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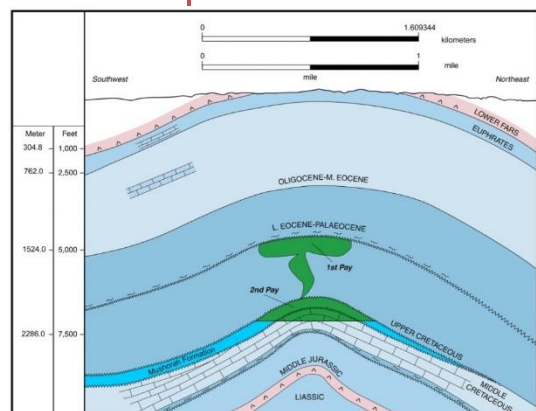
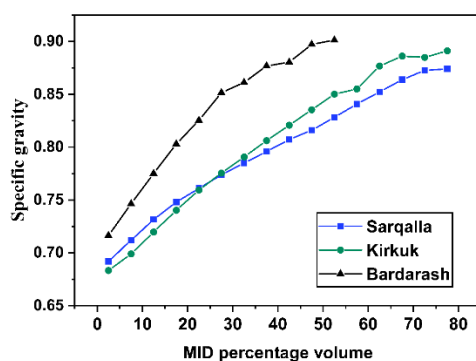
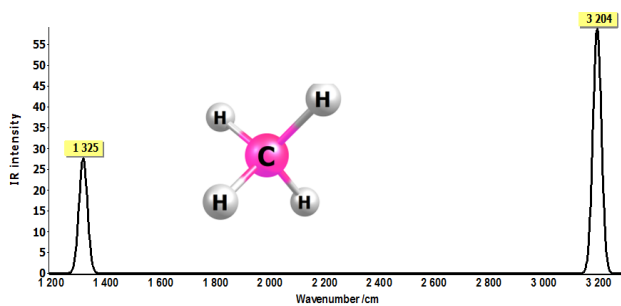
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Assessment of Postoperative Nurse's Intervention in Patients with Laparoscopic Cholecystectomy at Teaching Hospitals in Sulaimaniyah, Iraq

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Abstract

Background: Laparoscopic cholecystectomy is the standard gold treatment for gallstones. However, its postoperative complications can be overcome through high-quality knowledge and practice of health care providers, especially nurses working at surgical wards that play major roles in post-operated patient management. **Objective:** This descriptive cross-sectional study aimed to assess the postoperative nurses' intervention for patients with laparoscopic cholecystectomy and to determine the relationship between nurses' interventions and their sociodemographic characteristics. **Patients and Methods:** A total of 65 experienced nurses at surgical wards in Sulaimaniyah Teaching Hospitals were included from March to August 2022 to determine nurses' intervention domains in laparoscopic cholecystectomy. For this purpose, a well-designed questionnaire was used to collect the participant's data, including sociodemographic data and clinical data. **Results:** Most participating nurses (38.5%) were aged 30-39 years, females (66.2%), from the urban region (87.7%), married (66.2%), completed nursing institute (76.9%), and full-time hospital staff (66.2%). Also, most (36.9%) had 1-5 years of work experience and did not take part in training courses (50.8%). In comparison, 41.5% of them participated in the training courses for <6 months. Furthermore, most of the studied variables for the postoperative nurses' intervention items were significantly/highly significantly associated between the first and second assessments. Moreover, a significant difference between gender, education, and residency in the overall assessment of postoperative nurses' intervention in the first assessment and a significant association only for residency was reported for the second assessment. **Conclusions:** Nurses who worked at surgical wards were professional in relieving pain, improving respiratory status, maintaining skin integrity/drainage, improving nutritional status, and monitoring/managing potential complications for patients who underwent laparoscopic cholecystectomy, regardless of their sociodemographic variables.

