THE DIFFERENCE OF PAIN SCALE USING NUMERIC RATING SCALE AND VISUAL ANALOG SCALE IN POST-OPERATIVE PATIENTS

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ABSTRACT*

Post-operative pain is acute and subjective therefore the perceived pain intensity will be different. In one of the western Indonesia Hospitals in measuring the pain threshold using 2 tools namely Numeric Rating Scale and Wong Baker Face. Measurement of the pain intensity can be done with NRS and VAS scale. The objective of this research was to identify the difference of pain scale using the NRS and VAS scale in post-operative patients. The research method was descriptive quantitative using comparative approach. The study was conducted on 1 November 2017 – 12 December 2017.The population of the study are the post-operative patients at the In-Patient wards in a private hospital in Western Part of Indonesia. The samples were obtained using purposive sampling with n = 41. Research instrumen consists of observation sheet using NRS and VAS scale. The results showed most respondents during the first eight hours using NRS scale had mild pain (80.5%); first 16 hours had light pain (63.4%); and had mild pain in the first 24 hours (85.4%). Using VAS scale, most of the respondents on the first eight hours has mild pain (87.8%); first 16 hours has mild pain (68.3%); and has mild pain in the first 24 hours (87.8%). The conclusion of this study is there is no difference in pain scale of post-operative patients using VAS scale and NRS scale. So, hospitals can also use the VAS scale to assess pain scale in post-operative patients.

Keywords: *pain scale, post operative, numeric rating scale, visual analog scale*
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INTRODUCTION

Based on the data from World Health Organization (WHO), the number of patients with the action of surgery increases each year. At the time of recording in 2011, there were 140 million patients with surgery; and in 2012, there were 148 million people who performed surgery in all hospitals in the world. The surgery within Indonesia in 2012 reached 1,2 million people (WHO, 2013). National Data Tabulation from the Ministry of Health Republic of Indonesia in 2009 showed the fact that surgery ranked as 11th from 50 pattern of disease in Indonesia with percentage of 12,8 %.

A private hospital in Western Part of Indonesia performed surgery in 2016 with the total of 2082 cases of patients consisted of One Day Care (ODC) cases and In-Patient cases. The surgery performed from January to June 2017 was with total of 1060 cases of patients consisted of One Day Care (ODC) cases and In-Patient cases. In April to June 2017 according to the data from the Pain Nurse at a private

hospital in Western Part of Indonesia, there were 256 patients experienced post-operative pain to the intensity of mild pain 81,25 %; and with moderate pain 18,75 %; and the instrument used was Numeric Rating Scale (NRS). Furthermore, the researchers conducted preliminary study using questionnaires to 10 post-operative respondents and the assessment was done in the first 8 hours after the patient arrived in ward using NRS; the results obtained were 20% from the patients experienced severe pain; 50% from the patients experienced moderate pain; and 30 % from the patients experienced mild pain. Based on observation, post-operative patients had difference onset of pain, there were patients with continuous pain, and also patients with different time of pain intensity.

Post-operative pain is the pain considered after surgery (Mustawan, 2008). Post-operative pain is acute pain because it occurs less than six months and with quick onset. According to Smeltzer & Bare in Langanawa and Cindrawati (2014), post-operative pain appears because of mechanical stimulation from the wound that caused the body produces chemical pain mediators. Toxonomi Committee of the International Association for the Study of Pain (IASP) defined post-operative pain as unpleasant experience in sensory and emotional which is related to tissue damage that is actual or potential to become as describe by terminology of damage. Pain intensity felt by each individual will be different, it was because the pain is a response that sensory subjective and it is an unpleasant experience emotional related to destruction of tissue as an actual or potential or felt in events where damage occurs (Perry & Potter, 2013).

Pain intensity is a subjective experience, so the pain intensity and the response to pain that experienced between individuals will be different (McGuire, 2006). Therefore, to understand the patients' pain intensity, the pain assessment needs to be performed. This needs to be done, to understand the pain threshold felt by the patient, so the nurse can perform interventions quickly and effectively, so patients can achieve comfort and avoid complications that may happen. As a nurse, the nurse must be able to understand the patient as individual related with the pain management (*Board of Nursing*, 2008). The pain scale used for the pain assessment according to Agency for Health Care Policy and Research (AHCPR in Novita 2012) consists of Visual Analog Scale, Numeric Rating Scale, and Wong Baker Face Scale.

A private hospital in Western Part of Indonesia performed pain assessment using

pain scale of Numeric Rating Scale consisted of number from zero to ten to assess patients' pain threshold know the patients' pain threshold (Black & Hawks, 2009); and Wong Baker Face scale. Therefore, the researchers want to study about Difference of Pain Scale Using Numeric Rating Scale and Visual Analog Scale in Post-Operative Patients.

