their role in managing. Pre-operative anxiety so that they can act as an advocate for patients (*Mitchell, 2019*).

Health needs of patients undergoing laparoscopic cholecystectomy, including the provision of information related to preoperative education, which is a crucial part of improving the postoperative period and preventing postoperative complications. Also, the provision of information about the postoperative period includes postoperative pain management, exercise, nutrition, activity, and follow up for evaluation of the care. This postoperative care is critical to prevent

post-operative complications that lead to postoperative mortality and prolonged hospital stay, decrease functional and cognitive status. It has a considerable impact effect on hospital costs (*Renholm, 2015*).

Self-learning package is essential in assisting nurses to meet the challenges presented in today's health care environment. Nurse educators have an important role to play in assisting nurses to acquire the skills for Self-learning package, and to do this they need to understand the concept of Self-learning package. In self-learning is that instead of instructor-centered learning, it takes learner at the center. Also control and learning responsibility is at the students and he/she determines what, how, where and when to learn (*Levett, 2015*). Self-learning is to provide learner to; manage learning without planning, be responsible and controller until the process of evaluation, decide, improve skills of learning and interrogation and his/her self-confidence (*Williams, 2017*).

Significance of the study:

Cholecystectomy procedure is performed annually in the United States, and 80% to 90% of them are candidates for laparoscopic cholecystectomy (*Trikudanathan et al., 2019*). In Egypt, the incidence of laparoscopic cholecystectomy in the Gastroenterology Surgical Center at Mansoura University was approximately 1200 procedure through the year 2018. Statistical Department at El Demerdash Surgical Hospital, (2019) reported that about 2200 cholecystectomy procedure was done through the year 2019. Statistical Department at Saied Gala in Bab Sharia

said that approximately 1003 cholecystectomy procedure was done through the year 2019 and 50% to 60% of them are candidates for laparoscopic cholecystectomy.

The nurses receive inadequate information and support and not enable to contribute in the provision of care for patients undergoing laparoscopic cholecystectomy to the degree that they would desire. Therefore, an assessing and improving of the knowledge and practices of nurses regarding care for patients undergoing laparoscopic cholecystectomy is necessary. Thus this study carried out to determine the effect of self-learning package on nurse's knowledge and practices regarding the care for patients undergoing laparoscopic cholecystectomy and finally, the study may create an interest and motivation for conduction of further studies into this area

The present study aims to:

Assess effect of self-learning package on nurse's knowledge & practices regarding the patient care undergoing laparoscopic cholecystectomy.

Research hypothesis:

Self-learning package has a positive effect on nurses knowledge and practices regarding the patient care undergoing laparoscopic cholecystectomy.

Subjects and methods:

Study Design: A quasi-experimental research design was utilized to meet the aim of this study.

Setting of the study:

This study was conducted at the surgical department at Saied Gala in Bab Sharia and Hussein hospital affiliated to Alazhar University. Because of a limited number of nurses working in the surgical department in Saied Gala in Bab Sharia. The setting of the surgical department at Saied Gala in Bab Sharia contains three departments. The first department called Dr. Mohammed Al-Qardi that contains four rooms and 12 beds. The second department, called Dr. Ashraf Abdel Hamid that contains 6 rooms and 20 beds. The last department, called Dr. Magdy Mahmoud that includes 5 rooms and 21 beds. The surgical department in Hussein hospital consists of 4 departments (A, B, D, and G). The first surgical department, A, consists of 4 rooms and 32beds. The second department B consists of 4 rooms and 24 beds. The third department D, consists of 26 beds. The last department G consists of 4 bedrooms, 26 beds. The care is provided by a multidisciplinary team of nurses, doctors, and social workers. The working hours are three shifts in the morning, afternoon and night shifts.

Sample:

A convenience sample of all available nurses (60 nurses) from both sexes working in surgical department in Saied Gala in Bab Sharia and El-Hussein hospital affiliated at Alazhar University who are willing to participate in the study.