Introduction

The most common gallbladder diseases are trauma, acute/chronic cholecystitis, and cholelithiasis (gallstones) (1). These diseases usually result in pain on the right side or upper middle belly that worsens after a heavy meal. Other symptoms may include nausea, vomiting, fever, and chills. The prevalence of gallbladder disease has been rising for years due to changes in people's social lifestyles and dietary patterns (2).

Gallstone is one of the most prevalent and expensive gastrointestinal conditions with a significant global epidemiological and economic burden (3). Approximately 20% of people with gallstones have symptoms that necessitate medical attention or surgery, while the other 80% go unnoticed for many years. Sometimes gallstones have no clinical symptoms, but it accidentally diagnosed during abdominal ultrasound for any other reason (4).

Cholecystectomy (CCE) is a common treatment for symptomatic gallstones and other gallbladder conditions. In this respect, laparoscopic CCE is preferred over traditional (open) CCE as it is less invasive, reduces hospital stay, provides quick recovery and faster return to work, and improved cosmetic results with reduced postoperative complications (5).

Perioperative rehabilitation is now widely used in clinical as a method to improve the prognosis of surgical patients. It consists of nutritional support, individualized exercise, and preoperative psychological interventions (6). Thus, one of the potential topics in nursing research is how to enhance the quality of perioperative nursing and encourage postoperative rehabilitation in patients who underwent CCE (7). It has been reported that applying rehabilitation to perioperative nursing of patients undergoing laparoscopic CCE can effectively shorten the recovery time, reduce the economic burden of patients, improve patients' satisfaction, and achieve the goal of rapid recovery (6).

Additionally, nurses can optimize the patient's surgical experience and promote safety by implementing best practices in all recovery phases from laparoscopic CCE. Also, nursing care focuses on reestablishing the patient's physiologic equilibrium, alleviating pain, and preventing complications (8). Moreover, careful assessment and intervention assist the patient in returning to optimal function quickly, safely, and comfortably as possible (9). Therefore, this study aimed to assess the postoperative nurses' care intervention for the patients who underwent CCE with sociodemographic characteristics.

Materials and Methods

Study sample and setting

In this descriptive cross-sectional study, 65 nurses who worked in Shar Teaching Hospital and Sulaimani Teaching Hospital at Sulaimaniyah, Iraq, were included with <1 year to >15 years' experience from March to August 2022.

Ethical considerations

Ethical and scientific committees approved the study at the College of Medicine, University of Sulaimani, Sulaimaniyah, Iraq (No. 21/06/02/2022). Before conducting the study, verbal permission and formal consent were taken from participants. The purpose of the study was explained to participants, especially nursing data from the questionnaire remained confidential, and participants were allowed to quit at any time without giving a reason or excuse.

Inclusion criteria

Nurses who worked in the surgical wards at hospitals, regardless of age, gender, ethnicity, or nationality, were included in this study.

Exclusion criteria

Uncooperative nurses, off-nurses, and less experienced nurses were excluded from the study.

Questionnaire

To collect the proper information for the study, a modified questionnaire was designed and constructed by the researchers. Generally, collected data consisted of participants' sociodemographic characteristics (age, gender, residency, education level, marital status, and employment) and clinical parameters to find nursing intervention domains in laparoscopic CCE. Briefly, the questionnaire contained 54 questions, of which 6 were on participants' sociodemographic data 3 on their professional background. Other questions (45) were on nurse's intervention postoperative care about CCE concerning relieving pain (6), respiratory status (6), and monitoring/managing potential complications (15).

Statistical analysis

Statistical Package of Social Sciences (SPSS version 26.0, Chicago, USA) was adopted to declare the tables using independent sample t-test, Chi-square test, and Pearson's Correlation test. Then, data are presented as frequencies, distributions, percentages, Mean Score (MS), and Standard deviation (SD). A P-value was set to be significant at ≤ 0.05 and highly significant at ≤ 0.01 .

