

Pain Experience and Satisfaction with Pain Management among Patient's Undergoing Knee and Hip Arthroplasty

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Abstract: Total Hip Arthroplasty (THA) and Total Knee Arthroplasty (TKA) are now very common procedures performed in Orthopaedics. Pain experienced after orthopedic surgeries remain unclear and results from several factors; one of them is postoperative pain experience and management protocol. The aim of this study was to determine pain experience and satisfaction with pain management among patients undergoing knee and hip arthroplasty. Setting: The study was carried out in Trauma and Orthopaedics departments of Elhadra orthopedic and traumatology Hospital, Alexandria. Subjects of the study consisted of convenient sample of 100 adult patients undergoing knee and hip arthroplasty. Two tools were used to collect the necessary data, bio-socio-demographic and postoperative pain experience and satisfaction questioner. Results showed that postoperative severe pain was experienced among majority of the studied patients. More than half of the patients reported difficulties in performing activities in-bed and outside bed, the pain also affects sleep pattern, mood and emotional status Conclusion: the study concluded that majority of the patients experience severe pain during the first 24 hours of surgical intervention which affects patients recovery period and imply activities in-bed and outside bed of the patient. In addition to, the presence of dissatisfaction of the patients to pain management during postoperative period. Recommendations: This study recommended that encouraged nurses to use all treatment options pharmacological and non- pharmacological for management of postoperative pain and informed about possible risks.

Key words: Total hip arthroplasty • Knee arthroplasty • Pain experience • Pain satisfaction

INTRODUCTION

Pain could be defined as an “unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage”. It could imply that pain is a complex and multifactorial experience that involves multiple organ systems. An increased amplification of pain is related to tissue injury, blood pressure, impaired pain regulatory systems and proinflammatory states. All chronic pain was once acute, but not all acute pain becomes chronic. The transition is complex and involves pre-, intra- and postoperative, psychosocial, socio-environmental and patient-related genetic factors [1-2].

Postoperative pain is a major concern for surgical patients. Orthopedic surgery is considered a particularly painful procedure. The severe pain experienced after orthopedic surgery is due to the demanding surgical procedure, which involves muscle and skeletal tissue

repair or reconstruction [1]. Total Hip Arthroplasty (THA) and Total Knee Arthroplasty (TKA) are now very common procedures performed in orthopedics with 150, 000 performed per year in the UK according to the National Joint Registry [3-5].

Total knee and total hip arthroplasty are common elective procedures whose demand is continually rising due to ageing population. The major aim of these surgeries is to relieve pain; improve quality of life, physical activity and mobility, allowing a better social and psychological well-being [6-8]. Various authors have studied this and pain relief was identified as the most important factor concerning quality of life, followed by psy-chological well-being and restoration of physical activity. Despite the high satisfaction rates published, up to 20% of TKA and 7% of THA patients remain dissatisfied after surgery and require post-surgical supplementary medical treatment, producing an additional burden for the national healthcare system [9-12].

The medical profession has devoted considerable effort to managing pain by developing new approaches to relieving pain, including medication for pain relief and establishing pain-management guidelines. However, adequate pain management remains an important issue for postoperative patients. Non-pharmacologic measures may be effective in pain management, but are often overlooked or underused. Nurses familiar with simple and noninvasive non-pharmacologic measures, such as patient positioning, massage therapy, relaxation techniques, music listening and cold applications, can identify and educate patients who may benefit from them [13, 14].

Nurses are the professionals who spend the most time with the patients in the ward after the surgery. Their responsibilities in pain assessment include applicable planning and implementing sufficient medical treatments. Additionally, nurses are required to perform patient-orientation and counseling during postoperative care in order to improve pain management before the patient is discharged. Besides implementing pharmacological and non-pharmacological pain management methods, nurses are also responsible for documenting the recovering process of patients, the side effects they experience, the effectiveness of the treatments and discuss with doctors the possibility of suggesting another method if the current treatment is proved to be inefficient in relieving pain. Inadequately treated postoperative pain is considered to be one of the main problems in health care services. One of the causes of delayed discharge of surgical patients is insufficient knowledge of pain management and underestimation of patients' pain [15, 16].

Aim of the Study: The study aimed to determine pain experience and satisfaction with pain management among patients undergoing knee and hip arthroplasty.

Research Question: What is the postoperative pain experience and satisfaction of patient's undergoing knee and hip arthroplasty?

