PAIN MANAGEMENT MODEL FOR PATIENTS UNDERGOING LUMBAR LAMINECTOMY, KING NARAI HOSPITAL, LOP BURI, THAILAND

[1]ANANYA MANIT, [2]KANNIGA CHUMPUENG, [3]BOONSOM PHUANGNAK, [4]SIRIRAT KEDSEM

[1]Research and Nursing Development, King Narai Hospital, Lop Buri, Thailand
[2]Nursing Department, King Narai Hospital, Lop Buri, Thailand
[3]Out Patient Department, King Narai Hospital, Lop Buri, Thailand
[4]Nursing Department, Sabot, Lop Buri, Thailand
E-mail: [1]ananya.m09@gmail.com, [2]Kanniga_1604@hotmail.com, [3]Noiprint@hotmail.com, [4]sirirat_sabot@hotmail.com

Abstract - The purpose of this qualitative study was to develop a pain management model for patients undergoing lumbar laminectomy at King Narai Hospital, Lop Buri, Thailand. The study sample included 12 staff from the orthopedic multidisciplinary team and 10 patients undergoing lumbar laminectomy. The main management model was developed from: situational analysis; the evidence-based practice of Rosswurm and Larrabe; the Transition theory of Meleis, et al., and preferred music therapy. Subject data was gathered using questionnaires answered by patients undergoing lumbar laminectomy. Data were analyzed using descriptive statistics and content analysis. The pain management model for patients undergoing lumbar laminectomy was developed using the Clinical Practice Guideline (CPG) and Standard Manual of Pain Management. User of CPG, Standard Manual of Pain Management were orthopedic multidisciplinary team, Outcomes of postoperative lumbar laminectomy care were pain score, opioid drug dosages after surgery, postoperative pain management methods, impact from pain to the holistic health status, patient's satisfaction, knowledge of pain management of nurses, and nurse satisfaction. This study suggests that the model of pain management after undergoing lumbar laminectomy should be developed from the evidence-based practice of Rosswurm and Larrabe, Transition theory of Meleis, et al., and preferred music therapy. This model should be implemented for patients undergoing lumbar laminectomy and in other areas of post-operative care and evaluated using holistic outcomes.

Keywords - Pain Management Model, Patients Undergoing a Lumbar Laminectomy

I. INTRODUCTION

Currently, the World Health Organization (WHO) showed the pain was accepted as the 5th vital signs [1]. In the first 24 hours after surgery, the patient's severity of low back pain is 40-70 percent in the 1st-2nd level of severity, and 80 percent is the 2nd level [2].

Laminectomy is an operation to remove the lamina so reducing laminar pressure. Bone damaged during the operation and around the site will be sensitive so producing very severe pain [3]. Nurses are primarily responsible for patient pain assessment, and management before surgery. [4]. Nurses will implement procedures to help patients with the relief of postoperative pain that will imping on there general health status, and wellbeing [5] as Melsis, et al. (2000) [6] said transition theory that person will change situation from one to another situation, such as pain to decrease pain, and it will have occurred in many models. Each person will adapt to a situation in different ways therefore the assessment of nurses is very important. There may be one or two transitions at the same time which must be identified.

The effectiveness of the method of pain relief the nurses implement follow the standard of operational procedure that has been developed from Evidence-based practice (EBP) of credible outcomes of research [7]

Many models have developed from clinical practice guidelines that are unique to each institution. The development of a clinical practice guideline model by using the EBP of Rosswurm, M. A., & Larrabee, J. H. (1999)[8] have clearly developed a popular model to manage operative pain using opioid drug, and non-opioid drugs. The opioid, drug procedure in general is not completely the responsibility nurse due to the restrictions on medical administration [9] of the drugs.

Preferred music therapy reduces emotional depression because the music makes people feel relaxed. As the autonomic nervous system will be less stimulated, thus reducing sympathetic nerve activity leading to increased parasympathetic nerve responsibility and reduced hypothalamic pituitary adrenal axis simulation so leading to reduced cortisol hormone. This finally leads to patients being in a good mood and in general experiencing a better physical balance. Moreover, music therapy still adopts to perceive for cognitive domain [10].

King Narai Hospital, general Hospital of the ministry of public health has 536 beds, and there were 137, 145, 155 patients undergoing lumbar laminectomy in the years 2014-2016respectively. The Department of nurse anesthesia, King Narai Hospital, Lop Buri, Thailand treated patients undergoing lumbar laminectomy by an orthopedic multidisciplinary team before, during, and post operation on-- admission to an orthopedic ward. From reviewing 105 medical records, and interviewing the patients having undergone lumbar laminectomy in 2016 showed that the patients were not informed about the methods of

pain assessment, methods of pain management, nor have nursing clinical practice guidelines of pain management for patients undergoing lumbar laminectomy explained to them. The method of pain management was not identified and the outcomes of care not recorded.

