

***EVIDENCE-BASED OF PAIN MANAGEMENT IN POSTOPERATIVE PATIENTS
A CASE STUDY***

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ABSTRACT

Pain is the main reason encountered by hospitalized patients in general and surgical patients in particular. Postoperative pain is caused by tissue damage as a consequence of the surgical procedure. Nurse has role to control and relieve of acute postoperative pain. This study aim to describe the level of acute postoperative pain and influencing factors among the surgical patients, and evaluate the outcomes of evidence based practice interventions in relieving acute postoperative pain. Four patients who underwent surgery, cooperative, able to communicate and follow up for at least three days were selected as a subject. The DDQ and NRS were used to collect the data. The findings showed that the pain score decreased after subject received pain management intervention both pharmacologic and nonpharmacologic. Pain medication alone is not effective; they need non-pharmacologic approach as well. This study recommended both pain management pharmacologic and non-pharmacologic can be used together in relieving acute postoperative pain. To improve of knowledge, in clinical setting particularly in surgical ward, nurses have to try to apply the evidence based in managing pain.

Background of the study

Pain is a common symptom found in patients with acute and chronic illness. Pain is also the main reason encountered by hospitalized patients in general and surgical patients in particular. Tranmer, Heyland, Dudgeon, Squires and Coulson (2003) reported that 74 % of 69 patients included postoperative patient in their study experienced pain. Postoperative pain is caused by tissue damage as a consequence of the surgical procedure.

The source of postoperative pain is the injury that induced release of chemical mediators that occurs with the acute inflammatory responses. Bradykinin, substance P, and prostaglandins are released from the injured cells. Pain stimuli sensitize pain receptors so that once the brief period of injury is over; long standing changes in the neurons maintain the pain postoperatively. Some authors believe that, despite the drugs and anesthetic techniques available, the prevalence of postoperative pain is still high (Apfelbaum, Chen, & Mehta, 2003; Omote, 2007; Power, 2005).

Acute postoperative pain has physiological, emotional, economical, social and spiritual impacts. These issues are as a challenge for nurse in relieving acute postoperative pain. Nurse has role to control and relieve of acute postoperative pain by administering pain-relieving interventions including both pharmacologic and non-pharmacologic approaches.

Pharmacologic alone may not fully relieve all aspects of acute postoperative pain. Complementary therapy as an adjuvant therapy may have the potential to improve pain management and palliate acute postoperative pain (Piotrowski, Paterson, Mitchinson, Myra, Kirsh, & Hinshaw, 2003).

In recent years, many complementary therapies such as massage, soothing music, relaxation, mind-body techniques, reflexology, herbal medicines, hypnosis, and therapeutic touch have proved decrease pain level to help manage pain (Smith, Collins, Cyna, & Crowther, 2003). Those

therapies can be used to manage pain and promote healthy living, and the combination of pharmacological and non pharmacological intervention can improve patient opportunities for self-control over manifestation of pain (Black & Hawks, 2005).

Objectives of the study

The objectives of this study are to:

1. Describe acute postoperative pain experience of surgical patients.
2. Examine factors influencing acute postoperative pain among surgical patients.
3. Apply and evaluate the outcomes evidence based interventions in relieving acute postoperative pain.

Methods of the study

Subjects in this study were patients who underwent surgery associated with a significant degree of acute postoperative pain. They were hospitalized in a male surgical ward Songklanagarind Hospital. Criteria for case selection in this study include: 1) patients who follow minor and major surgery. 2) cooperative and able to communicate. 3) Follow up for at least three days.

Data collection tools were used in this study consisted of (1) Demographic Data Questionnaire (DDQ) and (2) Numeric Pain Intensity Scale. The DDQ was deriving from study that developed by Hooi (2007). From 35 items, the author revised and modified the items to be 22 items that relevant for this study.

The pain intensity was measured by using Numeric Pain Intensity Scale. Each patient was asked and then mark on the number that best describe how much pain intensity he was experiencing at the moment, and then the number was recorded. The left end of the line with number zero represented no pain, number 1 to 3 represented mild pain, number 4 to 6 represented moderate pain, and number 7 to 9 represented severe pain, and number 10 represented worst possible pain (McCaffery&Beebe, 1993).

