

Guidelines for Regulating the Pain in Post-Operative Patients at Recovery Room of Angthong Hospital

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ABSTRACT

Introduction: Most post-operative patients do not feel well because of very severe pain level during the first 24 hours after surgery, pain can be managed and reduced by means of evidence-based practices.

Objectives: To develop Clinical Practice Guidelines (CPG) for pain management in the recovery room. To assess the effectiveness of the clinical practice.

Developmental research procedures: Phase 1: This phase is the analysis step of the causes of problems regarding post-operative pain management in the recovery room. Phase 2: Guidelines for post-operative pain management were developed. Phase 3: The CPG for post-operative pain management in the recovery room were used as a standard in practice by the staff of the anesthesiology department. The outcomes of the developed methods were assessed. Descriptive statistics and inferential statistics were used.

Results: The development of CPG. The Clinical Practice Guidelines for post-operative pain management in the recovery room follow the practice following

the CPG for post-operative pain management in the recovery room increased from 76.4% to 93.3% and 99.2%, respectively. The development periods were associated with the practices of nurse anesthetists following the Clinical Practice Guidelines in the recovery room with statistical significance ($p < 0.001$). Comparing the means of pain scores before leaving the recovery room, it was found that the means of pain scores of the pre-development period and the during-development period were 2.99 and 2.59, respectively. The mean in the post-development period decreased to 1.86. The overall rating of nurse anesthetists and patients satisfaction in the use of the Clinical Practice Guidelines for pain management in the recovery room was good (mean 4.34, 4.37) respectively. The CPG were appropriate and they were satisfied with the implementation.

Keywords: Post-operative, Pain management guidelines, Recovery room

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INTRODUCTION

Pain affects the body because it causes physiological changes that increase the function of the autonomic nervous system and increase the level of catecholamine's in the plasma. As a result, arteries constrict, the blood flow to a surgical wound decreases, and the level of oxygen pressure under the skin decreases (Bonica JJ, 2001). These factors increase the risk of post-operative complications since a patient will have more pain after he or she starts moving their body. As a result, the patient may feel fearful, worried, bored or depressed. Post-operative pain will be more severe during 12-36 hours after surgery. This pain originates from damaged tissues and nerves that stimulate pain nerve endings (Good M, 1999). Although most post-operative patients do not feel well because of very severe pain level during the first 24 hours after surgery, pain can be managed and reduced by means of evidence-based practices. At Angthong Hospital, pain experienced patients in the recovery room between October 2014 and September 2015 was studied. There were 1,484 patients in the recovery room who received general anesthesia before their operation. It was found that 1,034 (69.67%) of patients who underwent general anesthesia had a post-operative pain level for which analgesics were needed. According to an initial evaluation of Clinical Practice Guidelines, it was found that 51.37% of patients did not receive care based on the guidelines. 45.45% of patients received more than one dose of analgesics. Also, a wide variety of analgesics and inappropriate, insufficient post-operative pain-assessment instruments in the recovery room were used with some patients. Administration of analgesics when the pain score was ≥ 5 was insufficient some patients who had difficulty with pain relief. This demonstrates that the Clinical Practice Guidelines require further development to make them more complete and effective. Therefore, the researcher is interested in developing post-operative pain management guidelines for the recovery room at Angthong Hospital, Angthong Province. Hopefully, the results of the study will result in the use of more appropriate, effective, and standard pain management

guidelines for the recovery room at the hospital, which will benefit the patients as well as nurse anesthetists.

Objectives

1. To develop Clinical Practice Guidelines (CPG) for pain management in the recovery room
2. To assess the effectiveness of the Clinical Practice Guidelines based on
 - nursing practices following CPG of nurse anesthetists
 - patients' pain in the recovery room
 - nurse anesthetists' satisfaction in the use of the clinical practice guidelines for pain management in the recovery room
 - patients' satisfaction with pain management of nurse anesthetists after surgery

MATERIALS AND METHODS

Related theories

PDCA theory, known as the Deming Cycle or Shewhart Cycle, was used. The Cycle is a cycle for quality control.