Tools for data collection:

All tools were developed by the researcher after strength review of the relevant literature (Abdel Hafez, 2016, Mitchell, 2019, Brenner & Kautz,

2019) to assess nurses knowledge and practice regarding patient care undergoing laproscopic cholecystectomy. The two tools were used to gather data pertinent to the study as follows:

Tool I: Knowledge questionnaire sheet to assess Nurses' Demographic and knowledge regarding patient care undergoing laproscopic cholecystectomy; it consisted of two parts as follows:

Part A: Nurses' Demographic characteristics; such as age, gender, qualification, years of experience in the surgical department , Training courses on nursing care for patients undergoing laparoscopic cholecystectomy.

Part B: Nurses knowledge regarding patient care undergoing laproscopic cholecystectomy; This includes (anatomy and physiology of gall bladder. Definition, indication, contraindication, risk factor, advantage, disadvantage, complication, the role of the nurse in preparing the patient for laparoscopic cholecystectomy, causes, signs, and symptoms of gall stones...etc) and It composed of 125 items all of that true or false questions.

Scoring system: Nurses' knowledge items were evaluated the correct answer was given two score and the incorrect answer was given one score. The total scoring system of nurses knowledge was 125. They were calculated and classified as; 75% or more were considered a satisfactory level of knowledge, while less than

75% were considered un satisfactory level of knowledge .

Tool II: Observational checklist sheet:

It was developed and filled by the researcher to assess the level of nurses practices regarding care for the patient undergoing laparoscopic cholecystectomy with gallbladder disease (acute cholecystitis). It included the following items 1- pre-operative-care of laparoscopic cholesectomy including (a) day before surgery e.g review medical records and & nursing data base...etc and (b) day of suergy (morning) e.g check vital signs...etc 2- post-operative care including immediate post-operative care , ongoing care such as assess respiratory function, wound care & pain management... etc.). A scoring system was followed to assess nurses' practice; each satisfactory practice was assigned a score according to sub-items. The total score of nurses' practices was 86 grades; each item was evaluated as "done correct" was taken 2 score, and "Not done" was taken 1 scores. These scores were summed up and were converted into a percentage score. It was classified into two categories:

- Competent if score \geq 80%.
- In- Competent if score $<$ 80%.

Content validity: It was carried out by a panel of nine experts whom were reviewed the instrument and the learning package for clarity, relevance, comprehensiveness, understanding, and easiness for administration was established, minor modifications were required. Experts group was consisting of nine members, (2) Lecturer, (3) Assistant Professors , (3) Professors of

Medical Surgical Nursing at Ain-Shams and Helwan University and (1) Professor of laparoscopic surgery at Alazhar university hospitals.

Reliability of the tools: Alpha Chronbach test was used to measure the internal consistency of the tools. These showed high reliability scores for the used tools were valid and reliable at (0.826) for practice tool and at (0.672) for knowledge tool.

Pilot study: It was carried out on 10% of the total study nurses. This was done to test clarity, arrangement of items and the applicability of the tools. Modifications based on the result of pilot study were made; some statements were omitted, added or rephrased. Nurses who shared in the pilot study were excluded from the main study sample. Finally, the final forms were developed.

Ethical Considerations: An official permission was obtained before conducting the current from Alazhar university hospital administrators. Written approval was obtained from the studied subjects after clarification of the aim of the current study. Privacy and data confidentiality were assured to all studied subjects.

The studied subjects were assured that every one had the right to withdraw from the present study at any time of the research process.

Field work: It includes three phases: 1) Planning phase, 2) Implementation phase, 3) Evaluation phase.

1-Planning the self-learning package:

The self-learning package was developed in Arabic language based on nurse's needs assessment from the

results of the data analysis of the nurses knowledge questionnaire & observational checklist sheet after reviewing of the literature which related to the practices necessary for giving the care for patient undergoing laparoscopic cholecystectomy.

In addition, this package was tested by an exam for every unit and model answers at the end of the unit. The designed SLP included the following (nursing guidelines regarding care for patient undergoing laparoscopic cholecystectomy and CD-ROM about this care). Educational principles were reviewed for the development of the self-learning package.

