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Evaluation of Patient Satisfaction toward Nursing Management of Postoperative Pain: A Comparative Study

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Abstract: **Patients often suffer from inadequate treatment of post-operative pain. Managing of acute post-operative pain should be one of the key components of patients' satisfaction. This study aimed to evaluate patient's satisfaction toward post-operative nursing pain management. The study was conducted at general surgical units and surgical intensive care units at Alexandria Main University Hospital. The subjects of this study comprised a convenient sample of 100 patients, 50 patients and the one nursing supervisor from each setting. One tool was used for data collection entitled patient satisfaction toward postoperative nursing pain management (Structured interview). It included two parts: Part one:-Socio demographic and clinical data of surgical patients. Part two: - Patient satisfaction of Pain Management for Post-operative Patient: structured interview. The results revealed that most of patients in surgical ICU have been participated in their pain treatment decision making than those in the general surgical units. There was significant difference between postoperative patients in surgical intensive care units and general surgical units toward pain level, participation on pain treatment decision making, comfort level and satisfaction level (P= 0.029, P=<0.001, P=<0.001, P=<0.001) respectively It can be concluded that, patients in surgical ICU were more satisfied than patients in the general surgical units. Moreover, nurses in these settings were mainly focusing on pharmacological interventions rather than the non-pharmacological one. Recommendations include, development of pain policies, and manual guidelines about general surgical pain management, to guide care providers and patients at surgical units, is mandatory.**

Keywords: **Patient satisfaction, postoperative pain management, intensive care units, general surgical units.**

I. INTRODUCTION

Post-operative pain is defined as a condition of tissue injury together with muscle spasm after surgery. Recently, peripheral and central sensitization has been shown within the mechanisms of post-operative pain generation. Therefore, the issue of whether post-operative pain is purely a nociceptive pain remains a topic of debate [(1)]. Effective pain relief is very important not only for humanitarian and ethical reasons, but also in order to avoid several post-operative complications and to obtain a faster recovery from surgery and an earlier discharge from hospital. Proper pain management in the post-operative periods helps to ensure the best outcome for the patient [(2)].

Patient satisfaction is a measure of the extent to which a patient is content with the health care which they received from their health care provider. Patient pain management is a big part of patient satisfaction [(3)]. Pain is a predictable response to surgical intervention regardless the type of surgery either minor or major [(4)]. Ineffective post-operative pain management may interfere with patients' quality of life as the majority of patients who submit to surgical procedures experience acute post-operative pain. However, evidences suggest that below half report adequate post-operative pain relief [(5)]. Incidence of post-operative pain has been reported to be between 47–100% [(6)].

Acute surgical pain in both surgical intensive care unit (ICU) and general surgical units may stimulate sympathetic activity leading to negative hemodynamic effects in which develop the possibility for the occurrence of chronic pain and post-traumatic stress disorders after patients discharge. In the ICU, many factors may exacerbate post-operative pain; either from their illness or injury or from procedures in addition to placement of invasive tubes/catheters. While in the general surgical units the main cause of post-operative pain is related to surgical incision. Post-operative pain can affect the patient recovery, the length of hospital stay, and increases the cost of the provided care. In addition poorly managed post-operative pain has severe consequences, such as respiratory infection, atelectasis, deep vein thrombosis, increase myocardial consumption, muscle spasm, and myocardial infarction. Moreover, acute post-operative pain in both settings is a leading stressor could increases stress, anxiety, fear, sleeplessness, and possible chronic pain [7, 8]. Additionally, post-operative pain in both settings could worsen the patients' compliance with nursing post-operative activities that accelerate recovery and discharge such as chest physiotherapy (deep breathing and use of incentive spirometry) and ambulation [9, 10].

Pain management has been targeted as a top priority for any patient. An ultimate approach of surgical management is aiming to prevent complications and improve quality of life. The perception of patient satisfaction with healthcare and healthcare providers is a complex phenomenon [11]. Patient satisfaction is used by many associations as a parameter of care quality. Patients recognize quality in terms of staff reaction to their pain, patient satisfaction with post-operative pain management relies on different aspects including patients' expectations, intensity of pain experienced, promptness of acute pain service response, effectiveness of treatment and healthcare professionals' attitude. Additionally, patient satisfaction with pain management is essentially associated with the approach nurses discuss their pain and use a different of pharmacological and non-pharmacological methods to relieve pain [12].

One of the essential components of surgical patient care is effective post-operative pain control. Knowledge and practice of nurses towards pain management have been noted in various studies around the world. Deficient knowledge and practice regarding pain management among nurses remains a pervasive problem. Further knowledge is required on patient satisfaction with healthcare team response to their pain reports in the post-operative period. The nurses' primary role is to promote comfort and pain relief through more contact with patients than any other member of the healthcare team. It is essential that they are able to make proper pain assessments [13,14].