- Plan (develop a plan) means careful planning. This stage covers determining a topic which needs to be improved including development of new methods for solving the problems from work.
- Do (follow the plan) means plan implementation. This may include both structures and implementation (There are procedures, implementation, and implementation outcomes).
- Check (examine the implementation) means plan evaluation. This stage may include an evaluation of the supporting structures, implementation an evaluation of procedures, and an evaluation of planned work.
- Act (improve) means using the evaluation outcomes to develop a plan. This stage may include using the evaluation outcomes for analysis to determine structures or procedures that need improvement or development, and synthesizing new patterns or implementation appropriate for the next year.

Conceptual framework

This research is developmental research using a conceptual framework for development using the Deming Cycle or PDSA Cycle (Plan-Do-Study-Act). It is the developmental concept for developing post-operative pain management guidelines for nurse anesthetists in a recovery room.

Procedures

This research is developmental research.

Population and sample

The population and sample were the patients who underwent surgery and received pain management treatment in the recovery room and nurse anesthetists taking care of the patients in the recovery room from February 1, 2016 to May 1, 2016.

Instruments

Record forms of the recovery room include a record form of the patient's general information and a record form of pain and pain management in the recovery room, as well as the clinical pain management of nurse anesthetists in the recovery room.

A record form of nurse anesthetists' satisfaction with clinical pain management in the recovery rooms (9 items).

A record form of patients' satisfaction with receiving clinical pain management in the recovery room administered by nurse anesthetists (9 items).

Quality validation of instruments

1. Content validity for pain management guidelines was assessed unanimously by three experts.

2. Reliability on the questionnaires about patients' satisfaction and nurse anesthetists' satisfaction was checked. The researcher tested the questionnaires with 30 patients and nurses having similar characteristics as the sample and verified the internal consistency with Cronbach's alpha coefficient of validity. The reliability was 0.81.

Phases

Phase 1: The pain management of post-operative patients in the recovery room was analyzed. This phase is the analysis step of the causes of problems regarding post-operative pain management in the recovery room.

Phase 2: Guidelines for post-operative pain management were developed. The quality of instruments was checked by measuring the content validity of the pain management guidelines as assessed unanimously by 3 experts after 1-month implementation of the Clinical Practice Guidelines and the outcomes from 3 Plan-Do-Study-Act cycles which were assessed before actual implementation. After that, the researcher collected the record forms for post-operative patient care in the recovery room including information about vital signs, consciousness levels, patients' evaluation after being given general anesthesia, pain evaluation, and pain management, and the record forms for nursing care and changes of symptoms in the recovery room. Actions were determined and the guidelines were developed to cover all steps from the initial step of receiving a patient from an operating room, pain management, and clinical pain management to the evaluation of outcomes from pain. Then the developed Clinical Practice Guidelines were applied in practice.

Phase 3: The Clinical Practice Guidelines for post-operative pain management in the recovery room were used as a standard in practice by the staff of the anesthesiology department. The outcomes of the developed methods were assessed.

Data analysis

Descriptive statistics and inferential statistics were used.

Protection of the sample group's rights

This research received approval from the research ethics committee of Anghong Hospital. The approval number of the certificate was AEC002/59.

RESULTS

1. The development of Clinical Practice Guidelines (CPG)

The Clinical Practice Guidelines for post-operative pain management in the recovery room are as follows (*Figure 1*):

- Providing information about pain before surgery
 - For a non-emergency case, a nurse anesthetist who visits a patient before surgery provides information.
 - For an emergency case, a nurse anesthetist who gives anesthetics provides information before surgery.
- A post-operative pain evaluation when receiving a patient into the recovery room must be done in all cases. If a patient is unconscious, 0 is given for pain score which means no pain at all.
- For a post-operative pain evaluation while staying in the recovery room, if a patient does not feel pain or does not groan, a re-evaluation will be done every 15 minutes.
- Before sending a patient back to the ward, pain must be managed until a pain score is not more than 3.
- For clinical pain management, if a pain score is greater than or equal 3, a nurse anesthetist will give an analgesic based on a patient's body weight, age, comorbidity, and condition, and re-evaluate the pain after the patient receives the analgesic. If the pain is still greater than or equal 3, the analgesic will be given for 3 doses. If the pain is not reduced, the anesthetist will report to the doctor or the anesthetist.
- A systemic record of information about pain management includes a baseline pain level, pain levels before and after receiving an analgesic as well as before leaving the recovery room, consciousness level, vital signs, analgesic dosage, and complications in the recovery room.