MATERIALS AND METHODS

Materials

Design: A descriptive study design was used.

Sitting: The study was carried out in Trauma and Orthopedics Departments of Elhadra Orthopedic and Traumatology Hospital, Alexandria.

Subjects: A total of 100 patients were studied, 50 underwent THA and 50 who underwent TKA between 2016 and 2017.

Inclusion Criteria:

- Patients scheduled for a primary total hip and total knee arthroplasty.
- Adult patients with age 21-60 year.
- Willing to participate in the study.

Exclusion Criteria: Mention Age Exclusion??:

- Patients undergoing revision hip or knee arthroplasty.
- Patients having other body pains like, back pain or hip pain.
- Patients who are confused or having cognitive impairment.

Tools: Two tools were used in the study to collect the necessary data:

Tool I: Bio-socio-demographic assessment sheet: Developed by the researcher after reviewing of literature [12-17] to collect data pertinent to the study. It was composed of two sections: The first section included personal data such as age, gender, level of education, occupation, marital status...etc. While, the second section included medical data such as medical diagnosis, type of surgery, site of surgery, postoperative medications

Tool II: American Pain Society's patient outcome questionnaire (*APS-POQ R*) [18]. Used to measure pain experience and satisfaction to pain management during first 24 hours in the hospital or after operation. It was adopted from the revised American Pain Society's patient outcome questionnaire (*APS-POQ R*) for quality improvement of pain management in hospitalized adults. The questioner includes two parts:

Part I: This part includes 7 items about pain experience during first 24 hours after operation, using 0-10 numeric rating scale. Verbal Numerical Pain Rating Scale (VNRS; Taiwan version) to measure pain. The VNRS is frequently used to assess pain and the effects of pain management. The patients indicated their degree of pain by using a scale ranging from 0 (*no pain*) to 10 (*the worst pain possible*). Such scales have the advantages of being quick and simple and requiring no equipment and they are

easy to understand and do not depend on intact motor skills. Strong concurrent validity for a numeric rating scale of 0 to 10 has been documented with a correlation coefficient of 0.92. Pain intensity from 0 to 10 (0 no pain, 1-3 mild pain, 4-6 moderate pain, 7-9 severe pain, 10 worst pain) [19, 20].

Part II: This part includes 6 items about satisfaction of pain management. The questionnaire was composed of 14 questions, on issues such as whether pain exists after surgery, if pain management should be undertaken, duration between patients' complaints about pain and response management, if medical personnel demonstrated the importance of pain management and their satisfaction with pain management. The questionnaire used a 5-point scale ranging from 1 (highly dissatisfied) to 5 (highly satisfied). The correlation coefficient of reliability was 0.80.

Methods:

- An official letter from the faculty of nursing was submitted to the director of the El-Hadara Orthopedic and Traumatology Hospital, Alexandria University after explanation of the purpose of the study.
- Tools of the study were developed by the researchers after extensive review of relevant literature.
- Content validity of the study tools were ascertained by a jury of 5 experts in the fields of medical surgical nursing.
- Tools were tested for reliability by using Cronbach Alpha Coefficient Test tool II part I ($r = 0.92$) and of Part II ($r = 0.80$).
- Pilot study was carried out on 10 patients undergoing total hip arthroplasty and total knee arthroplasty who fulfilled the inclusion criteria and selected from the study sitting to assess clarity and applicability of the tools.
- Data collection: Data were collected during period starting from the first of January 2016 to the end of May 2017.
- Each patient was interviewed individually to collect the necessary data during first 24 hours after operation. It took approximately 20-30 minutes to complete.

Ethical Considerations: The study was approved by the director of the El-Hadara Orthopedic and Traumatology

Hospital, Alexandria University. For participants who met the inclusion criteria, we explained in person the purpose of the study, data collection procedure and their rights to refuse to participate or to opt out at any time. All collected data were anonymously encoded to ensure that participant information remained confidential.

Data Processing and Statistical Analysis: This study used the Statistical Package for Social Sciences (SPSS, Chicago, IL, USA) software for Windows, version 15.0, to archive and analyze all data. The statistical methods included descriptive statistics.

The Used Tests Were:

- Chi-square Test: for categorical variables, to compare between different groups
- Fisher's Exact Test: correction for chi-square when more than 20% of the cells have expected count less than 5.