Data collection technique was based on nursing process, started from assessment, data analyzing, planning, implementation, and evaluation. In the assessment part, the information for DDQ were collected by using interview method to the patient and family, conducted physical examination to the patient, sought from hospital information system (via computer), and patient record. Then, continued with measure pain intensity by using Numeric Rating Scale (NRS). After collected the data then was analyzed by using mind mapping technique to develop nursing diagnosis related to patient problem. Furthermore, nursing care plan for

intervention based on developing map to provide holistic care and found appropriate pain intervention which suitable for patient. In term of relieving pain, beside patient receive pain medication as usual care, nurse performed the music therapy, foot massage, jaw relaxation and distraction technique as complimentary therapies and each patient can select one intervention to be implemented for at least 20 to 30 minutes. After the implementation, then nurse reassessed the level of pain by using Numeric rating Scale (NRS) to determine whether those intervention effective or not effective in relieving acute postoperative pain.

Findings

Table 1
Demographic data subject, data-related health, and data-related to postoperative pain
Demographic data

No	Data	Patient 1	Patient 2	Patient 3	Patient4
1	Patient initial	NS	NS	YP	SS
2	Age	63	69	73	30
3	Gender	Male	Male	Male	Male
4	Race	Thai	Thai	Thai	Thai
5	Educational level	Primary School	Primary School	Master degree	Secondary School
6	Religion	Buddhist	Buddhist	Buddhist	Buddhist
7	Occupation	Rubber farmer	Farmer	Police retired	Rubber farmer

Data-related health

No	Data	Patient 1	Patient 2	Patient 3	Patient4
8	Alcohol history		yes	yes	yes
9	Smoking history		yes	yes	Yes
10	Presence of family during hospitalization		yes	yes	yes

Data related to postoperative pain

No	Data	Patient 1	Patient 2	Patient 3	Patient4
11	Preoperative intervention	yes	yes	yes	yes
12	Previous surgery	no	yes	no	yes
13	Medical diagnosis	Right pneumothorax (Pulmonary blebs)	Ca Rectum	Right pneumothorax (Pulmonary blebs)	Multiple small bowel obstruction
14	Surgical intervention	Right thoracotomy with bullectomy	Ileocelectomy with sigmoid loop colostomy	Right thoracotomy with bullectomy	Explore laparotomy for small bowel resection
15	Type of surgery	Major	Major	Major	Major
16	Duration of surgery	2 hours, 25 minutes	3 hours, 10 minutes	2 hour, 55 minute	3 hour, 55 minute
17	Direction of surgical incision	Vertical lateral incisional	Midline incisional	Vertical lateral incisional	Midline incisional

18	Length of incision	20 cm	25 cm	20 cm	25 cm
19	Presence of incision drain	ICD	JD	ICD	JD
20	Types pain medication currently used	Morphine Tramadol Paracetamol	Morphine, Pethidine Paracetamol	Morphine	Fentanyl
21	Technique of anesthesia	General anesthesia	General anesthesia	General anesthesia	General anesthesia
22	Non-pharmacological intervention	Deep breathing exercise Foot massage	Deep breathing exercise Music therapy Foot massage	Deep breathing exercise Music therapy	Music therapy Distraction

Table 2
Pre and post-test acute postoperative pain

No	Patient's initial	Day 1		Day 2		Day 3		Outcome
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	
1	Mr. NS (POD 1-3)	5	3	4	3	3	1	The average pain decreased until 2 score after received intervention
2	Mr. NS (POD 3-5)	7	2	5	3	3	1	The average pain decreased until 3 score after received intervention
3	Mr. YP (POD 2-4)	6	3	8	slee p	5	3	The average pain decreased until 4 score after received intervention
4	Mr. SS (POD 3-5)	4	3	4	1	2	1	The average pain decreased until 2 score after received intervention

Table 3
Pain management in postoperative patients

No	Patient	Pain management	Day 1	Day 2	Day 3
1	Mr. NS	Pharmacologic	Morphine sig 3 mg IV q 3 hr	Tramadol 50 mg cap sig 1x3 @pc Paracetamol 500 mg tab sig 1 q 4 hr	Tramadol 50 mg cap sig 1x3 @pc
		Non pharmacologic	-	Deep breathing for 10 minutes	Foot massage for 20 minutes
2	Mr. NS	Pharmacologic	Morphine sig 3 mg IV q 3 hr	-	-
		Non pharmacologic	Deep breathing for 10 minutes	Jaw relaxation for 10 minutes and music for 20 minutes	Foot massage for 20 minutes
3	Mr. YP	Pharmacologic	Fentanyl sig 30 mg IV q 3 hr	Fentanyl sig 30 mg IV q 3 hr	Fentanyl sig 30 mg IV q 3 hr
		Non pharmacologic	-	Music therapy for 20 minutes	Foot massage for 20 minutes
4	Mr. SS	Pharmacologic	Fentanyl drip drip (0.1 mg/ml) sig 30 mg IV q 3 hr, pain score is 3	-	-
		Non pharmacologic	-	Music therapy for 20 minutes	Distraction read comic

Discussion

According to explanation four cases above, some factors influence level of pain among those patients including age, gender, past experience with pain, culture, psychological factor (anxiety) and coping mechanism due to acute postoperative pain. These factors have influenced in relieving pain level from day to day. In addition, preoperative intervention also influence on pain outcome that feel by the patients.