2. The effectiveness of the Clinical Practice Guidelines for post-operative pain management in the recovery room

a. The practice of nurse anesthetists following the Clinical Practice Guidelines for post-operative pain management in the recovery room

According to *Table 1*, in the during-development and post-development periods, the practice following the Clinical Practice Guidelines for post-operative pain management in the recovery room increased from 76.4% to 93.3% and 99.2%, respectively. The development periods were associated with the practices of nurse anesthetists following the Clinical Practice Guidelines in the recovery room with statistical significance ($p < 0.001$).

b. Pain of the patients in the recovery room

- The means of patients' pain scores before leaving the recovery room are divided based on the development periods. According to *Table 2*, comparing the means of pain scores before leaving the recovery room, it was found that the means of pain scores of the pre-development period and the during-development period were 2.99 and 2.59, respectively. However, the mean in the post-development period decreased to 1.86.

- Comparison of the relationship between the means of pain scores before leaving the recovery room and the development periods.

Based on *Table 3* comparing the relationship between the development periods and the means of pain scores before leaving the recovery room, it was found that the development periods were associated with the means of pain scores before leaving the recovery room. Comparing the different development periods, the differences in the means of pain scores were statistically significant ($p < 0.005$).

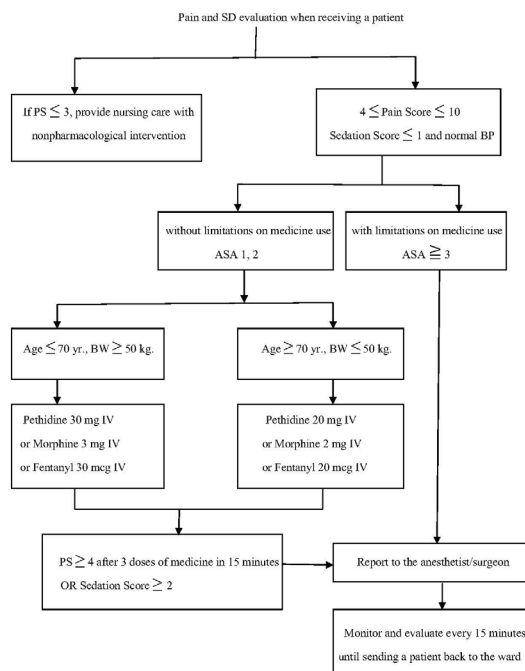


Figure 1: Clinical Practice Guidelines (CPG) for administering analgesics after surgery in the recovery room

Table 1: The practice of nurse anesthetists following the Clinical Practice Guidelines (CPG) for post-operative pain management in the recovery room

Following CPG	Yes		No	
	No. of cases	Percent	No. of cases	Percent
Pre-development period	84	76.4	26	23.6
During-development period	84	93.3	6	6.7
Post-development period	129	99.2	1	0.8

Note: Chi-square=36.146, df=2, p-value=0.000

Table 2: The means of patients' pain scores before leaving the recovery room divided based on the development periods

The development periods	Mean	SD	Min	Max
Pre-development period (n=110)	2.99	0.791	0	4
During-development period (n=90)	2.59	0.82	0	3
Post-development period (n=130)	1.86	1.292	0	3

Table 3: Comparison of the relationship between the means of pain scores before leaving the recovery room and the development periods

The development periods	B (The difference in means of pain)	Std. Error	t	p-value
Pre-development period	1.187	0.141	8.393	0
During-development period	0.758	0.141	5.39	
Post-development period	0			

Note: R Square=0.215; Adjust R square=0.198; B=The difference in means of pain scores when compared with the baseline (The post-development period was determined as the point of intersection or the baseline.)