RESULTS

Table (1) shows frequency distribution of the bio socio-demographic and clinical characteristics of the studied patients. The results stated that age of patients ranged between 20 to 60 years with a mean of 45.66 ± 8.72 years. Patients who aged between 40 and 50 years represented more than half of the sample (52%). Moreover, the majority of the patients (52%) were males. Regarding level of education, the largest proportion (30%) was primary and preparatory education while those who had secondary education constituted 24%. Illiterate patients represented 16% while those who had university education constituted only (6%). Again, the majority of the studied patients (32%) were divorced while only minority were either single (16%), married (28%) or widow (24%). Approximately two thirds of the patients are house wife living in rural area. As noted from the table that, (75%) of the patients receive non-steroidal anti-inflammatory drugs for controlling preoperative pain.

Table (2) portrays the distribution of patient's undergoing knee and hip arthroplasty according to pain experience during first 24 hours after operation. In relation to least pain experienced during the first 24 hours (40%) of the patients had reported moderate pain. While, sever pain was described by (43%) of the patients. Whereas the worst pain described as being sever was among (93%) of the patients during first 24 hours of surgery.

Table 1: Frequency distribution of patients' undergoing knee and hip arthroplasty according to their bio-sociodemographic characteristics

Bio-sociodemographic characteristics	Studied patients (N= 100)	
	No	%
Age (years)		
20-9	6	6.0
30 -9	12	12.0
40 -9	52	52.0
50-60	30	30.0
Total	100	100.0
X ± SD	45.66± 8.728	
Sex		
Male	52	52.0
Female	48	48.0
Level of education		
Illiterate	16	16.0
Read& write	24	24.0
Primary +Preparatory	30	30.0
Secondary	24	24.0
Higher education	6	6.0
Marital status		
Single	16	16.0
Married	28	28.0
Divorced	32	32.0
Widow	24	24.0
Residence		
Urban	42	42.0
Rural	58	58.0
Occupation		
Not working	8	8.0
Businesses	0	0.0
Clerical work	26	26.0
Manual work	26	26.0
Retired	0	0.0
House wife	40	40.0
Post-operative pain management medications		
Non-steroidal anti-inflammatory only	75	75.0
Steroidal anti-inflammatory only	0	0.0
Steroidal &Non-steroidal anti inflammatory	25	25.0
Total	100	100.0

Table 2: Frequency distribution of patients' undergoing knee and hip arthroplasty according to pain experience during first 24 hours after operation

Pain experience	Pain severity										Total
	No pain		Mild		Moderate		Severe		Worst possible pain		
	No	%	No	%	No	%	No	%	No	%	
• The least pain experienced during the first 24 hours	0	0.0	17	17.0	40	40.0	43	43.0	0	0.0	100
• The worst pain experienced during the first 24 hours	0	0.0	7	7.0	0	0.0	93	93.0	0	0.0	100
• The average pain experienced during the first 24 hours	0	0.0	7	7.0	38	38.0	31	31.0	24	24.0	100

Table 3: Frequency distribution of patients undergoing knee and hip arthroplasty according to pain interference with activities of daily living

Activities of daily living	Not interfere		Partially interfere		Totally interfere		Total
	No	%	No	%	No	%	
1- Bed activities:							
• Turning, sitting up, repositioning.	19	19.0	50	50.0	31	31.0	100
2- Activities out of bed:							
• Walking, sitting in a chair, standing at the sink.	0	0.0	0	0.0	100	100.0	100
3- Sleeping							
• Falling asleep	0	0.0	4	4.0	96	96.0	100
• Staying asleep	0	0.0	0	0.0	100	100.0	100
4- Pain effect on mood and emotions	Not at all		Slightly		Extremely		
	No	%	No	%	No	%	Total
• Anxiety	14	14.0	18	15.0	62	62.0	100
• Depression	78	78.0	22	22.0	0	0.0	100
• Frightens	36	36.0	36	36.0	28	28.0	100
• Helplessness	22	22.0	36	36.0	42	42.0	100

Table 4: Frequency distribution of patients undergoing knee and hip arthroplasty according to side effects of pain medications

Side effects	None		Mild		Moderate		Severe		Total
	No	%	No	%	No	%	No	%	
• Nausea	8	8.0	16	16.0	48	48.0	28	28.0	100
• Drowsiness	18	18.0	48	48.0	34	34.0	0	0.0	100
• Itching	34	34.0	42	42.0	24	24.0	0	0.0	100
• Dizziness	2	2.0	24	24.0	52	52.0	22	22.0	100