Pain assessment scales may be different in surgical patients including intensive care units (ICU) and general surgical units. However, post-operative pain reassessment and treatment should be reported on a regular basis to confirm ideal pain care process for any patient [14]. Different modalities of pain killers have been broadly used according to physical condition of the patient which may be different in ICU rather than general surgical units [15]. As resuscitative interventions in ICU always compete the pain management in priority. These interventions are recommended in surgical ICU patients to reduce opioid administration, thereby avoiding prolonged use of high doses of opioids, prolonged mechanical ventilation period, and withdrawal symptoms [16, 17] which is different with general surgical units.

Patient satisfaction affects clinical outcomes, patient retention, and medical malpractice claims. It affects the timely, efficient, and patient-centered delivery of quality healthcare. It is necessary to identify patient outcomes in terms of self-reports of pain severity and satisfaction [18]. Few studies have been evaluated patient satisfaction toward post-operative pain management [19-21]. Hence this research aims to achieve this goal and compare the pain management nursing in two different settings.

AIM OF THE STUDY

The aim of this study was to compare patient satisfaction toward nursing management of postoperative pain in two different settings; general surgical units and surgical ICU.

RESEARCH QUESTIONS:

1. What is the patients' satisfaction toward nursing management of postoperative pain in general surgical units?
2. What is the patients' satisfaction toward nursing management of postoperative pain in general surgical ICU?
3. What is the difference between patients' satisfaction in general surgical units and surgical ICU toward nursing management of postoperative pain?

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II. MATERIALS AND METHOD

Materials

Design:

A comparative descriptive research design was utilized for this study.

Setting:

The study was conducted at the three general surgical units (male and female departments) and surgical intensive care unit at Alexandria Main University Hospital.

Subjects:

A convenient 100 immediate post-operative adult male and female, were included in this study. The study sample was estimated based on Epi -info program, which used to estimate the sample size using the following parameters:

- Population size =230.

- Expected frequency = 50%.

- Margin of error =10%.

- Confidence coefficient = 95%.

- Minimum sample size = 100.

These patients were selected at the time of data collection from the above mentioned settings according to the following inclusion criteria:

1. Subjected to general abdominal operations.
2. Aged between 21-60 years.
3. Conscious and able to communicate.
4. Subjected to routine post-operative pain management.
5. Have clean closed wound.

The patients were divided equally into two groups, 50 patients in each group from both settings as following:

- Immediate postoperative 50 adult male and female patients who underwent abdominal surgery from general surgical units.
- Immediate postoperative 50 adult male and female patients who underwent abdominal surgery from the surgical intensive care unit.
- In addition to two nursing supervisors; who is responsible for general surgical departments and surgical intensive care were included in the study.

Tool:

One tool was utilized for this study:

Patient satisfaction toward nursing management of postoperative pain (Structured interview). This tool was consisted of two parts as follows;

Part-I: titled "**Socio demographic and clinical data of surgical patients**": that was developed by the researchers to identify characteristics of patients and baseline clinical data, it included two sections:

Section 1: **Socio demographic data**: age, gender, marital status, level of education, and occupation.

Section 2: **Clinical data**: it included close ended questions (multiple choice questions ranged from 2-4 choices) such as associated diseases, use of analgesia, previous hospitalization, and type of surgery, chief complaint, and smoking. In

addition to; nurse-to- patient -ratio, attending previous training programs regarding pain management and presence of pain policy management were added-by interviewing the both nursing supervisors in both settings.

Part -II: titled **"Patient satisfaction structured interview of pain management for post-operative patient"** that was adapted from Revised American Pain Society Patient Outcome Questionnaire for Quality Improvement of Pain Management in Hospitalized Adults (Arabic version) [22] to evaluate the pain level within 24 hours post-operative then assess the level patient satisfaction that contribute to poor treatment outcomes. It measures 5 aspects of quality out of six, including (1) pain severity and relief; (2) impact of pain on activity, sleep, and negative emotions; (3) helpfulness of information about pain treatment; (4) ability to participate in pain treatment decisions; and (5) use of non-pharmacological strategies. Each aspect includes 10 points scale ranging from 0 (the least value) to 10 (the highest value)-[22]. A total score of less than 60% for participants' responses was considered as low satisfaction level; score of 60% to less than 80% was considered moderate satisfaction level while 80% and above was considered high satisfaction level.

Method:

- **Approval** from the ethical committee of Nursing faculty, Alexandria University was obtained. And approval to conduct this study was obtained from hospitals responsible authorities after explanation of its purpose.