The difference in the means of pain scores between the pre-development period and the post-development period was 1.187, whereas the difference in the means of pain scores between the during-development period and the post-development period was 0.758 (the post-development period used as the point of intersection or the baseline).

c. Nurse anesthetists' satisfaction in the use of the Clinical Practice Guidelines for pain management in the recovery room

According to Table 4, the overall rating of nurse anesthetists' satisfaction

in the use of the Clinical Practice Guidelines for pain management in the recovery room was good (4.34).

d. Patients' satisfaction in pain management following the Clinical Practice Guidelines in the recovery room

According to Table 5, the overall rating of patients' satisfaction in pain management following the Clinical Practice Guidelines for the recovery room was good (mean=4.37).

Table 4: Nurse anaesthetists' satisfaction in pain management in the recovery room

Nurse anaesthetists' satisfaction in the pain management in the recovery room following the CPG	Average (Mean)	Standard Deviation (SD)	Rating
The Clinical Practice Guidelines are appropriate and comprehensive.	4.3	0.63	Very good
The Clinical Practice Guidelines are clear, easy to understand, and convenient to use.	4.2	0.63	Very good
I am satisfied with pain management following the Clinical Practice Guidelines.	3.9	0.63	Good
I am satisfied with the instrument for pain evaluation.	4.2	0.73	Very good
I am satisfied with pain monitoring and evaluation of pain after pain management.	4.6	0.63	Very good
The dosage of an analgesic for a post-operative patient is adequate and appropriate.	4.2	0.69	Very good
I am satisfied with the frequency of pain evaluation.	4	0.47	Good
I am satisfied with an evaluation of pain management before transferring a patient back to the ward.	4	0.47	Good
I am satisfied with a pain-relieving method by positioning a post-operative patient in the recovery room.	4	0.47	Good

Table 5: Patients' satisfaction in pain management following the Clinical Practice Guidelines for the recovery room

Patients' satisfaction in pain management from a nurse anaesthetist following the Clinical Practice Guidelines	Average (Mean)	Standard Deviation (SD)	Rating
I am satisfied with post-operative pain management in the recovery room.	4.5	0.63	Very good
I am satisfied with pain-relief by appropriate positioning.	4.57	0.72	Very good
I am satisfied with pain-relief by an analgesic while staying in the recovery room.	4.57	0.67	Very good
My pain level and pain characteristics were assessed and asked before receiving an analgesic or nursing care.	4.6	0.67	Very good
My pain was regularly assessed and asked about after receiving an analgesic or nursing care.	4.23	1	Very good
I received fast, continuous pain relief.	4.37	0.96	Very good
I received attention while being asked about my symptoms.	4.5	0.77	Very good
A nurse has the instruments for evaluation that help me to indicate the pain severity.	3.4	0.93	Good
A nurse in the recovery room has adequate knowledge to relieve pain and discomfort from the pain.	4.6	0.72	Very good

DISCUSSION

For the development of the Clinical Practice Guidelines for post-operative pain management in the recovery room, the post-operative pain management situations in the recovery room in Phase 1 were analyzed and it was found that the Clinical Practice Guidelines were not clear. This was in accordance with previous research (Natee K, *et al.*, 2015) on the development of a nursing care plan for post-operative pain management. The results of implementing the Clinical Practice Guidelines for post-operative pain management in the recovery room at Anghong Hospital showed that the practice following Clinical Practice Guidelines could relieve patients' surgical pain. The majority of patients felt relieved and was satisfied. In addition, nurse anaesthetists thought that the guidelines were appropriate and they were satisfied with the implementation in the department. Therefore, it can be concluded that the Clinical Practice Guidelines developed as a part of this study can increase the effectiveness of post-operative pain management. Advantages of these developed guidelines include being easy to follow and allowing for the appropriate analgesic dosages to meet patient needs. The guidelines focus on pain evaluation after administering medicine and the dose can be repeated at least 2 doses in a 15 minute period. When a patient feels less pain, the patient will be calm and comfortable. This study can increase the effectiveness of post-operative pain relief as follows:

The practice following the Clinical Practice Guidelines revealed that the use of the guidelines for post-operative pain management in the recovery room was increased after the development. This was consistent with the study by Supitat (Muktanaanun W, 2008) entitled "Clinical judgment and care behavior by nurses in postoperative pain management". That study showed that the clinical judgment and care behavior of the nurse sample group were rated as good. The findings were also in conformity with the

study by Kaewta (Phongchoo S, *et al.*, 2012) who found that the number of patients receiving pain evaluation in the post-development period was increased.