II. DETAILS EXPERIMENTAL

2.1. Materials and Procedures

The research methodology was a qualitative study and the subjects were 36 people from the orthopedic multidisciplinary team, and 155 patients undergoing lumbar laminectomy, participants were 12 persons of orthopedic multidisciplinary team, and 10 patients undergoing lumbar laminectomy.

The Instrument developed by the researcher was semi-structured to asses the following.

1) Pain management for patients undergoing lumbar laminectomy who were treated using opioid drugs and non-opioid drugs.
2) To asses pain management for patients undergoing lumbar laminectomy.
3) How best to evaluate pain management.
4) Suggestions for pain management of patients undergoing lumbar laminectomy.

Data were collected prior to and post operation of patients undergoing lumbar laminectomy. Then using applied data analysis using the Transition theory of Melis, et al. (2000) [6], EBP concept of Rosswurm and Larrabe (1999) [11], and preferred music therapy. Later, developed nursing clinical practice that consisted of preferred music therapy. Prior to the operation patients who selected music therapy chose 6 Thai songs and 6 international songs. When patients were admitted to the orthopedic ward, nurse assessed vital signs and initiated preferred music therapy for 30 seconds, every 8 hours except when patients were sleeping until 72 hours. The vital signs were compared with patients receiving opioid drug treatment by orthopedic physicians [12], and followed by diverting attention, and used preferred music therapy [13].

To test validity 2 nurses assessed at the same time (inter-rater reliability). To test reliability by using agreement rate calculator [14] two groups were used. In study 1 was implemented with 5 patients undergoing lumbar laminectomy in study 2, 10 patients were used.

old	new
1) There was no model of pain management for patients undergoing lumbar laminectomy pre, during, and post operation, patients were not informed about methods of pain assessment, method of pain management, nor have nursing clinical practice guidelines for pain management of patients undergoing lumbar laminectomy. No guideline for assessing use of opioid drug, and nursing care during operation.	1) To develop model of pain management for patients undergoing lumbar laminectomy since pre, during, and post operation. To produce a standard manual to inform patients about the method of pain assessment, method of pain management. To produce nursing clinical practice guideline of pain management for patients undergoing lumbar laminectomy. Inform about assessing pain score by using numeric rating scale (NRS). Preparing, guideline for using opioid drug, and nursing care during operation.
2) There was no identification who responded in each process of care.	2) Clarify who responded in each process of care.
3) They did not record the outcomes of care in each stage.	3) Clarify the outcomes of care, since before, during, and post operation for monitoring patients undergoing a lumbar laminectomy

Table 1: Model of pain management for patients undergoing lumbar laminectomy, old and new

EBP synthesis for good outcomes of care by using:

1. PICO format consisted of Population: patients undergoing lumbar laminectomy, Intervention: developed nursing clinical practice guideline for patients undergoing lumbar laminectomy, EBP of Rosswurm and Larrabe, Transition theory of Melis, et al., preferred music therapy, Comparison: control and experimental group, Outcomes: quality of care for patients undergoing lumbar laminectomy, pain management knowledge, patient satisfaction, pain score for patients undergoing lumbar laminectomy, method of pain management, dosage of opioid drug, holistic outcomes from lumbar laminectomy

2. Published between 2008-2018

3. Database: Pub Med, Google,

Science direct, Lipplincott, Crochrane collaboration, ThaiLis, reliability level No.1-4 by Joanna Briggs Institute recommendation from Joanna Briggs institute [15], and grade for recommendations. Moreover, FAME was to be used that were Feasibility, Appropriateness, Meaningfulness, Effectiveness [16].

115 articles of EBP were reviewed, 30 articles were applied: a meta-analysis (8 articles), quasi-experimental (6 articles), descriptive study (9 articles), academic paper (7 articles)

Furthermore, this model still was applied Transition Theory of Melis, et al. (2000) that were patients had minimum chronic pain to severe pain after the operation in 24 hours until recovery, then, the pain would be reduced. That was model of pain management for patients undergoing lumbar laminectomy consisted:

1) Clinical nursing practice guideline about pain management for patients undergoing lumbar laminectomy since before, during, and post operation. Before the operation, the patients were assessed, prepared, and taught pain management knowledge by using preferred music therapy [17].
2) Standard manual of pain management for patients undergoing lumbar laminectomy, for nurses [17][9].
3) Identify outcomes of lumbar laminectomy care, pain management covering every process of care [13][18].