Results

The mean age of participants was 37.1 ± 11.2 years. Most participants (38.5%) belonged to the 30-39 years' age group, females (66.2%), lived in an urban area (87.7%), married (66.2%), graduated from a nursing institute (76.9%) and had a full-time job (66.2%) (Table 1).

Table 1. Sociodemographic characteristics of the studied participants.

Variable		Frequency	%
Gender	Male	22	33.8
	Female	43	66.2
Age (Year)	20-29	16	24.6
	30-39	25	38.5
	≥ 40	24	36.9
Residency	Urban	57	87.7
	Sub-urban	2	3.1
	Rural	6	9.2
Marital status	Single	21	32.3
	Married	43	66.2
	Divorce	1.0	1.5
Education	Secondary Nursing School	15	23.1
	Nursing Institute	50	76.9
Employment	Full-time/formal employment	43	66.2
	Contract	1	1.5
	Volunteer	21	32.3

Regarding the participant's background, most (36.9%) had 1-5 years of experience in the surgical unit. They had not participated in training courses (50.8%) established by the hospitals. In comparison, 41.5% of them participated in the training courses for <6 months (Table 2).

Table 2. The professional background of studied participants.

Variable	Frequency	%
Experience in the surgical unit (Year)		
1-5	24	36.9
6-10	18	27.7
11-15	7	10.8
>15	16	24.6
Participated in the training course		
Yes	32	49.2
No	33	50.8
Duration of the training participation (Month)		
<6	27	41.5
>6	5	7.7

Furthermore, most of the studied variables for the postoperative nurses' intervention items (31) on relieving pain, improving respiratory status, maintaining skin integrity/drainage, improving nutritional status, and monitoring/managing potential complications were reported to be significant (22 items)/highly significantly (9 items) associated between the first and second assessments except for 14 items (Table 3).

Table 3. Assessment of postoperative nurses' intervention variables on different items.

Postoperative nurses' intervention item	First Assessment (Morning session)					Second Assessment (Evening session)					P-value
	Group	F	%	MS	L	Group	F	%	MS	L	
1. Relieving pain											
Keep track of how much pain in and what symptoms having (location, type, extension, and severity)	Never	2	3.1	2.52	H	Never	3	4.6	2.27	M	0.005*
	Sometimes	27	41.5			Sometimes	41	63.1			
	Always	36	55.4			Always	21	32.3			
Position the patient in a different way	Never	3	4.6	2.41	H	Never	2	3.1	2.24	M	0.021*
	Sometimes	32	49.2			Sometimes	42	69.2			
	Always	30	46.2			Always	18	27.7			
During the turn, assists the patient by placing a cushion or binder over the surgical wound. Coughing and inhaling deeply	Never	6	9.2	2.40	H	Never	5	7.7	2.38	H	0.829*
	Sometimes	27	41.2			Sometimes	30	46.2			
	Always	32	49.2			Always	30	46.2			
Massage is beneficial to the patient's back	Never	46	70.8	1.32	L	Never	54	83.1	1.21	L	0.180
	Sometimes	17	26.2			Sometimes	8	12.3			
	Always	2	3.1			Always	3	4.6			
Assists the patient in walking	Never	30	46.2	1.60	M	Never	39	60.0	1.44	L	0.077
	Sometimes	31	47.7			Sometimes	23	35.4			
	Always	4	6.2			Always	3	4.6			
Administers analgesic painkillers on a doctor's prescription	Never	0	0	2.98	H	Never	0	0	2.98	H	0.007*
	Sometimes	1	1.5			Sometimes	1	1.5			
	Always	64	98.5			Always	64	98.5			
2. Enhancing the respiratory status											
At least once every quarter hour for the first hour and once every half hour for the next two hours, evaluate the rate, depth, and sound of breathing	Never	18	27.7	1.84	M	Never	22	33.8	1.75	M	0.000**
	Sometimes	31	60.0			Sometimes	37	56.9			
	Always	8	12.3			Always	6	9.2			
Take note of your breathing's rhythm, depth, and sound	Never	4	6.2	2.18	M	Never	4	6.2	2.10	M	0.000*
	Sometimes	45	69.2			Sometimes	50	76.9			
	Always	16	24.6			Always	11	16.9			
Raise the patient's bed's head	Never	11	16.9	2.40	H	Never	16	24.6	2.20	M	0.002*
	Sometimes	17	26.2			Sometimes	20	30.8			
	Always	37	56.9			Always	29	44.6			