2-Implementation of the self-learning

package: The actual fieldwork for the process of data collection of this study was started and completed within six months from the first week of February (2019) to the end of June (2019). During morning shift and afternoon shift, four days/week. The knowledge questionnaire & observational checklist sheets were carried out to assess knowledge & practices of the nurses regarding care for the patient undergoing laparoscopic cholecystectomy with gallbladder disease (acute cholecystitis). It included the following items (pre and post-operative care, wound care, pain management... etc.). the knowledge questionair sheet was filled in by the nurses and the observational checklist sheet was filled in by the researcher by direct observation carried out before implementing SLP (pre phase). After one month from studying the package (post phase), and finally after three

months (follow up phase). The nurses were given the Arabic self-learning package, with clarification related to how the package is to be used. These were given in 25 minutes to every unit separately (surgical department). The time allowed to study the package is one month for all nurses. After one month the post assessments of practice were applied and a follow up test were performed after three months. Contacts with the nurses were done through the interviewing in the surgical department and telephone to explain some difficult points of the SLP which encountered the nurses during the time of the study .

3-Evaluation of the self-learning package:

This phase includes evaluating the effect of self-learning package on the nurses' knowledge & practices by comparing the results pre/post self-learning package 1 month and after three months in the follow up test, using the same study tools .

III. Administrative Design

To carry out the study, the necessary approvals were obtained from the Director and Nursing Director of Saied Gala in Bab Sharia and El-Hussein hospital affiliated at Alazhar University Hospitals. The verbal approval was taken from nurses who agreed to participate in the research process. Permission was taken from the administrative personnel and the head nurses/supervisors of surgical departments. After the permission was granted to proceed with study, the head nurse of the surgical departments was oriented about the objective of the study, to ensure

maximum cooperation from the nurses in the study group.

Statistical design: The collected data were organized, categorized, tabulated and statistically analyzed using the Statistical Package for Social Science (SPSS), version 15, to evaluate the change for nurses under the study (pre and post Self Learning Module and after three months). Data were presented in tables and charts using numbers and percentages. The statistical analysis included percentage (%), mean and standard deviation (SD), range, Chi-square (χ^2), ANOVA test (F-test) and Pearson coefficient (r). The observed differences, and associations were considered statistically significant at $P < 0.05$. Significance of results was described as follows: Non significant (NS) difference obtained at $p > 0.05$, Significant (S) difference obtained at $P < 0.05$ and highly significant (HS) difference obtained at $P < 0.001$.

Results:

Table (1): shows that about two thirds (60%) of the study sample were females. Regarding the age of the study sample, (51.7%) of them were in the age between (20-<30 years old) with a mean age (33.5 ± 8.2). Regarding educational qualification, it was found that (48%) of them have nursing Technical Institute of nursing while, (40%) of the study sample had from 5 to less than ten years of experience in the surgical department with the mean of (9.18 ± 8.4).

Figure(1): This figure shows that (55%) of the studied nurses not attain any training courses on nursing care for patients undergoing laparoscopic cholecystectomy.

Table (2) showed that highly statistically significant improvement in the nurses' knowledge pre, post, and follow up means level in the post-test than that reported of the pre-test, $P < 0.001$.

Table (3) As regard nurses' practice about pre-operative care for patients undergoing cholecystectomy this table revealed that, the high mean score of total nurse's level of practice score (22.9 ± 2.3) had showed in post phase after the implementation of self-learning package with maximum score 26 & minimum score 18 followed by (21.23 ± 2.1) in follow up phase. While in the pre phase the mean score was (14.73 ± 1.63).

Table (4) As regard nurses' practice in the day of Surgery: (Morning) pre-operative care for patients undergoing laparoscopic cholecystectomy this table revealed that, the high mean score of total nurse's level of practice (23.80 ± 0.130) had showed in post phase after the implementation of self-learning package with maximum score 20 & minimum score 24 followed by (21.22 ± 0.18) in follow up phase. While in the pre phase the mean score was (14.80 ± 0.535).