Table 5: Frequency distribution of patients undergoing knee and hip arthroplasty according to their participation in pain treatment decision

Participation in pain treatment decision	Studied patients (N= 100)	
	No	%
Participation in pain treatment decision		
• Not at all	100	100.0
• Very much so	0	0.0
Total	100	100.0
Receiving any information about pain treatment options		
• No	93	93.0
• Yes	7	7.0
Total	100	100.0

Table 6: Frequency distribution of patients undergoing knee and hip arthroplasty according to satisfaction from pain treatment

Patient's satisfaction	Extremely Dissatisfied		Slightly Satisfied		Extremely Satisfied		Total
	No	%	No	%	No	%	
	78	78.0	11	11.0	11	11.0	100

Table (3) illustrates interference of pain on activities of daily living. In relation to bed activities it was found that half of the studied patients reported partial interference. On the other side, activities outside the bed were totally affected among all patients. As regard sleeping pattern it was found that (96%) of the patient reported total interference of postoperative pain with sleeping pattern. Concerning pain experience related to

mood and emotion, 62% of patients experienced extreme affection of the pain on anxiety level and 42% suffered from extreme helplessness, while pain slightly affect sense of depression leading to fright among (36%) of the studied patients.

Table (4) illustrates distribution of the patients according to side effects of pain medications received during the first 24 hours of surgical intervention.

Table 7: Frequency distribution of patients undergoing knee and hip arthroplasty according to use of non-pharmacological pain relief methods

Non-pharmacological pain relieve methods	Studied patients (N= 100)	
	No	%
• Non	83	83.0
• Cold pack	5	5.0
• Meditation	0	0.0
• Deep breathing	0	0.0
• Listen to music	0	0.0
• Distraction (such as watching TV, reading)	0	0.0
• Prayer	10	10.0
• Heat	2	2.0
• Relaxation	0	0.0
• Imagery or visualization	0	0.0
• Walking	0	0.0
• Massage	0	0.0
Total	100	100
How often a nurse or doctor encourage patients to use non-pharmacological methods		
• Never	84	84.0
• Sometimes	0	0.0
• Often	0	0.0
Total	100	100

Over half of the patients (52%) complain of moderate dizziness, approximately half (48%) had moderate nausea and 34% drowsiness and the minority (24%) had moderate itching.

Table (5) shows frequency distribution of patient's undergoing knee and hip arthroplasty according to their participation in pain treatment decision. The results of the present study found that, all the patients didn't participate in pain management plan and the majority of them (93%) didn't not receive any information about pain treatment options.

Table (6) illustrates distribution of patient's undergoing knee and hip arthroplasty according to satisfaction from pain treatment. It was reported that (78%) of the studied patients were extremely dissatisfied from pain treatment, while, only (11%) of the patients experienced slightly and were extremely satisfied.

Table (7) reveals frequency distribution of patients undergoing knee and hip arthroplasty according to use of non-pharmacological pain relief methods. Results illustrate that, majority of the studied patients (83%) receive non-pharmacological management for pain relief, while; minor percentage of them received cold pack, heat pack and participated prayer as follow (5, 2&10%) respectively.

DISCUSSION

Postoperative pain is caused by ischemia and the release of neuropeptides at the site of the trauma and

throughout the nervous system. Numerous studies continue to indicate problems with postoperative pain following orthopedic surgery [13]. Several studies tried to optimize techniques and drugs to improve management of postoperative pain and increase patient satisfaction [1-3-6]. In general, nerve blockage is superior to patient-controlled analgesia in TKA. Despite heightened awareness and clinical advancements in pain management, the quality of acute postoperative pain management is still far from satisfactory as shown by Benditz *et al.* [16].

The results of the current study revealed that the overall percent score of pain severity at first 24 hours of surgical intervention post total hip and total knee arthroplasty was severe. Similar, findings have been reported by Benditz *et al.* [16] who stated that total knee arthroplasty is highly stressful for patients. After surgical intervention, 75.0% of patients complain about moderate to severe postoperative pain with high correlation with the development of chronic pain. These results are in line with Subramanian *et al.* [21] who reported that majority of postoperative patients had experienced severe pain during first 24 hours postoperatively.