In the low Fowler's position, the patient was positioned	Never	17	26.2	2.16	M	Never	16	24.6	2.04	M	0.103
	Sometimes	20	30.8			Sometimes	30	46.2			
	Always	28	43.1			Always	19	29.2			
Encourages the patient to slowly cough, turn, and breathe deeply	Never	0	0	2.58	H	Never	4	6.2	2.35	H	0.003*
	Sometimes	27	41.5			Sometimes	34	52.3			
	Always	38	58.5			Always	27	41.5			
Assigning the surgical incision location while coughing and moving helps the patient	Never	2	3.1	2.81	H	Never	2	3.1	2.78	H	0.597
	Sometimes	8	12.3			Sometimes	10	15.4			
	Always	55	84.6			Always	53	81.5			
3. Maintaining skin integrity and drainage											
Keep skin health; observe color of cornea, and urine	Never	8	12.3	2.30	M	Never	13	20.0	2.03	M	0.002*
	Sometimes	29	44.6			Sometimes	37	56.9			
	Always	28	42.1			Always	15	23.1			
Note the drainage's color, characteristics, and amount	Never	1	1.5	2.41	H	Never	3	4.6	2.26	M	0.032*
	Sometimes	36	55.4			Sometimes	42	64.6			
	Always	28	43.1			Always	20	30.8			
Attach the tubing to the patient's gown or the dressings	Never	4	6.2	2.49	H	Never	3	4.6	2.26	M	0.004*
	Sometimes	25	38.5			Sometimes	42	64.6			
	Always	36	55.4			Always	20	30.8			
Place a drainage bag	Never	2	3.1	2.60	H	Never	2	3.1	2.56	H	0.597
	Sometimes	22	33.8			Sometimes	24	36.9			
	Always	41	63.1			Always	39	60.0			
Every 30 minutes, check the drainage	Never	50	76.9	1.26	L	Never	61	93.8	1.06	L	0.004*
	Sometimes	13	20.0			Sometimes	4	6.2			
	Always	2	3.1			Always	0	0			
Dress the drainage tube differently	Never	1	1.5	2.36	H	Never	3	4.6	2.41	H	0.496
	Sometimes	39	60.0			Sometimes	32	49.2			
	Always	25	38.5			Always	30	46.2			
Investigates the location of the upper abdominal pain and the vomiting	Never	6	9.2	2.24	M	Never	6	9.2	2.27	M	0.658
	Sometimes	37	56.9			Sometimes	35	53.8			
	Always	22	33.8			Always	24	36.9			
Note the location of upper abdominal pain and any vomiting	Never	3	4.6	2.36	H	Never	5	7.7	2.18	M	0.017*
	Sometimes	35	53.8			Sometimes	43	66.2			
	Always	27	41.5			Always	17	26.2			
changing the outer dressings frequently and shielding the skin from irritants	Never	1	1.5	2.67	H	Never	1	1.5	2.50	M	0.007*
	Sometimes	19	29.2			Sometimes	30	46.2			
	Always	45	69.2			Always	34	52.3			
Frequently change the patient's position	Never	7	10.8	2.15	M	Never	8	12.3	2.12	M	0.000**
	Sometimes	41	63.1			Sometimes	41	63.1			
	Always	17	26.2			Always	16	24.6			
Keep track of the patient waste products' color and texture	Never	28	43.1	1.64	L	Never	40	61.5	1.43	L	0.009*
	Sometimes	32	49.2			Sometimes	22	33.8			
	Always	5	7.7			Always	3	4.6			
Evaluate the patient's fluid intake and output	Never	0	0	2.87	H	Never	0	0	2.73	H	0.011*
	Sometimes	8	12.3			Sometimes	17	26.2			
	Always	57	87.7			Always	48	73.8			
4. Improving nutritional status											
Gives fluid by intravenous infusion following surgery, as directed by a doctor	Never	0	0	2.98	H	Never	1	1.5	2.89	H	0.033*
	Sometimes	1	1.5			Sometimes	5	7.7			
	Always	64	98.5			Always	59	90.8			
Investigates the state of the bowel movements and swallowing	Never	1	1.5	2.58	H	Never	2	3.1	2.40	H	0.022*
	Sometimes	25	38.5			Sometimes	35	53.8			
	Always	39	60.0			Always	28	43.1			
After bowel sounds resume, which is typically the following day, a soft diet is introduced	Never	2	3.1	2.38	H	Never	4	6.2	2.23	M	0.058
	Sometimes	36	55.4			Sometimes	42	64.6			
	Always	27	60.0			Always	19	29.2			
Keep track of the patient's fluid intake and output	Never	0	0	2.70	H	Never	0	0	2.60	H	0.849
	Sometimes	19	29.2			Sometimes	26	40.0			
	Always	46	70.8			Always	39	60.0			
Evaluates digestive system signs and symptoms (Nausea, vomiting)	Never	2	3.1	2.61	H	Never	4	6.2	2.49	H	0.000**
	Sometimes	21	32.3			Sometimes	25	38.5			
	Always	42	64.6			Always	36	55.4			
Examines the patient waste products' color and texture	Never	60	92.3	1.13	L	Never	59	90.8	1.13	L	0.000**
	Sometimes	1	1.5			Sometimes	3	4.6			
	Always	4	6.2			Always	3	4.6			
5. Monitoring/managing potential complication											
To prevent issues in the surgical unit, carefully read and review the patient chart after leaving the surgical unit to determine how the procedure went	Never	4	6.2	2.53	H	Never	5	7.7	2.31	M	0.002*
	Sometimes	22	33.8			Sometimes	34	52.3			
	Always	39	60.0			Always	26	40.0			
Vital signs are measured and watched for the first hour, then every half-hour for the following two hours	Never	5	7.7	2.23	M	Never	6	9.2	2.18	M	0.443
	Sometimes	40	61.5			Sometimes	41	63.1			
	Always	20	30.8			Always	18	27.7			