Table (5) As regard nurses' practice **in the immediate post-operative care** for patients undergoing laparoscopic cholecystectomy this table revealed that, the high mean score of total nurse's level of practice (**23.38 ± 0.176**) had showed in post phase after the implementation of self-learning package with maximum score 25 & minimum score 20 followed by (22.02 ± 0.172) in follow up phase. While in the pre phase the mean score was (14.87 ± 3.412).

Figure (2): This figure shows that (23.3%) of the studied subjects had incompetent total practice in pre phase, while (93.3. %) had a competent total practice level in post implementation of self-learning package and (78.3%) had a competent total practice level in follow up phase after 3 month related to the

nurses practice regarding patient care undergoing laparoscopic cholesectomy.

Table (6) indicated a statistically positive correlation among total knowledge score levels and practice throughout the self learning package that ensures that adequate knowledge effects directly in the nurses' practice.

Table (1): Percentage Distribution of Demographic Data of Nurses under the Study (N=60):

Items	N	%
Gender		
Female	36	60
Male	24	40
Age (year)		
20-<30	31	51.7
30-<40	17	28.3
≥40	12	20
Mean SD	33.5±8.2	
Qualification		
Diploma Nurse	16	26.7
Technical Institute	29	48.3
Bachelor of Nursing	10	16.7
Post Graduate Studies	5	8.3
Years of Experience		
< 5	4	6.7
5-<10	27	45
10-<15	16	26.7
≥15	13	21.7
Mean SD	9.18±8.4	
Training courses on nursing care for patients undergoing laparoscopic cholecystectomy		
Yes	27	45
No	33	55

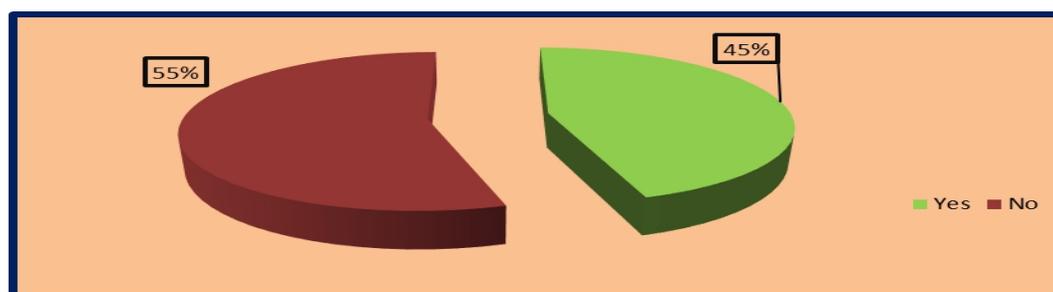


Fig. (1): Percentage Distribution of Training courses on nursing care for patients undergoing laparoscopic cholecystectomy for nurses under the Study (No=60).

Table (2): Mean \pm SD of Total Scores of Nurses Knowledge regarding nursing care for patients undergoing laparoscopic cholecystectomy for nurses under the Study through the 3 phases of the study (No=60).

Total scores of Knowledge Mean \pm SD		F	P-value
• The nurses knowledge level Pre – self learning package	21.783 \pm 2.26	9.22	0.000**
• The nurses knowledge level Post - self learning package (after 1 month)	27.06 \pm 3.59		
• The nurses knowledge level Follow-up after self learning package(after 3 months)	26.28 \pm 3.18		