- **Tool development**, Part one of the tool was developed by the researchers in Arabic language, part two was adapted from Gordon et al.(2010) [22] and then the tool was tested for their content validity by five experts in the field of medical surgical nursing, critical care and emergency nursing, general surgeons and intensivists then the required modifications were introduced accordingly; part two was modified as omit the items related to operations side effects (nausea, drowsiness, itching, dizziness).

- The reliability of the tool was assessed using Cronbach-alpha coefficient statistical test (tool -α= 0.89).

- **A pilot study** was conducted to ensure the clarity and applicability of the tool, and identify obstacles and problems that might be encountered during data collection. It was applied on ten patients from both two settings after obtaining their oral approvals. The data of the pilot was excluded from the study . The necessary modifications had been done. As the scale system was generalized between zero and ten in all questions.

- **Data collection:**

- The patients were interviewed individually by the researchers for 30 to 45 minutes.

- The interview was held in both settings 8-12 hours after the operation when patients were hemodynamically and emotionally stable.

- Patients' socio demographic and clinical data were obtained and recorded using part one.

- A structured interview was conducted to assess and record patients' satisfaction toward nursing management of postoperative pain.

- Questions related to nursing administrators (nurse-to- patient –ratio, attending previous training programs in pain management and presence of pain policy management) were assessed through interviewing the nursing supervisors in both settings.

- Data were collected by the researchers in two settings during approximately six months starting from June 2019 to December 2019.

- **Ethical Consideration**: An oral approval was obtained from the participants. The anonymity, confidentiality and privacy of responses have been asserted, voluntary participation and right to withdraw from the study were emphasized before inclusion in the study sample.

- **Statistical Analysis:** Data were analyzed to evaluate patient satisfaction toward postoperative pain management in two different settings; general surgical unitss and ICU. SPSS package version 20 was used for statistical analysis. Descriptive statistical analysis for all study variables was conducted. Quantitative data were described using number and percent. Tables of different characteristics were presented.

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III. RESULTS

Table (1) shows characteristics of surgical patients in the general surgery and intensive care units according to their socio-demographic data. Considering age distribution, it was found that 40.0% of patients in the general surgical units between 35 to less than 45 years, while 40% of the studied patients in surgical ICU aged between 45 to less than 60 years. As regards gender, general surgical units less than three quarter (58.0%) of patients were males and more than half of the studied patients in surgical ICU (56%) were males. Regarding marital status, more than half (52.0% and 82% respectively) of patients general surgical units and surgical ICU were married. In relation to patients' education, it was found that 20.0% of patients in the surgical units were illiterate. 28% of the studied patients in surgical ICU had a diploma. Concerning occupation, it was found that 16.0% of patients in the general surgical units and 32% surgical ICU had manual work.

Table (1): Frequency distribution of socio-demographic characteristics of surgical patients in the surgical intensive care unit and general surgical units

Socio demographic data	Surgical Intensive Care unit n=50		General Surgical Units n=50	
	No	%	No	%
Age (years)				
▪ 21-	16	32	18	36.0
▪ 35-	14	28	20	40.0
▪ 45-60	20	40	12	24.0
Gender				
▪ Male	28	56	29	58.0
▪ Female	22	44	21	42.0
Marital status				
• Single	6	12	13	26.0
• Married	41	82	26	52.0
• Divorced	2	4	3	6.0
• Widow	1	2	8	16.0
Education				
▪ Illiterate	0	0.00	10	20.0
▪ Primary	11	22	12	24.0
▪ Preparatory	5	10	4	8.0
▪ Secondary	7	14	9	18.0
▪ Diploma	14	28	9	18.0
▪ University	13	26	6	12.0
Occupation				
• Manual	16	32	8	16.0
• Employee	11	22	7	14.0
• Housewife	15	30	16	32.0
• Not work	0	0.0	12	24.0
• Retired	8	16	7	14.0

Table (2) In relation to the clinical data, related to the associated diseases, 54% of the studied patients in surgical ICU had associated diseases compared to 44% of patients in studied patients in surgical units. All patients in surgical ICU had heart disease compared to 40.9 % in the surgical units. In both units, all patients have been used analgesia (100%). 42% of the studied patients in surgical ICU have been previously hospitalized compared to 40% of patients in studied patients in surgical units. This table also reveals that 64 % of the studied patients in surgical ICU were not smokers and 30% of patients in studied patients in surgical units. Incisional pain was the chief complaint of all studied patients in surgical ICU, whereas only 35% of the studied patients in the surgical units had this chief complaint. All patients in surgical ICU had major surgery while 56% of patients in the surgical units had minor surgery.