Check vital signs like blood pressure	Never	0	0	2.73	H	Never	0	0	2.69	H	0.321
	Sometimes	17	26.2			Sometimes	20	30.8			
	Always	48	73.8			Always	45	69.2			
Vital signs to note: Pulse rate	Never	1	1.5	2.70	H	Never	0	0	2.67	H	0.000**
	Sometimes	17	26.2			Sometimes	21	32.3			
	Always	47	72.3			Always	44	67.7			
Check vital signs like breathing rate	Never	0	0	2.67	H	Never	0	0	2.66	H	0.000**
	Sometimes	21	32.3			Sometimes	22	33.8			
	Always	44	67.7			Always	43	66.2			
Observe body temperature	Never	3	4.6	2.15	M	Never	3	4.6	2.07	M	0.568
	Sometimes	52	80.0			Sometimes	54	83.1			
	Always	10	15.4			Always	8	12.3			
The nurse examines the dressing to make sure it is intact, clean, and dry	Never	0	0	2.33	M	Never	2	3.1	2.44	H	0.146
	Sometimes	43	66.2			Sometimes	32	49.2			
	Always	22	33.8			Always	31	47.7			
Checks for bleeding in the surgical dressing and any drains	Never	0	0	2.75	H	Never	0	0	2.60	H	0.017*
	Sometimes	16	24.6			Sometimes	26	40.0			
	Always	49	75.4			Always	39	60.0			
Through the measurement of vital signs, note the shock signs and symptoms	Never	0	0	2.86	H	Never	0	0	2.50	H	0.000**
	Sometimes	9	13.8			Sometimes	32	49.2			
	Always	56	86.2			Always	33	50.8			
Monitor and record signs of internal bleeding in the patient including excessive sweating and yellowing of the skin	Never	0	0	2.70	H	Never	1	1.5	2.47	H	0.001*
	Sometimes	19	29.2			Sometimes	32	49.2			
	Always	46	70.8			Always	32	49.2			
instructs the patient and their loved ones to note any modification in the waste's color (stool)	Never	7	10.8	2.15	M	Never	19	29.2	1.81	M	0.000**
	Sometimes	41	63.1			Sometimes	39	60.0			
	Always	17	26.2			Always	7	10.8			
Assesses the patient for increased abdominal rigidity and tenderness	Never	1	1.5	2.60	H	Never	2	3.1	2.43	H	0.033*
	Sometimes	24	36.9			Sometimes	33	50.8			
	Always	40	61.5			Always	30	46.2			
Keep track of the gastrointestinal signs and symptoms (nausea and vomiting)	Never	0	0	2.64	H	Never	2	3.1	2.36	H	0.000**
	Sometimes	23	35.4			Sometimes	37	56.9			
	Always	42	64.6			Always	26	40.0			
For the patient, note the discomfort and abdominal swelling	Never	0	0	2.60	H	Never	0	0	2.36	H	0.001*
	Sometimes	26	40.0			Sometimes	41	63.1			
	Always	39	60.0			Always	24	36.9			
The nurse routinely counsels the patient to follow up after hospital discharge	Never	41	63.1	1.49	L	Never	40	61.5	1.43	L	0.437
	Sometimes	16	24.6			Sometimes	22	33.8			
	Always	8	12.3			Always	3	4.6			