For the pain scores of patients in the recovery room, it was found that the differences of the means of pain scores before leaving the recovery room in each group of the development periods compared to the post-development period were statistically significant ($p < 0.000$). This was in accordance with the study by Sompron (Songkong S, *et al.*, 2008) on the effects of pain management protocol on pain perception of persons with post-operative abdominal surgery. The experimental group and the control group had different pain levels. The mean of pain scores in the experimental group was lower than that of the control group. The findings were also consistent with the study by Kaewta (Supachutikul A, *et al.*, 2005). The post-operative pain level in the post-development period was decreased when it was compared to the pre-development period.

For patients' satisfaction and nurse anaesthetists' satisfaction in pain management following the Clinical Practice Guidelines in the recovery room, the mean of patients' satisfaction in pain management following the Clinical Practice Guidelines in the recovery room at Anghong Hospital was rated as good. The findings were in conformity with the study by Panaratana (Ratanasuwan P and Tantanatewin W, 2006) entitled "Patient satisfaction with postoperative pain management at recovery room in Srinagarind Hospital". It was found that patient satisfaction with post-operative pain management in the recovery room was rated as good. Furthermore, the study by Jantra entitled "Post-operative pain management in recovery room of Kalasin Hospital" showed that the overall anesthetic nurses satisfaction to use the post-operative pain management protocol in the recovery room was in a high level.

CONCLUSION

The results from the implementation of the Clinical Practice Guidelines for post-operative pain management indicate that they are appropriate for the recovery room at Anghong Hospital. The outcomes from the Clinical Practice Guidelines are shown to relieve post-operative pain, making patients experience less pain and feel greater satisfaction. Nurse anesthetists who followed the guidelines thought that the Clinical Practice Guidelines were appropriate and they were satisfied with the implementation.

RECOMMENDATIONS

Anghong Hospital should encourage healthcare personnel to apply the developed Clinical Practice Guidelines to post-operative patient care continuously after a patient is transferred from the recovery room to the ward. Moreover, the Clinical Practice Guidelines should be reviewed or updated regularly.

Anghong Hospital should formulate strategies to encourage healthcare personnel to continuously follow the Clinical Practice Guidelines for post-operative pain management in the wards after surgery such as by offering training workshops on giving information about pain, pain evaluation, and pain management including other pain-relieving methods such as music therapy and positioning.

REFERENCES

1. Bonica JJ. History of pain concepts and therapies. Bonica's management of pain. 2001.
2. Good M. Acute pain: Complementary health and pain management. New York: Spring. 1999.
3. Natee K, Rattanasimakorn S, Pankot N, Wannasoontornchai P, Sriworrarnas J. The development of guidelines for management in patients undergoing surgery at Udonthani hospital. *J Nurs Health*. 2015; 34(2): 174-183.
4. Muktanaanun W. Development of post-operative pain nursing management. *Medical Journal*. 2008; 21(1): 17-21.
5. Phongchoo S, Sritunyarat P, Chathaisong P, Sornprom N, Phanjoubsing J, Chatchumni M. Effects of pain management protocol on pain perception of persons with post-operative abdominal surgery. *Disease Control Journal*. 2012; 38(2): 157-164.
6. Songkong S, Petpichetchian W, Sae-Sia W. Clinical judgment and care behavior by nurses in postoperative pain management. *J Health Sci Med Res*. 2008; 26(5): 459-468.
7. Supachutikul A, Chittiprasert C, Sumamal T, Trireangwat B, Poonual V, Potisat S. Development of activity for health service, institute of accredit. Bangkok: Desige. 2005.
8. Ratanasuwan P, Tantanatewin W. Patient satisfaction with postoperative pain at recovery room in Srinakarin hospital. *Srinakarin Medical Journal*. 2006; 21(1): 17-21.