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Table (2): Frequency distribution of clinical data of surgical patients in the surgical intensive care unit and general surgical units

Clinical data	Surgical Intensive Care units n=50		General Surgical Unit n=50	
	No	%	No	%
Presence of associated diseases				
▪ Yes	27	54	22	44.0
▪ No	23	46	28	56.0
Associated diseases	n=27		n=22	
▪ Diabetes mellitus	16	32	5	22.8
▪ Heart disease	27	100	9	40.9
▪ Liver disease	2	4	7	31.8
▪ Respiratory diseases	5	10	1	4.5
Use of analgesia				
▪ Yes	50	100.0	50	100.0
▪ No	0	0.00	0	0.00
Previous hospitalization				
▪ Yes	21	42	20	40.0
▪ No	29	58	30	60.00
Smoking				
▪ Yes	18	32	35	70.0
▪ No	32	64	15	30.0
Chief complaint				
▪ Incisional pain	50	100	38	35.0
▪ Headache	0	0.00	5	22.8
▪ Fatigue	0	0.00	18	45.0
Type of surgery				
▪ Major	50	100	22	44.0
▪ Minor	0	0.00	28	56.0

Table 3 shows that none of nurses in both study settings were attending training program in pain management. It can be noted that there was no pain policy neither in surgical ICU nor in the surgical units. **Figure 1** presents that nurse-to-patient ratio in surgical ICU were between 1:1 - 1: 4, while in the surgical units the nurse-to-patient ratio in 58.5% were equal or more than 1:9.

Table (3): Frequency distribution of nursing supervisors items in the surgical intensive care unit and general surgical units

Nursing supervisors questions	Surgical Intensive Care unit (n=50)		General Surgical Units (n=50)	
	No	%	No	%
Presence of pain policy				
▪ No	50	100	50	100
▪ Yes	0	0.00	0	0.00
Attending previous training programs in pain management:				
▪ No	50	100	50	100
▪ Yes	0	0.00	0	0.00
Nurse-to-patient ratio				
▪ (1:1 - 1:4)	50	100	0	0.00
▪ (1:5 - 1:8)	0	0.00	21	42.5
▪ Equal or more than 1:9	0	0.00	29	58.5

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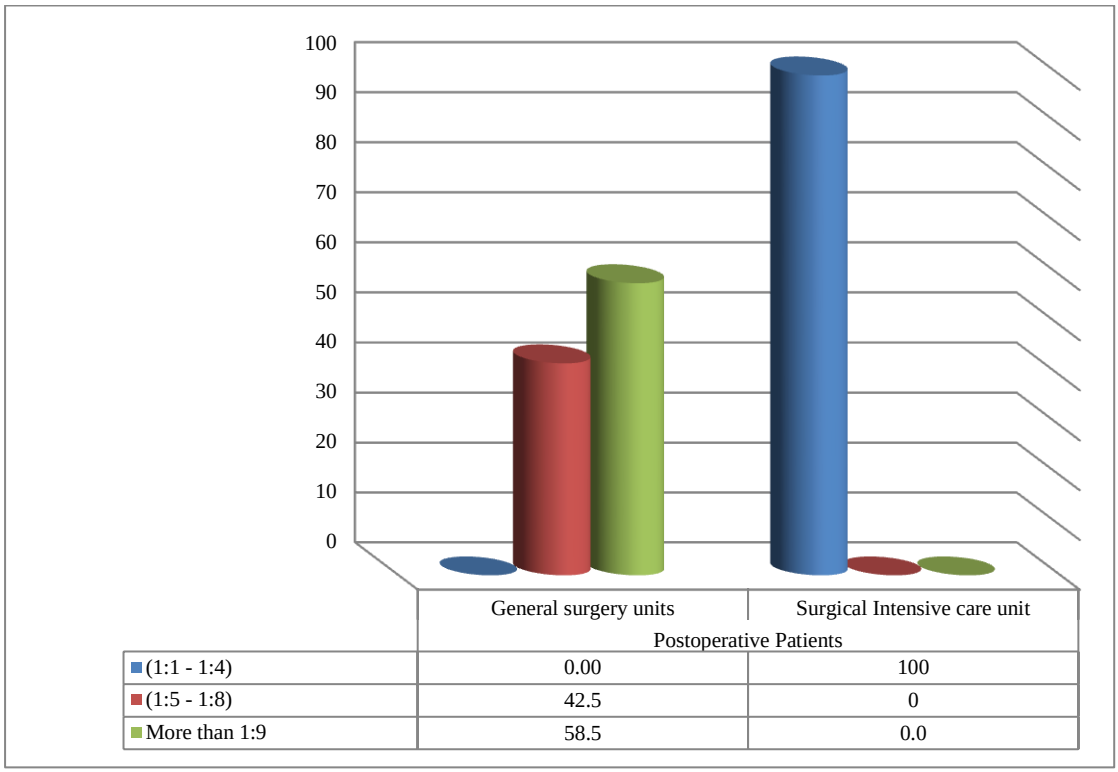

Fig.1 Nurse-to-patient ratio in the general surgical units and surgical intensive care unit

Table (4) illustrates distribution of the postoperative studied patients according to their pain level within 24 hours postoperatively. In relation to surgical ICU, it can be noted that the worst pain level for 40% of patients was a tolerable level, while the least pain level for about half of them was a moderate level. Concerning the surgical units, most of patients experienced a worst level of pain (70%), while the least pain level for more than half of them was a worst level (60%).