For age factor, basically ages will affects to the way of people respond to pain, whereas increasing age is a risk factor to develop further pain in postoperative patient (Kehlet et al., 2006). From four cases, three cases are elderly and one case is adult. Age factor may contribute in the patient's pain. Three cases with elderly, they had problem with pain. The pain score was higher than adult patient. The pain level was moderate pain. If compare with cases number 4, he is adult patient. He can manage his pain. The level of pain was mild pain. A study found that an inverse correlation between age and morphine consumption to achieve a similar level of pain relief (Burns et al as cited in Mamie and colleagues (2004).

Gender is important factor in response to pain as well. All of patient is men, so cannot compare with women in this study. In this study, men patient could manage the postoperative pain. In one study was conducted by Berkley and Holdcroft (1999), gender was a significant factor in the pain response, with men reporting less pain than women regardless of ethnicity. In some cultures in the United States, boys and men are expected to express pain less than women. Men have higher tolerance with pain than women.

Another factor that influence on patient's pain perception is psychological factor. Many psychological factors that influence on pain perception such as anxiety, depression. Anxiety related to feeling fear, dread, and worry. Two of four cases have problem with anxiety. Case number 2, during hospitalization, patient worry and afraid may he will suffer from the cancer disease. He did not know about next medication. After surgery, patient will receive chemotherapy and radiation therapy. He seems stress and worry will suffer from the disease. It was supported a study by Tazner et al., (2003). They stated that anxiety is related with postoperative pain. Case number 4, he had problem anxiety as well. The fourth day

postoperative, the doctor told that he had potential a cancer disease. He was worry. Anxiety is often related to the meaning of the pain (Black & Hawks, 2005)

The last factor that related to acute postoperative is memory of past experiences with postoperative pain. Two patients have past surgical history. Patient number 2 had surgical history with cataract and patient number 4 had surgical history laparotomy ten years ago. They used past surgical history in managing his pain. A person who has had multiple or prolonged experiences with pain will be less anxious and more tolerant of pain than one who has had little pain. Often, the more experience a person has had with pain, the more frightened he is about subsequent pain full events (Smeltzer & Bare, 2000). Similarly a study found that past experience with pain affects the way current pain is perceived. People who had a negative experience with pain as children have reported greater difficulties with managing pain (Porter, Grunau, & Anand as cited in Black & Hawks, 2005).

Patients were managed their pain and other stressors in their life in many different ways. Some of them see themselves as self-sufficient, internally controlled, and independent. As a result, they may deny or be slow to admit they are in pain. While, others see themselves as insufficient, externally controlled, and dependent on others to treat their pain (Hamilton, 2007). From this cases, culture, and ethnicity can be a critical factors for patient respond to pain (Black & Hawks, 2005). Culture and ethnicity have an influence on how a person responds to pain (how the pain is described or how the patients have a response with pain). Individual factor also influence response to pain, how they interpret of pain (Carvillo & Flaskerud as cited in Smeltzer & Bare, 2000).

Conclusion and recommendation

Conclusion

Pain is a common problem encountered by hospitalized patients in surgical ward. After surgery, its development can be predicted and should be prevented and treated. Acute postoperative pain can affect on physical functioning, including the ability to cough and breathe deeply, move, sleep, and perform self-care activities. This may contribute to unintended and serious postoperative complications. To prevent complications,

patients need pain management including both pharmacologic and non-pharmacologic.

Pain medication alone may not be effective, so patients need a non-pharmacologic approach as well. Many techniques that are useful to reduce pain with non-pharmacological intervention, including deep breathing exercise, distraction technique, music therapy, foot massage therapy, and relaxation technique. After receiving these interventions, the pain level decreased. It is appropriate to teach these methods to patients and family in managing acute postoperative pain.

Recommendation for clinical practice and research

Both pain management pharmacologic and non-pharmacologic can be used together in relieving pain. Non-pharmacologic intervention is as an adjuvant treatment to more effectively effect of pharmacologic intervention. This treatment gives support to improve effectiveness of medication. Pharmacologic drugs have side effects that can be life-threatening, such as side effects from morphine can cause depression in the respiratory system. Physicians should consider side effects from these medications.

To improve knowledge, in a clinical setting particularly in a surgical ward, nurses should try to apply evidence-based in managing pain. Another technique may be used as a guideline for further research. These techniques need supporting to prove the effectiveness of complementary therapy.

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