In relation to postoperative pain severity, majority of the studied patients experienced severe pain during the first 24 hours of surgery at rest and during activity. This may be results from Postoperative pain is caused by ischemia and the release of neuropeptides at the site of the trauma and throughout the nervous system. Numerous studies continue to indicate problems with

postoperative pain following orthopedic surgery [13]. Recent studies done by Veal *et al.* [22] and Samona *et al.* [23] reported the same results. Despite advances in surgical and anesthetic techniques, many patients still suffer from acute pain in the postoperative period. Many anesthesia modalities and medications have been used in various combinations to reduce the amount of pain experienced by patients postoperatively.

Moreover, the finding of the present study showed that majority of the patients reported extremely dissatisfied with management of postoperative pain, response of medical team for pain management and participation in management plan of postoperative pain. This finding congruents with Lavand'homme *et al.* [24] and Choi [25] who found that, patients are not satisfied after TKA without evident clinical or radiological findings and the most common causes of patient dissatisfaction include residual pain and limited function. Same results are reported by Gustke *et al.* [9] who stated that patients who undergo TKA consistently report higher levels of pain, greater impairment of function and lower levels of satisfaction than those who undergo total hip arthroplasty. A number of explanations for these findings have been suggested. Satisfaction correlates closely with function. Dissatisfaction may reflect the failure of the surgeon to manage the expectations of the patient prior to surgery. It is likely that both factors contribute to dissatisfaction.

Regarding to impact of postoperative pain on physical activities of the patients the results of the present study indicated that the majority of the patients reported severe postoperative pain that affect activities in and out of the bed. This can be explained by patient's expectation of increased pain level with movement. This finding is supported by Le- Ko *et al.* [13] who revealed that the pain experience for most patients was reported to be highest on the first postoperative day estimated that postoperative pain following total knee arthroplasty was severe in 60% of patients and moderate in a further 30%. Pain interferes most with walking, exercise, general activity and sleep. Similar results were reported by Karabulut *et al.* [26] who examined patient's satisfaction with their pain management reported that, all of their studied patients report dissatisfaction with their pain management.

Concerning to impact of postoperative pain on psychological status of the studied patients the results of the present study indicated that approximately half of the patients experienced extreme affection of the pain on anxiety level and helplessness, while pain slightly affect

sense of depression and frightens. Abel-Hameed [27] who examined the postoperative pain in Egyptian patients found same results among their studied patients and reported that postoperative pain effect on sleeping pattern of the patients and indirectly affect psychological condition. These results agree with Woldehaimanot *et al.* [28] most of patients in their study experience anxious and helplessness during postoperative period. They may be explained as anxiety of the patients from unexpected outcome of surgical interference, fear of disability, body image disturbance and fear of death, fear of pain and fear of falling [29].

The present study findings revealed that approximately half of the studied patients suffer from mild to moderate side effects from pharmacological pain management. These results are in line with Stephan and Parsa [30] who stated that pharmacological pain management having critical unfavorable side effects as nausea, vomiting, dizziness, respiratory depression and addiction.

In spite of the fact that, majority of the studied patients did not receive any types of non-pharmacological management for pain relive, while; minor percentage of them received cold pack, heat pack and participate prayer. In support of this finding Lee-Ko *et al.* [13] stated that non-pharmacologic measures may be effective in postoperative pain management, but are often overlooked or underused. Nurses familiar with simple and noninvasive non-pharmacologic measures, such as patient positioning, massage therapy, relaxation techniques, music listening and cold applications, can identify and educate patients who may benefit from them.

Several studies were done to evaluate postoperative pain management and patient satisfaction [31-33], accordingly, the results of the present study concluded that patient dissatisfaction may be experienced as a result of insufficient preoperative patient education and lack of communication between patients and health care providers leads to inappropriate pain management and lowered patient's satisfaction.

CONCLUSIONS

Based on the results of the present study, the following conclusion can be drawn. Patients experienced severe pain level during the first 24 hours after total hip and total knee arthroplasty, with low level of satisfaction of postoperative pain management. In addition to, negative impact of pain on physical and emotional status of the patients.

Recommendations:

- Encourage nurses to use all treatment options available for management of pain and informed about possible risks.
- Encourage using non-pharmacological therapeutic modalities for management of postoperative pain.
- Plan and organize way of communication between the patient and between nurse and physician.
- Encourage patients to report pain to the nurses as early as possible for early intervention and not try to bear the pain.

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