METHOD

The research was conducted using descriptive quantitative research method with comparative approach. The research was conducted on Novemver 1st – December 12th,2017. Data collection was perfomed on postoperative patients counted 2 hours after the patient moved into the care room for 1 x 24 hours and carried out an assessment every eight hours. The research population was all post-operative patients in the In-Patient wards in a private hospital in Western Part of Indonesia. The research sample was calculated using purposive sampling with n = 41.

The reserch use inclusion and exclusion criteria. The inclusion criteria were all post operative patients and patient were willing to be respondents, aged > 18 years, fully aware and cooperative and post operative patients 1 x 24 jam. The exlusion criteria were patients > 65 years old, history of

visual, hearing, muscular or central nervous system disorder, obstetric and neurosurgical patient, patients with surgical procedures without prior planning.

The research instruments used consisted of pain observation chart of NRS and VAS scale (© McMosby St. Louis, MO). According to Hjermstad et all (2011) NRS and VAS measuring instruments are reliable and valid for measuring pain intensity in adult patients. The research was conducted after ethical approval from *Research, Community-Service, and Training Committee* (RCTC) Faculty of Nursing (FON) Universitas Pelita Harapan (UPH). The data processing consisted of editing, coding, processing, cleaning, and tabulating. Data analysis was computerized using the Friedman test. Ethical consideration was closely observed in this study such as informed consent, anonymity and confidentiality.

RESULT

In this study, the researchers distributed pain observation charts to the post-operative patients that matched with the specified inclusion and exclusion criteria. The total number of respondents are 41 post-operative patients.

Table 1. Characteristics of the Respondents
Post-Operative Patients
November, 1 – December, 12, 2017

Based on	Demographic	Frequency	Percentage (%)
Age	Adolescence (18-25 years old)	6	14.6
	Adult (26-45 years old)	21	51.2
	Elderly (46-65 years old)	14	34.1
Gender	Male	21	51.2
	Female	20	48.8
Type of Anesthesia	General Anesthesia	26	63.4
	Local Anesthesia	11	26.8
	Spinal Anesthesia	4	9.8
Type of Medication	NSAIDs	30	73.2
	Paracetamol (PCT)	6	14.6
	Opoid	5	12.2

The biggest percentage of respondents' age are in adult patients (31,7%), most respondents are male for their gender (51,2%), most respondents used general anesthesia (63,4%), and most respondents used NSAIDs as their type of medicines (73,2%).

Table 2. The Distribution of the Pain Scale in Post-Operative Patients using NRS scale
November, 1 – December, 12, 2017

Pain Scale	8th hours		16th hours		24th hours	
	n	(%)	N	(%)	n	(%)
No Pain	0	0	0	0	0	0
Mild Pain	33	80.5	26	63.4	35	85.4
Moderate Pain	8	19.5	15	36.6	6	14.6
Severe Pain	0	0	0	0	0	0
Total	41	100.	41	100.	41	100.

The biggest percentage of pain scale using NRS scale in the first 8th hours is mild pain (80,5%), in the first 16th hours is mild pain (63,4%), and in the first 24th hours is mild pain (85,4%).

Table 3. The Distribution of the Pain Scale in Post-Operative Patients using VAS scale
November, 1 – December, 12, 2017

Pain Scale	8th hours		16th hours		24th hours	
	n	(%)	N	(%)	n	(%)
No Pain	0	0	0	0	0	0
Mild Pain	36	87.8	28	68.3	36	87.8
Moderate Pain	5	12.2	13	31.7	5	12.2
Severe Pain	0	0	0	0	0	0
Total	41	100.	41	100.	41	100.

The biggest percentage of pain scale using VAS scale in the first 8th hours is mild pain (87,8%), in the first 16th hours is mild pain (68,3%), and in the first 24th hours is mild pain (87,8%).

The results of Friedman test to see the difference in pain scale on post-operative patients using NRS scale and VAS scale in the first 8th hours, in the first 16th hours, and in the first 24th hours (with n = 41) has shown that there is no significant difference in pain scale on post-operative patients.

DISCUSSION

In this study, the pain intensity in post-operative patients measured with two different pain scales, namely NRS scale and VAS scale, had shown mild pain using minimal scale of one and maximum scale of 5. The mean value of NRS scale in the first 8th hours is 2,95; in the first 16th hours is 3,41; and in the first 24th hours is 2,80.

Meanwhile, the mean value of VAS scale in the first 8th hours is 29,76; in the first 16th hours is 33,90; and in the first 24th hours is 27,56.