III. RESULTS AND DISCUSSION

Results

Model of pain management for patients undergoing lumbar laminectomy was valid by 5 experts for content validity index (CVI) = 0.95, calculated Inter-rater reliability by agreement rate = 0.93.

The pilot study was 15 patients undergoing lumbar laminectomy that results showed:

1. Clinical practice guideline of

pain management for patients undergoing lumbar laminectomy since before, during, and post operation at the recovery room, and orthopedic ward. Pain management, guideline for using opioid drug, non-opioid drug with preferred music therapy were identified, the nurse opened music at ward, 8 hours later, excepted patients slept. Then, nurses opened music for patients undergoing lumbar laminectomy every 8 hours until 3 days.

Standard manual of pain management for patients undergoing lumbar laminectomy, for nurses.

2. Users of clinical practice guideline of pain management for patients undergoing lumbar laminectomy were orthopedic physicians, anesthetist who treated patients, anesthetic nurses taught patients about pain management by using opioid drug, non-opioid drug with preferred music therapy, assessed pain by using numeric rating scale (NRS), knowledge of lumbar laminectomy, monitored signs and symptom, injected opioid drug dosage following anesthetist. Orthopedic ward, nurses would assess and monitored pain of patients undergoing lumbar laminectomy. Furthermore, she opened preferred music therapy, injected opioid drug dosage following orthopedic physicians and recorded outcomes of care.

3. Outcomes of postoperative lumbar laminectomy care were pain score, the dosage of opioid drug at the recovery room, and orthopedic ward, patients and nurse satisfaction

Discussion

1. Development of model of pain management for patients undergoing lumbar laminectomy by orthopedic multidisciplinary team, and using EBP concept of Rosswurm, and Larrabe (1999) were reliability in the 1st level (8 articles), 2nd level (6 articles), 3rd level (9 articles), and 4th level (7 articles), updated. Otherwise, Transition Theory of Melis, et al. (2000) was applied. The model was shown about patients who had minimum pain to severe pain after 24 hours of post operation that patients were assessed, prepared by teaching pain management knowledge. Additionally, preferred music therapy was applied to reduce operative pain according to Rattanapathumwong P, Yooujaiyen M. (2014) [7]. There was the use of nursing clinical practice guidelines that were clearly responsibility in every process of care. Furthermore, outcomes of care were shown clearly for monitoring quality of care, continuously, and covering every process of care according to Daoruang B, Kanogsunthornrat N, Junhavat D.(2012) [19]; Jin Hyung Lee (2017)[18] Standard manual of pain management for patients undergoing lumbar laminectomy, for nurses according to Rattanapathumwong P, Yooujaiyen M. (2014) [7] that showed model of pain management were clearly, reliability before implemented in real situation, and studied effect of pain management model.

Model of pain management covered since, 1) before operation: patients were taught about pain management, assessed pain score by using NRS, selected preferred music therapy, 2) during operation, patients would be injected opioid drugs e.g. Morphine, Pethidine, and Fentanyl that bodyweight would clarify opioid drugs dosage, 3) Postoperative, at recovery room, nurse would evaluate pain score (PS) by using NRS [20], sedative score (SS) [21], identified dosage of opioid drugs, at orthopedic ward, nurse would evaluated PS, and SS since patients came to orthopedic ward, opened preferred music therapy 30 second every 8 hours except patients slept for 3 days. There were clearly outcomes of care about pain score, method of pain management, the dosage of opioid drugs, patients, and nurse's satisfaction for monitoring patients covering every process of care.

Therefore, the model of pain management for patients undergoing lumbar laminectomy, there were clear, available to implement, that made nurses implement the same method. Finally, it will be good effect according to Kamolwit S, Attanapathumwong P (2013) [9] disclosed good clinical practice guideline that was applied from EBP, would be occurred to practice more than old guideline.

ACKNOWLEDGMENTS

I give my heartfelt appreciation to the Director of King Narai Hospital, Lop Buri, Thailand, for this opportunity to further my studies. Additionally, I

extend these sentiments to the chief of the orthopedic, anesthetic nursing department, staff nurses, orthopedic multidisciplinary care team, staff of the information technology department and other officers of King Narai Hospital who played a large role in helping collect data and facilitating working sites.
Also a special thank you goes to the patients undergoing lumbar laminectomy of the orthopedic ward, King Narai Hospital, Lop Buri, Thailand who participated in the data collection and made this study possible.