Moreover, postoperative nurses' interventions concerning relieving pain, improving respiratory status, and maintaining skin integrity/drainage were reported to be moderate for the first and second assessments. In contrast, their concern for improving nutritional status and monitoring/managing potential complications was reported high for the initial evaluation and moderate for the second assessment. Significant/highly significant associations were noted between the first and second assessments for all items except relieving pain (Table 4).

Table 4. Assessments of postoperative nurses' intervention domains for patients who underwent laparoscopic CCE.

No.	Postoperative nurses' intervention	First Assessment (Morning Session)				Second Assessment (Evening Session)				P-value
		MS	SD	RS	Assessment	MS	SD	RS	Assessment	
1.	Relieving pain	2.207	0.287	73.5	Moderate	2.292	0.237	76.4	Moderate	0.071
2.	Enhancing respiratory status	2.333	0.400	77.7	Moderate	2.207	0.356	73.5	Moderate	0.004*
3.	Maintaining skin integrity/drainage	2.284	0.271	76.1	Moderate	2.155	0.214	71.8	Moderate	0.000**
4.	Improving nutritional status	2.402	0.186	80.0	High	2.292	0.237	76.4	Moderate	0.000**
5.	Monitoring/managing potential complications	2.476	0.173	82.5	High	2.337	0.213	77.9	Moderate	0.000**

*: Significant difference; **: Highly significant difference using Independent sample t-test, MS; Mean score, RS: Relative sufficiency, SD: Standard deviation

Table 5 shows a highly significant ($p=0.000$) association between overall assessment for postoperative nurses' intervention in the first and second assessments. Good level was reported to be highest in both reviews, followed by moderate level with no one to be poor.

Table 5. Overall assessment of postoperative nurses' intervention for the studied sample.