Table (4) Distribution of the studied patients according to their pain level within the first 24 hours postoperatively

Pain level (0-10) scale	Postoperative Patients							
	Surgical Intensive Care Unit N= 50				General Surgical Units N= 50			
	Worst level		Least level		Worst level		Least level	
	N	%	N	%	n	%	n	%
No pain (0)	0	0.0	0	0.0	0	0.0	0	0.0
Mild (1-2)	0	0.0	4	8.0	0	0.0	0	0.0
Moderate (3-4)	14	28.0	26	52.0	0	0.0	0	0.0
Tolerable (5-6)	20	40.0	12	24.0	3	6.0	5	10.0
Severe (7-8)	13	26.0	7	14.0	12	24.0	15	30.0
Worst (9-10)	3	6.0	1	2.0	35	70.0	30	60.0

Table (5-A) shows distribution of studied patients according to negative effect of pain on physical effects. In both settings, patients experienced negative effects of pain in the form of mobility in and out of bed and sleep initiation and continuity in varied levels. In both settings, most of patients rated these negative effects between3 to8. **Table (5-B)** highlights those patients in both settings experienced psychological negative effects of pain in the form of anxiety, sadness, fear, and helplessness. They mostly rated this experience between 2 to 9.

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Table 5-(A) Distribution of the studied patients according to negative effect of pain (A- physical)

Negative effects (0-10) scale	Postoperative Patients															
	Surgical Intensive Care Unit N= 50								General Surgical Units N= 50							
	Mobility in bed		Mobility out of bed		Sleep initiation		Sleep continuity		Mobility in bed		Mobility out of bed		Sleep initiation		Sleep continuity	
	N	%	n	%	n	%	n	%	N	%	n	%	n	%	N	%
0 (does not interfere)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2	2	4.0	0	0.00	7	14.0	4	8.0	2	4.0	0	0.00	7	14.0	4	8.0
3	9	18.0	11	22.0	8	16.0	7	14.0	9	18.0	11	22.0	8	16.0	7	14.0
4	12	24.0	9	18.0	10	20.0	12	24.0	11	22.0	9	18.0	10	20.0	12	24.0
5	5	10.0	9	18.0	4	8.0	8	16.0	6	12.0	9	18.0	4	8.0	8	16.0
6	10	20.0	10	20.0	8	16.0	6	12.0	10	20.0	9	18.0	8	14.0	8	16.0
7	7	14.0	9	18.0	7	14.0	8	16.0	7	14.0	10	20.0	7	16.0	6	12.0
8	5	10.0	0	0.00	3	6.0	2	4.0	5	10.0	0	0.00	3	6.0	2	4.0
9	0	0.00	2	4.0	3	6.0	3	6.0	0	0.00	0	0.00	3	6.0	3	6.0
10 (completely interferes)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	4.0	0	0.00	0	0.00

Table 5-(B) Distribution of the studied patients according to negative effect of pain (B- Psychological)

Negative effects (0-10) scale	Postoperative Patients															
	Surgical Intensive Care Unit N= 50								General Surgical Units N= 50							
	Anxiety		Sadness		Fear		Helplessness		Anxiety		Sadness		Fear		Helplessness	
	N	%	n	%	n	%	n	%	N	%	n	%	n	%	N	%
0 (not at all)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1	0	0.00	0	0.00	1	2.0	3	6.0	0	0.00	0	0.00	1	2.0	3	6.0
2	2	4.0	8	16.0	9	18.0	5	10.0	2	4.0	8	16.0	9	18.0	5	10.0
3	15	30.0	9	18.0	10	20.0	11	22.0	8	16.0	8	16.0	8	16.0	11	22.0
4	8	16.0	8	16.0	8	16.0	10	20.0	15	30.0	9	18.0	10	20.0	10	20.0
5	6	12.0	5	10.0	5	10.0	1	2.0	6	12.0	5	10.0	5	10.0	1	2.0
6	4	8.0	4	8.0	3	6.0	3	6.0	4	8.0	4	8.0	3	6.0	3	6.0
7	6	12.0	5	10.0	5	10.0	6	12.0	6	12.0	5	10.0	5	10.0	6	12.0
8	4	8.0	5	10.0	0	0.00	4	8.0	4	8.0	4	8.0	0	0.00	4	8.0
9	4	8.0	4	8.0	7	14.0	5	10.0	4	8.0	5	10.0	7	14.0	5	10.0
10 (extremely)	1	2.0	2	4.0	2	4.0	2	4.0	1	2.0	2	4.0	2	4.0	2	4.0

Table (6) shows distribution of the studied patients according to their participation in pain treatment decision making. This table shows that most of patients in surgical ICU have been participated in their pain treatment decision making than those in the surgical units. Patients in surgical ICU have been participated with a certain level ranged from 2 to 7, but more than three quarters of patients in the surgical units (78%) have no participation in pain treatment. However, none of patients in both settings participated in in their pain treatment decision making as they want.