In this study, from the frequency distribution of pain intensity on NRS and VAS scale during the first 24th hours, there is an increase on the pain scale during the first 8th hours compare to the first 16th hours; then on the first 24th hours, the pain intensity decreases. Medication therapies that were given to post-operative patients in this study consisted of NSAID, opioid, and Paracetamol (PCT). It is possible that the pain scale decreased because of the medications given. The study conducted by Wiryawan, Suarjaya & Saputra (2013) showed that there is a decrease in the pain scale from the first 24th hours to the 48th hours post-operatively. It is possible that this is the effects of analgesic drugs (pain-killer) that were given, because in accordance to the Sinatra et al., (2009) the intervention of mild acute pain can be done by administering NSAID and PCT; on moderate acute pain can be done by administering NSAID, weak opioid, and adjuvant therapies. Meanwhile, severe acute pain can be done by administering strong opioid such as morphine and combined with NSAID accompanied adjuvant drugs.

The study done by Admassu, Hailekiros & Abdissa (2016) showed the outcomes of pain intensity of 65 post-operative patients (43%) experienced mild pain and 85 post-operative patients (57%) experienced moderate to severe pain during the as to first 2nd hours. After the first 12th hours, the patients felt that the pain was different than the first 2nd hours after post-operative, only 33 patients (22%) felt mild pain and 117 patients (78%) felt moderate to severe pain. Later in the first 24th hours, 71 patients (47%) experienced mild pain and 79 patients (53%) experienced moderate to severe pain.

The study carried out by Admassu, Hailekiros & Abdissa (2016) explained that the age and gender have significant relation against the pain intensity. However, the length of incision and the type of anesthesia used can affect the pain intensity felt by the patients. That research by Admassu, Hailekiros & Abdissa (2016) is in common with the result of this study where the results showed the biggest percentage of pain intensity in the first 24th hours is mild pain; and in the frequency distribution of pain scale in first 8th hours to the first 16th

hours is increase; meanwhile, the pain scale in the first 16th hours to the fist 24th hours is decrease. This is possible because of the age and the type of anesthesia.

Research conducted by Pritaningrum (2010) showed the result that the median value of medicine: Ketorolak is higher than the medicine: Dexketoprofen with a meaningful difference ($p<0,05$). In this research, the researchers used analgesic drugs for the comparison of pain scale consisted of Ketorolak and Dexketoprofen. Pritaningrum (2010) explained that the optimal management can reduce someone's pain intensity. One way of pain management is by using analgesic drugs or pain-killer. So in this research, the pain in the first 8th hours managed by using Dexketoprofen is mild pain and decreases every eight hours after surgery.

Stoelting RK in Pritaningrum (2010) said that the pain intensity of post-operative pain will be reduced in line with healing of the destructive tissue. In this current research conducted to post-operative patients with assessment every eight hours during the first 24th hours using VAS and NRS scale showed the results that majority is where the mild pain with scales 10mm-30mm on NRS scale. Post-operative patients in this study were given analgesics to lessen their pain intensity. According to the previous research (Pritaningrum, 2010) there is possibility that the administering of analgesics can lessen the intensity of pain that is felt by post-operative patients.

Fuadi, Maskoen & Yuswono (2014) showed the result of their research that the pain intensity felt is the scale of mild pain with the patients as respondent took analgesic drugs. According to the analysis of Chi-Square, there is no significant difference between both respondents group with p value = 1,00. The results of Fuadi, Maskoen & Yuswono (2014) has not much difference with this current study conducted by researcher. It is possible that the post-operative patients had mild pain in their pain intensity because of the effects of analgesic drugs or pain-killer given to them.

A study conducted by Verma & Guha (2017) showed the result from n = 90, there were 47 patients using VAS scale and 43 patients using NRS to assesses their pain. In this research by Verma & Guha (2017), the result showed that there was no relation between the pain intensity using NRS and VAS scale. In this research, it is described that pain scale is not influenced by age,

knowledge about pain, and gender. This study by Verma & Guha (2017) has not much different with the current study done by the researcher. In this current study conducted by researchers with n = 41, the number of respondents for male and female does not differ much and in the result, there is no difference in pain scale of post-operative patients using NRS and VAS scale. This could be possible because of the gender in general where male and female has no meaningful difference in their response to pain (Potter & Perry in Langanawa and Cindrawati, 2014).

The study conducted by Hjermstad et al., (2011) revealed the result that when it is compared between VAS scale and NRS scale, the NRS scale had better adherence. Furthermore, it was found in 15 researchers from 19 studies that reported this and NRS scale was the recommended tool in 11 studies based on higher level of compliance, more responsive, easy to use, and its application is relatively good. The study conducted by Hjermstad et al., (2011) was inversely proportional to this current study done by the researchers that there is no difference between NRS scale and VAS scale for assessing the pain scale.

CONCLUSION

The conclusion of this study is there is no difference in pain scale of post-operative patients using VAS scale and NRS scale. So, hospitals can also use the VAS scale to assess pain scale in post-operative patients.

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