Assessment type	First Assessment (Morning Session)		Second Assessment (Evening Session)		P-value
	Frequency	%	Frequency	%	
Good	46	70.8	23	64.6	0.000*
Moderate	19	29.2	42	35.4	
Poor	0.0	0.0	0.0	0.0	

** : Highly significant difference using the Chi-square test

Consequently, the overall assessment regarding postoperative nurses' intervention and their sociodemographic characteristics showed a general improvement in all items for the first and second assessments. However, there was a significant difference between gender, education, and residency in the overall evaluation of postoperative nurses' intervention in the first assessment. Still, there was a significant association only for residency ($p=0.44$) with comprehensive assessment postoperative nurses' intervention in the second assessment (Table 6).

Table 6. Association between overall assessment regarding postoperative nurses' intervention and their sociodemographic characteristics.

Sociodemographic characteristic	Group	First Assessment (Morning Session)				Second Assessment (Evening Session)			
		Assessment type		d.f	P-value	Assessment type		d.f	P-value
		Moderate Frequency, %	Good Frequency, %			Moderate Frequency, %	Good Frequency, %		
Gender	Male	7 (31.8)	15 (68.2)	1	0.044*	17 (77.3)	5 (22.7)	1	0.104
	Female	12 (27.9)	31 (72.1)			25 (58.1)	18 (41.9)		
Age (Year)	20-29	6 (37.5)	10 (62.5)	2	0.565	9 (56.3)	7 (43.8)	2	0.679
	30-39	8 (32.0)	17 (68.0)			16 (64.0)	9 (36.0)		
	≥ 40	5 (20.8)	19 (79.2)			17 (70.8)	7 (29.2)		
Educational level	Secondary Nursing school graduate	3 (20.0)	12 (80.0)	1	0.022*	9 (60.0)	6 (40.0)	1	0.761
	Nursing and midwifery institute graduate	16 (32.0)	34 (68.0)			33 (66.0)	17 (34.0)		
Marital Status	Married	8 (38.1)	13 (61.9)	1	0.565	12 (57.1)	9 (42.9)	2	0.728
	Single	11 (25.6)	32 (25.6)			29 (67.4)	14 (32.6)		
	Divorce	0 (0)	1 (100)			1 (100)	0 (0)		
Residency	Urban	15 (26.3)	42 (73.7)	2	0.016*	37 (64.9)	20 (35.1)	2	0.044*
	Sub-urban	2 (100)	0 (0)			2 (100)	0 (0)		
	Rural	2 (33.3)	4 (66.7)			3 (50.0)	3 (50.0)		
Employment	Full-time/formal employment	10 (23.8)	32 (76.2)	2	0.551	28 (66.7)	14 (33.3)	1	0.453
	Contract	0 (0)	1 (100)			0 (0)	1 (100)		
	Volunteer	8 (38.1)	13 (61.9)			13 (61.9)	8 (38.1)		

Discussion

The nurses are the patient's chief advocate in the surgery, and the care of the nurses continues to the patients as long as the surgical procedure is planned and advised in the immediate preoperative phase, the surgical stage and the recovery from anesthesia, then the postoperative stage. Therefore, surgical nurses are essential in caring for patients undergoing CCE during pre/postoperative time. They should also have knowledge and practices to provide proper nursing care, prevent complications and decrease the reasonable cost of treatment (10).

So, this study was conducted to assess nurses' postoperative intervention related to patients' satisfaction with undergoing laparoscopic CCE. As a result, most participants were young females who graduated from Nursing Institute, lived in the city, married, and were full-time hospital staff. These outcomes are consistent with the findings of another study conducted by Alaa and Halema, 2014 at Baghdad Teaching Hospitals, with an exception for gender, who found most participants (60%) were males (11). Similarly, another study in Al-Nasiriya, Iraq, by Bader and Suad, 2021 reported the same results (12). Also, Safa, 2016 at Shendi University, Sudan, presented the same outcomes to our participant's sociodemographic characteristics (2). Whereas Ahmed et al. 2013 at Assuit University Hospital, Egypt, reported the same personal data for nurses except for nurses' education level (88.3% had a nursing diploma, and only 1.7% graduated from Nursing Technical Institute) (13). However, Abdelhafiez et al. 2021 in Egypt found that most (2/3) of enrolled nurses were aged more than 43 years (14), while Saied et al. 2018 mentioned that 62.2% of nurses were aged less than 30 years and 80.5% were single (15).