REFERENCES

[1] Warfield C.A, Fausett HJ, (eds). Manual of Pain Management. 2 ed. Philadelphia: Lippincott Williams & Wilkins; 2002.
[2] Kunwee A, Pakdevong N-O, Binhosen V. Pain management situation in the recovery room for persons received general anesthesia. Journal of Bamrasnaradura infectious diseases institute. 2012;6(2):87-97.
[3] Pannet J. The effects of the Clinical Practice Guideline (CPG) for post-operative pain management in the elderly with hip fracture. Chonburi Hospital Journal. 2013;38(3):158-66.
[4] Sombutyanuchit T, Binya N, Sungkaew S. Surgical Pain Management in Songkhla Hospital: Problems in Nursing Practice, Patient's Needs. The Southern College Network Journal of Nursing and Public Health. 2016 January-April;3(1):77-94.
[5] Smeltzer SC, Bare BG, Hinkle JL, Cheever KH. Textbook of Medical-Surgical Nursing 11 ed. Philadelphia: Lippincott Williams & Wilkins; 2007.
[6] Meleis AI, Sawyer LM, Im EO, Messias DKH, Schumacher K. Experiencing transitions: An emerging middle-range theory Advances in Nursing Science. 2000;23(1):12-28.
[7] Rattanapathumwong P, Yooujaiyen M. Development of Clinical Practice Guidelines for Pain Management among Postoperative Patients in the Post-Anesthesia Care Unit in Ranong Hospital. Journal of Boromarajonani College of Nursing 2014 January - April;30(1):86-99.
[8] Rosswurm MA, Larrabee JH. A Model for Change to Evidence-Based Practice. Image J Nurs Sch. 1999;31(4):317-22.
[9] Kamolwit S, Rattanapathumwong P. Development of Clinical Practice Guidelines for Pain Management in Postoperative patients in Ranong Hospital. Journal of nursing division. 2013 May-SeptemberJournal of nursing division;41(2):23-40.
[10] Patharawut Vatanasapt. Music for Pain Management. In: Pramote Auasopon, Suwimon Yeepoo, Martin Thepsopan, editors. 28 the Annual Scientific Meeting of TASP, Transformation: From Knowledge to Clinical Skills in Palin Medicine; Sheraton Hotel, Hua Hin, Petchaburi, Thailand: Noppachai printing; 2017.
[11] Rosswurm MA, Larrabee JH. A model for change to evidence-based practice. J Nurs Sch. 1999;13(4):317-22.
[12] Mondanaro JF, Homel P, Shepp J, Lichtensztejn M, Loewy JV. Music Therapy Increases Comfort and Reduces Pain in Patients Recovering From Spine Surgery. The American Journal of Orthopedics. 2017;January/February:E13-22.
[13] Im-erb P, Kongchoom W, Rimsueb K. The Effects of Music Therapy on Postoperative Pain. Nursing Journal of the Ministry of Public Health. 2013;23(3):53-62.
[14] Srisathitnarakura B. Nursing research methodology. 5 ed. Bangkok: You and I Intermedia; 2010.
[15] The Joanna Briggs Institute. Joanna Briggs Institute Reviewers' Manual 2011 Edition. Australia: The Joanna Briggs Institute2011.
[16] The Joanna Briggs Institute. New JBI Grades of Recommendation: Developed by the Joanna Briggs Institute Levels of Evidence and Grades of Recommendation Working Party October 2013. 2013 [updated 20 Jan 2018; cited 2018 20Jan]; Available from: http://joannabriggs.org/assets/docs/approach/JBI-grades-of-recommendation_2014.pdf.
[17] Dulyatham D. Effect of Music Therapy on Pain Reduction in Patients with Femur Fixation. Master of Nursing Science Thesis in Adult Nursing. Hat Yai: Prince of Songkla University; 2001.
[18] Lee JH. The Effects of Music on Pain: A Meta-Analysis. Journal of Music Therapy. 2016;53(4):430-77.
[19] Daoruang B, Kanogsunthornrat N, Junhavat D. The Effects of a Post-Operative Orthopedic Pain Management Program on Nurses' Knowledge, Patients' Perception on Nursing Practice and Pain Management Outcomes. Rama Nurs J. 2012;18(3):358-70.
[20] Collins SL, Moore RA, McQuay HJ. The visual analog pain intensity scale: What is moderate pain millimeters Pain. 1997;72:95-7.
[21] Paul F. White, Dajun Song. New Criteria for Fast-Tracking
[22] After Outpatient Anesthesia: A Comparison with the Modified Aldrete's Scoring System. Anesth Analg 1999;88:1069–72.

★★★