**Highly statistical significant at $p \leq 0.001$

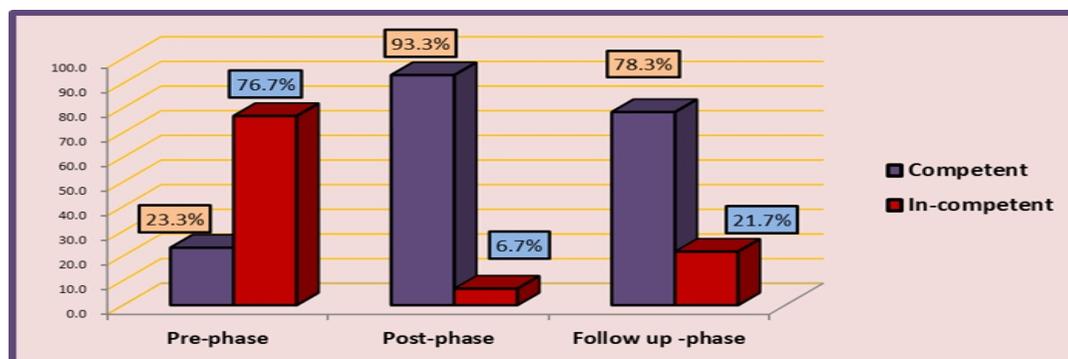


Fig. (2): Percentage Distribution of Total practices Level of Nurses under the Study (No=60).

Table (3): Mean ,SD, Maximum & Minimum of the Total Scores of Nurse's practice level regarding their practice in the day pre-operative care for patients undergoing LC through the phases of the study sample (n=60).

Pre-operative care items	Pre-phase	Post-phase	Follow up phase
Total Pre-operative Nursing practice Score			
X ²	14.73	22.9	21.23
SD	\pm 1.63	\pm 2.3	\pm 2.1
Maximum	21	26	24
Minimum	11	18	14

Table (4): Mean ,SD, Maximum & Minimum of the Total Scores of Nurse's practice level regarding their practice in the day of Surgery: (Morning) pre-operative care for patients undergoing LC through the phases of the study sample (n=60).

The practice items in the day of Surgery	Pre-phase	Post-phase	Follow up phase
Total Day of Surgery practice Score			
X ²	14.80	23.80	21.12
SD	± 0.535	± 0.130	± 0.18
Minimum	11	20	20
Maximum	21	24	22

Table (5): Mean ,SD, Maximum & Minimum of the Total Scores of Nurse's practice level regarding their practice in the immediate post-operative care for patients undergoing LC through the phases of the study sample (n=60).

The practice items in the immediate post-operative care	Pre-phase	Post-phase	Follow up phase
Total Post Operative Care Score			
X ²	14.87	23.38	22.02
SD	± 3.412	± 0.176	± 0.172
Maximum	21	25	23
Minimum	13	20	19

Table (6): Correlation between knowledge, and practices of Nurses' in pre, post & follow up throughout the SLP (No =60).

Item	Total scores of knowledge					
	Pre-phase		Post-phase		Follow-up phase	
	r	P-value	r	P-value	r	P-value
Total Practice	0.624	0.000**	0.598	0.001**	0.236	0.038*

*correlation is significant at the 0.05 level

Discussion:

Regarding the demographic characteristics of the studied sample caring for patients undergoing laparoscopic cholecystectomy, the present study showed that about two thirds of the study sample were females. Regarding the age of the study sample, more than half of them were in the age between (20-<30 years old) with a mean age (33.5 ± 8.2). This finding was supported by *Eldeen, (2016)*, which about "assessment of nurse's knowledge about nursing management for Patients undergoing cholecystectomy in Elmak Nimer University Hospital" mentioned that more than three-quarters of the studied group were age between (25-30) a year and the majority of the gender of the study group were females.

Also, these finding was in line with *AbdHafez, (2016)* which entitled "developing nurses' performance guideline for a patient undergoing cholecystectomy based on needs assessment" which found that the majority of the studied nurse was female. This finding was opposite with (*Kadhim, 2018*) study entitled "Assessment of postoperative nurses' interventions for the patients with laparoscopic cholecystectomy at Baghdad teaching hospitals" that found that the majority of the studied nurse were males.

Concerning the educational qualifications of the studied sample, the present study clarified that less than half (48%) of them have nursing Technical Institute of nursing while, less than half (40%) of the study sample had from 5 to less than ten years of experience in the surgical department with the mean of

(9.18 ± 8.4). The current study was in disagreement with *Kim & Massad, (2016)*, who conducted a study about "Assessment of nurse's knowledge about nursing management for patients undergoing cholecystectomy in Elmak Nimer University hospital" and mentioned that less than half of the studied nurses had (1-3) years and less than three quarters were bachelor of nursing.