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Table (6) Distribution of the studied patients according to their participation in pain treatment decision making

Participation in pain treatment decision making (0-10) scale	Postoperative Patients			
	Surgical Intensive Care Unit N= 50		General Surgical Units N= 50	
	N	%	n	%
0 (not at all)	7	14.0	39	78.0
1	3	6.0	8	16.0
2	9	18.0	3	6.0
3	7	14.0	0	0.00
4	11	22.0	0	0.00
5	1	2.0	0	0.00
6	6	12.0	0	0.00
7	5	10.0	0	0.00
8	1	2.0	0	0.00
9	0	0.00	0	0.00
10 (Yes as I want)	0	0.00	0	0.00

Table (7) illustrates that comfort level of patients after pain relieve measures in the surgical units was low in comparison to the comfort level of patients in surgical ICU. All patients in surgical ICU had a comfort level ranged from 2 to 7. Only 30% of them had a comfort level at 5. In the surgical units, patients reported that their comfort level was ranged from 1 to 3 and 1 of them had no comfort after pain relieve measures.

Table (7) Distribution of the studied patients according to their comfort after pain relive' measures

Comfort degree	Postoperative Patients			
	Surgical Intensive Care Unit N= 50		General Surgical Units N= 50	
	N	%	n	%
0 (extremely discomfort)	0	0.00	5	10.0
1	0	0.00	18	36.0
2	1	2.0	22	44.0
3	8	16.0	5	10.0
4	10	20.0	0	0.00
5	15	30.0	0	0.00
6	5	10.0	0	0.00
7	11	22.0	0	0.00
8	0	0.00	0	0.00
9	0	0.00	0	0.00
10 (extremely comfort)	0	0.00	0	0.00

Table (8) presents the distribution of the studied patients according to their satisfaction level. This table shows that patients in both settings were satisfied to their pain treatment; however, this level of satisfaction was different in both settings. In surgical ICU, most of patients were rated their satisfaction between 3 to7, while in the surgical units, they were satisfied at level 1 to 3.

Table (8) Distribution of the studied patients according to their satisfaction level

Satisfaction level (0-10) scale	Postoperative Patients			
	Surgical Intensive Care Unit N= 50		General Surgical Units N= 50	
	N	%	n	%
0 (extremely dissatisfied)	1	2.0	4	8.0
1	1	2.0	16	32.0
2	2	4.0	26	52.0
3	9	18.0	4	8.0
4	11	22.0	0	0.00
5	9	18.0	0	0.00
6	4	8.0	0	0.00
7	12	24.0	0	0.00
8	1	2.0	0	0.00
9	0	0.00	0	0.00
10 (extremely satisfied)	0	0.00	0	0.00

Table (9) shows distribution of the studied patients according to their use of non-pharmacological measures. The non-pharmacological measures done for more than half of patients in the surgical ICU (58%) were in the form of walking, guided imagery, distraction, listening to Holy Quraan, deep breathing and coughing exercise, and praying. On the other hand there were only two non-pharmacological measures done in the surgical unit; walking and listening to Holy Quraan (22%, 18%) respectively.

Table (9) distribution of the studied patients according to their use of non-pharmacological measures

Non-pharmacological measures	Postoperative Patients			
	Surgical Intensive Care Unit N= 50		General Surgical Units N= 50	
	N	%	n	%
1. Massage	1	2.0	0	0.00
2. Hot compresses	0	0.00	0	0.00
3. Cold compresses	0	0.00	0	0.00
4. Walking	9	18.0	11	22.0
5. Deep breathing exercises	11	22.0	0	0.00
6. Listen to music	0	0.00	0	0.00
7. Distraction: reading	1	2.0	0	0.00
8. Guided imagery	1	2.0	0	0.00
9. Meditation	0	0.00	0	0.00
10. Praying	7	14.0	0	0.00
11. Relaxation	0	0.00	0	0.00
12. Others (Listen to Holey Quran**)**	1	2.0	9	18.0

Table (10) shows that there was no significant difference between postoperative patients in surgical intensive care unit and general surgical units toward negative effects (physical and psychological) of postoperative pain (P= 0.542, P0.678). Compared with surgical intensive care patients had low and moderate level of satisfaction with nearly to equal percent score. The table also presents that, there was significant difference between postoperative patients in surgical intensive care units and general surgical units toward pain level, participation on pain treatment decision making, comfort level and satisfaction level (P= 0.029, P=<0.001, P=<0.001, P=<0.001) respectively . It was found that all postoperative patients in general surgical units had low satisfaction (100%) in comparison with patients in surgical intensive care unit who had the high satisfaction level of participation in pain decision making, comfort level and satisfaction level (12.0%, 22.0%, 26.0%) respectively.