Nurses' professional background helps prepare planned nursing care to improve patients' health conditions and promote their quality of life after laparoscopic CCE. Furthermore, by implementing best practices, the nurses can optimize the patient's surgical experience and prevent and recognize complications (10). Thus, in this study, most of the nurses had 1-5 years of experience in surgical wards, not participate in training courses established by the hospitals. Also, most of them took part in training courses for >6 months. These outcomes agreed with the findings of another two studies conducted in another city of Iraq (Baghdad and Al-Nasiriya) (11, 12) and a study in Sudan (2). However, Ahmed et al. 2013 at Assuit University Hospital, Egypt, reported that all nurses (100%) had an inadequate level of practice regarding nursing care for patients post-open CEE and did not participate in any training course related to their job practice (13). On the other hand, Saied et al. 2018 in Egypt mentioned that most nurses had > 5 years of experience (58.5%) and participated in the training courses (82.9%) (15).

Furthermore, in this study, most of the postoperative nurses' intervention domains on patient relieving pain, improving respiratory status, maintaining skin integrity/drainage, improving nutritional status, and monitoring/managing potential complications were reported to be moderate for both assessments. Additionally, the overall assessments for postoperative nurses' intervention were good. These outcomes are not agreed with another study in Egypt, which reported poor levels (13, 16) and a study in Iraq, which reported weak assessment (11). However, they agreed with another study conducted in Iraq, which reported a moderate level of evaluation for postoperative nurses' intervention domain regarding patients' laparoscopic CEE (12).

On the other hand, we found that the overall postoperative nurse's intervention domain assessments positively correlated to their sociodemographic characteristics (gender, education, and residency) with improvement in all items for both assessments. However, no positive correlations were found for age, marital status and employment type. These outcomes are not agreed with those observed by Badr and Suad, 2021 who found a non-significant relationship between nurses' knowledge and their sociodemographic data (12). However, Ahmed et al. 2013 in Egypt found a positive correlation for age, education level, and years of experience and not for other characters (13), while Alaa and Halema, 2014 found that only education level significantly correlated to postoperative nurses intervention assessments (11). Elsayed et al. 2021 in Egypt only found that age positively correlates to nurse's intervention domain assessments (17). Whereas, Abdelhafiez et al. 2021 (14), Abdelgilil et al. 2020 (16) and Saied et al. 2018 (15) in Egypt and Hussein and Khudair, 2019 in Iraq (18) found a significant correlation between postoperative nurse's intervention domain assessment and all sociodemographic data about caring of patients undergoing CEE.

Conclusions

It is concluded that most nurses who worked at surgical wards express satisfactory professional backgrounds related to their postoperative nursing interventions in laparoscopic CCE despite their level of education and not well training background. Additionally, most postoperative nurses' intervention domains were directly correlated with their assessments. Also, assessments of the postoperative nurses' intervention were affected by most of their sociodemographic characteristics. Thus, it is suggested to provide high-quality nursing interventions for the postoperative patient at surgical wards, and nurses should be supported by training courses inside/outside Iraq. Consequently, the continuation of the nurses' education who work in surgical wards and the use of guidelines for interventions after surgery improve the quality and intensity of nurses' care for the patient and improve the nurses' professional background to prevent complications of laparoscopic CCE. Therefore, effective intervention can only be achieved if the nurse has deficient knowledge or is affected by an attitudinal barrier. Limitations of this study were small sample size, time limitation, shortage of research studies/references on the topic and data collection at hospitals.

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