As regards to training courses for nurses about the care of the patient undergoing laparoscopic cholecystectomy, this study clarified that more than half of them had no training courses this result may be due to shortage of nurses number that did not let them have time to attend a course or lack of awareness about the effect of the training courses on the practices of the nurses and quality of care rendered to a patient undergoing laparoscopic cholecystectomy. This finding was supported by (*Said & Desouky, 2018*) whose study was about "Comparative study: postoperative nurses' competency regarding cholecystectomy at university and non-university hospitals" and mentioned that the highest percent did not attend any training regarding cholecystectomy (*Dickerson & Chappell, 2016*) emphasized that nurses need to participate in additional training to build the knowledge and skills needed to practice safely in their setting. Based on the investigator's point of view, all nursing staff in surgical wards should be enrolled in a training session to improve their performance for patient laparoscopic cholecystectomy.

As regard to nurses' total scores of knowledge regarding patient care undergoing laproscopic cholecystectomy

throughout the self learning package findings of the present study revealed that increase in the percentage of total knowledge score levels at the post and follow-up test as more than three quarter and the three quarter of the nurses had satisfactory knowledge compared to one quarter of them pre-SLP. This result was supported by (Dickerson & Chappell, (2016) and emphasized that nurses need to participate in additional training to build the knowledge and skills needed to practice safely in their setting.

As regard to total nurse's practices score level less than quarter of the studied subjects had in-competent total practice in pre phase, while most of them had a competent total practice level in post implementation of self-learning package and two third had a competent total practice level in follow up phase after 3 month related to the nurses practice regarding patient care undergoing laparoscopic cholesectomy.

This result supported by (Said &Desouky, 2018);which revealed that an improvement in nurse's practice after the attendance at continuing nursing education sessions. increase knowledge, and can improve practice.

in pre-post-operative care for patients undergoing cholecystectomy, findings of the present study revealed that less than quarter of the studied subjects had in-competent total practice in pre phase (before the self- learning package implementation). This may be due to lack of training and uninteresting of nurses to attend workshops.

As regard to nurse's practice in pre,post-operative care for patients undergoing cholecystectomy, findings of the present study revealed that most of

them had a competent total practice level in post implementation of self-learning package. This finding supported by Radunovic et al. (2016) recommended that educational programs should be organized according to the needs of nurses with continuous evaluation and adopting proper checklists for work monitoring to enhance patient and staff awareness, lead to reduced process errors, reducing overall risks, eventually resulting in effective patient care. Bertleff et al. (2018) noted that nurse's Original article Knowledge and practice improved immediately after attending the training programs.

The current study revealed that, a statistically positive correlation 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. This finding was supported by Ahmed , Essaa &ahmed (2019), which about "Assessment of nurses' knowledge and practice regarding postoperative open cholecystectomy patients at Assiut University hospital," was found that there was a positive relationship between total knowledge score and total practice score. Also, Ahmed & Abdo, (2018) was disagreeing with the current study, which revealed that "There was no positive correlation between nurses' knowledge and practice in pre, immediately and one -month posttest."

Conclusion

Based on the results of the current study, it can be concluded that:

a statistically positive correlation among total knowledge scores levels and total practice scores throughout the self

learning package that ensures that adequate knowledge effects directly in the nurses' practice.

There was a highly statistically significant correlation between total score of nurse's knowledge & practice

Self-Learning package (SLP) has a positive effect on nurses' knowledge & practice to attain research hypothesis.

Recommendations

On the light of the current study findings the following recommendations are suggested.

- Establish in-service training programs for continuous updating nurses' practice about nursing care for the patient undergoing laparoscopic cholesectomy.
- Additional studies should be carried out in different settings, on a larger sample for wider utilization of the SLP, in turn to attain generalization of the results.

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