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Table (10) Comparison between Score Percentage of Studied Patients in Surgical Intensive Care Unit and General Surgical Units in Relation to their Satisfaction toward Nursing Management of Postoperative Pain

Satisfaction toward Nursing Management of Postoperative Pain Aspects	Postoperative Patients												□□	p
	Surgical Intensive Care Unit						General Surgical Units							
	< 60% Low satisfaction		60% - < 80% Moderate satisfaction		≥ 80% High satisfaction		< 60% Low satisfaction		60% - < 80% Moderate satisfaction		≥ 80% High satisfaction			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
▪ Pain level	36	72.0	14	28.0	0	00	50	100	0	00	0	00	0.524	0.029*
▪ Pain negative physical effects	13	26.0	23	46.0	12	24.0	16	32.0	25	50.0	11	22.0	26.253	0.542
▪ Pain negative psychological effects	23	46.0	16	32.0	11	22.0	25	50.0	13	26.0	12	24.0	24.176	0.678
▪ Participation in pain treatment decision making	27	52.0	18	36.0	6	12.0	50	100	0	00	0	00	36.482	<0.001*
▪ Comfort degree	9	18.0	30	6.0	11	22.0	50	100	0	00	0	00	23.056	<0.001*
▪ Satisfaction level	13	26.0	24	48.0	13	26.0	50	100	0	00	0	00	29.749	<0.001*

X^2: Chi square test *: Statistically significant at $p \leq 0.05$

IV. DISCUSSION

Numerous studies on healthcare team experiences with patients' pain have been investigated [23-27], but data on the pain experience from the patient's point of view and their satisfaction to pain management are still little. Therefore, this study was conducted to evaluate patient satisfaction toward postoperative pain management in two different settings; general surgical units and ICU. Despite the differences in the nature of both settings, pain in critically ill post-operative patients and in general surgical units continues to be undermanaged. The main difference between ICU and any hospital unit is the level of care provided which is dependent on the qualification of nurses and the nurse patient ratio [28].

This study agree with that; as from the researchers point of view; the nurse-patient -ratio was appropriate in ICU than in the surgical units, this ratio reflected in pain management as the patients' participation in the pain treatment decision making in ICU was better than surgical units. As well as, patients in ICU were more satisfied from pain management than patients in the surgical units. Moreover, nurses in these settings were mainly focusing on pharmacological interventions rather than the non-pharmacological one.

It was noticed that there is absence of performed pain management policy in both general surgical units and ICU. The purpose of pain management policy is to be responsible for the best level of pain control that can safely be provided to patients to prevent constant pain. No doubt, pain management policies provide guidelines to caregivers in how to assess, treat, and evaluate managing patients' pain. Patient satisfaction with pain management is not only affected by the efficacy of pharmacological treatment, but also by the skills and knowledge of the nurses [16]. In this research, absence of performed pain management policy was illustrated in the patients' complain of pain in both settings. These results supported by many nursing researches which stated that; inadequate knowledge and skills of pain and pain management. Besides to the reports of nurses themselves; that they are unprepared to manage various types of pain [29-32].

Together with, the nurse patient ratios and absence pain management policy in both setting it is noticed that; in the surgical units the most of the participants were complaining with the worst pain level rather than the participants in ICU to some extent. This results supported by many researches which make emphasis on that nurse-to-patient ratios could influence many patient outcomes and patient satisfaction [16, 31].

According to the current study results, it can be noted that most of post-operative patients in surgical ICU complained pain from moderate to tolerable level within the first 24 hours post-operatively. This complain was due to multiple factors; the surgical incisional pain, in addition to other exacerbating factors as postoperative invasive procedures, and

presence of multiple tubes and catheters. Additionally, all patients in the current study were conscious. Thereby, they were aware of the ICU strange environment, and complex technology. On the other hand, patients in the general surgical units were suffered from severe pain level; this is mainly due to surgical incision. In line with the current study finding, Eshete et al, 2019 [33] found in a prospective longitudinal study to assess the quality of postoperative pain management that patients were suffered from moderate to severe pain postoperatively and pain was inadequately treated. This result was different from Vilīte et al, 2019 [16] who found that postoperative pain for patients after surgery is mostly mild. Also, the finding of the current study is in contrast with Hamid et al, 2014 [34] who found in their study conducted in a postoperative ICU that the majority of patients were complaining of mild or no pain.

Patients reported through the interview used to collect data in the current study that; they were complained due to pain from certain negative effects. It can be noted that all of patients in the postoperative ICU experienced negative effects of pain as most of them being anxious, depressed, had fear, and helplessness. Moreover, pain has been affected on most of patients' mobility either in bed or out of bed, and their sleep initiation and continuity. As well, in the general surgical units, patients experienced the same negative effects of pain as patients in ICU. In line with current study findings, Swift A [35] who conducted a study to understanding the effect of pain and how the human body responds. Swift A found that anxiety was associated with pain in about half of patients and only few patients complained from depression. Moreover, about one third of patients felt that pain causing anxiety.

Routine pain assessment and individualized pain management plan is the cornerstone in successful pain relief and high patient satisfaction [17]. There are various pharmacologic and non-pharmacologic interventions have been developed for pain management. In the current study, pain management was focused mainly on the pharmacological therapy. Critical care nurses due to the sensitivity of the overall situation, and the life threatening conditions of patients respond rapidly to patients' pain complaint almost pharmacologically. This may be the rationale behind most of the studied patients' self-report in the post-operative surgical ICU that they participated in their pain treatment decision making. While in general surgical units; the patients were not allowed to participate in their pain treatment decisions and they did not received any information about pain treatment options both pharmacological and non-pharmacological. However, the only used non-pharmacological interventions were mainly in the form of walking and deep breathing exercises. These non-pharmacological interventions were routinely done in both settings to decrease the post-operative complications not intentionally performed to decrease pain. In line with finding of this study, Ali 2010 [36] assessed critical care nurses' use of non- pharmacological pain measures in medical, emergency and surgical units and concluded that the majority of critical care nurses didn't use non-pharmacological interventions with their patients during pain.

Pain control is known to be the main indicator of the level of satisfaction among patients [37,38]. In the current study, the majority of patients in ICU were satisfied in a moderate level, while in the general surgical units, the majority of the studied patients were not satisfied. In both settings nurses have no training programs in pain management, also there is absence of pain assessment formats and clear pain management standards, only the pain killers prescribed by the physician were used when the patient complained from pain. From researchers' point of view, Egyptian nurses are often, overwhelmed by extra-administrative tasks and duties, beyond their capabilities and divert their attention beyond their patients' basic needs. However, the difference in satisfaction level between patients in the two settings would be related to the high nurse to patient ratio in ICU in comparison with the general surgical units which fasten the nurses' rapid response to their patients' complaint. On the other hand, in the surgical ICU; qualifications of the nurses who gave a direct patient care, the high risk condition of the patients, and fear of pain consequences on the recovery all are factors that could increase nurses' response to pain and thus improve the patients' satisfaction. However, stabilization and resuscitation efforts could take priority over pain management in the postoperative ICU settings.

MITSIOU 2013 [20] conducted a study to evaluate patients' satisfaction with their post-operative pain management. MITSIOU found that the majority of the surgical patients were satisfied with their post-operative pain treatment despite experiencing moderate to severe pain levels. Vilīte et al, 2019 [16] found in their study that despite the nurses' knowledge was average, patients were highly satisfied with pain management after surgery in the first 24 hours. This highlights the effect of nurses' communication and attitude as factors affecting patient satisfaction [16]. These results are in congruence with Wood (2020) [37] who stated that, assessment of a patient's experience of pain is a crucial component in providing effective pain management. Although the nursing definition of pain is what the patient says it does, there is scant evidence that many nurses may perceive pain as a sequence of disease or treatment related. Pain management after surgery remains

to be below the standard; there are many causes including lack of translation of results from basic science studies and scientific clinical evidence into clinical praxis [39,40].

V. CONCLUSION

In both settings; general surgical units and surgical ICU the findings of the present study concluded that; patients experienced pain in a moderate to severe level. Most of patients had no participation in their decision making to pain management in the surgical units, while there was a variation in patients' participation in the pain treatment decision making in the surgical ICU. Patients in surgical ICU were more satisfied than patients in the surgical units. Moreover, nurses in these settings were mainly focusing on pharmacological interventions rather than the non-pharmacological one. Also there was a significant difference between postoperative patients in surgical intensive care units and general surgical units toward pain level, participation on pain treatment decision making, comfort level and satisfaction level.

VI. RECOMMENDATIONS

- Development of pain policies, and manual guidelines about surgical pain management, to guide care providers and patients at surgical units, is mandatory.
- Continuing on the job, training programs related to pain management should be addressed for nurses working at all surgical units.
- Replication of this study in several settings is recommended to allow generalization of the findings. Further researches should be conducted to evaluate the patients' satisfaction qualitatively.

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