Comparison of The Level of Satisfaction With The Use of Analgesics Ketorolac 30 Mg and Paracetamol 1000 Mg in Moderate Post-Operative Patients

Yosi Budi Setyawan[1*], Meli Rosita[1]
[1]Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta

Email corespondence : yosybudi_s@fkik.umy.ac.id

Track Record Article

Accepted: 07 October 2023
Revised: 01 February 2024
Published: 11 March 2024

How to cite :
Setyawan, Y. B., & Rosita, M. (2024). Comparison of The Level of Satisfaction With The Use of Analgesics Ketorolac 30 Mg and Paracetamol 1000 Mg in Moderate Post-Operative Patients. *Contagion : Scientific Periodical of Public Health and Coastal Health*, *6*(1), 190–198.

Abstract

Pain is an uncomfortable feeling that can be an emotional experience and has the potential to cause real tissue damage. Post-operative events can cause patients to feel pain in certain parts of the body. In post-operative care to reduce pain, patients are given NSAID (Non-Steroid Anti-Inflammatory Drugs) analgesic drugs, and the drugs commonly used are Ketorolac 30mg and Paracetamol 1000mg. The use of analgesics is said to be effective if the patient's perception shows satisfaction after using the analgesic. The research was conducted to see the level of patient satisfaction in using the analgesic intravenous injection of ketorolac 30mg and intravenous infusion of paracetamol 1000mg. This research used a Randomized Controlled Trial (RCT) design with double blinds. Data collection was carried out in April–July 2021 at PKU Muhammadiyah Gamping Hospital. Then the data obtained was analyzed using the Chi-Square test. There were 40 respondents who met the inclusion and exclusion criteria. The analysis results show a significance value of 0.006<0.05. Thus it can be concluded that there is a difference in satisfaction with the use of analgesics. The research showed that the level of satisfaction with the use of the analgesic intravenous injection Ketorolac 30mg in mild to moderate post-operative patients at PKU Muhammadiyah Gamping Hospital was higher than the use of intravenous infusion Paracetamol 1000mg. We suggest conducting additional research with a larger and more diverse sample to yield results applicable to a broader population. We also recommend the routine use of 30mg ketorolac injection.

Keywords : Anti-pain, postperative, satisfaction level

INTRODUCTION

Anesthesia is a branch of medical science that studies the management of pain, soreness, and other discomfort, so that patients are in a comfortable condition during surgery and various other procedures (Siraneh et al., 2020). Based on data from the World Health Organization (WHO), the number of patients undergoing surgery has increased significantly every year. In 2011 there were 140 million patients in all hospitals in the world, while in 2012 there was an increase of 148 million people (Godman et al., 2020).

Globally, over 234 million surgical procedures are carried out to address various prevalent conditions requiring surgical care across all age groups (Dobson, 2020). These conditions encompass a diverse range, including complications during childbirth, congenital anomalies, eye-related problems like cataracts, cancerous conditions, diabetes, urgent abdominal concerns, burn injuries, and harm caused by incidents at home, in industries, and on roads. It is anticipated that the prevalence of conditions where surgery serves as a primary clinical solution

will continue to rise in the upcoming years (World Health Organization, 2015). In Indonesia alone, in 2012 there were 1.2 million patients who underwent surgery (Rismawan, 2019).

Surgery is a medical procedure that uses invasive techniques by opening or exposing the part of the body to be treated through an incision which ends with closing and suturing the wound (Thomson & Francis, 2019). Surgical procedures are divided into several parts, namely minor surgery, medium surgery, and major surgery. Surgical procedures can also be divided into two classifications, namely major operations and minor operations (Guo et al., 2020).

A study conducted on 5,130 post-operative and trauma patients showed that 22.5% of patients experienced postoperative pain (Sudin et al., 2023). This research is in line with other research which states that 50% of post-operative patients experience severe pain and 10% experience moderate to severe pain (Admassu et al., 2016). The prevalence of postoperative pain in clients with severe pain levels is 34.8%, while with moderate pain it is 57.0% (Gan, 2017).

Pain according to the International Association for the Study of Pain (IASP) is a feeling of discomfort and an emotional experience that is closely related to potential tissue damage or actual tissue damage (Meissner et al., 2015). Post-surgery can cause patients to feel pain in certain parts of the body, there are several types of pain, namely acute pain and chronic pain. This pain can be classified into two types, namely acute pain which is usually temporary and chronic pain which can last for a longer period of time (Raffaeli et al., 2021).

Management of acute post-operative pain in France and Australia states that analgesics are most often started while the patient is still under anesthesia (63.6%) (Coşar et al., 2023). The use of Patient Controlled Analgesia (PCA) is still less common (21.4%) compared to the use of subcutaneous morphine (35.1%). The highest use of non-opioid analgesics was paracetamol (90.3%), ketoprofen (48.5%) and nefopam (21.4%), while for epidurals (1.5%) (Eldor et al., 2013). In postoperative care, patients are given NSAID (Non Steroid Anti-Inflammatory Drugs) analgesic drugs. One example of an NSAID type of analgesic drug which is commonly used as a post-operative analgesic drug is Ketorolac 30mg. Antipyretic drugs, namely Paracetamol 1000mg, are also sometimes used as post-operative analgesics. Paracetamol is also widely used as a post-operative analgesic as a single dose or in combination with several other analgesics (Aweke et al., 2020; Lyngstad et al., 2021). Paracetamol is a selective COX-2 inhibitor, providing fewer side effects compared to NSAIDs or opioids at therapeutic doses. Administration of a single dose of oral paracetamol provides an effective analgesic effect within 4 hours after surgery with the fewest side effects shown in a randomized, double-blind, placebo-controlled study (Bonnal et al., 2016). Thompson (2013) In reducing visceral pain, giving effective NSAIDs such as ketorolac can have a better effect than giving opioids, and ketorolac is a non-selective inhibitor

of COX-1 and COX-2 so it can cause side effects, namely increasing the risk of bleeding, irritation of gastrointestinal organs, dyspepsia and nausea.

The research problem centers around the prevalent use of ketorolac 30mg as a post-operative analgesic at PKU Muhammadiyah Gamping Hospital, as evidenced by available data. This sparks our interest in delving deeper into the level of patient satisfaction concerning the use of ketorolac 30mg and paracetamol 1000mg in mild to moderate post-operative cases at the same hospital. The importance of this research lies in addressing the efficacy and patient experience associated with these analgesics, providing valuable insights that can potentially enhance post-operative pain management protocols and contribute to improved patient outcomes.The use of analgesics at PKU Muhammadiyah Gamping Hospital, based on the data, it turns out that many people use ketorolac 30mg as a post-operative analgesic. Based on this data, researchers are interested in conducting research on the level of patient satisfaction using the analgesic ketorolac 30mg and paracetamol 1000mg in mild to moderate post-operative patients at the PKU Muhammadiyah Gamping hospital.

The objectives to be achieved in this study are: to determine the effectiveness of the use of analgesics in mild to moderate post-surgical patients at PKU Muhammadiyah Gamping Hospital and to determine the comparison of satisfaction levels with the use of the analgesic using intravenous injection Ketorolac 30mg and the analgesic use of intravenous infusion of paracetamol 1000mg in post-operative patients with mild to moderate surgery at PKU Muhammadiyah Gamping Hospital.

METHODS

The design of this research is quantitative research with a double-blind experimental design and a Randomized Controlled Trial (RCT) research method. Randomized Controlled Trial (RCT) is the most powerful design for evaluating interventions used to show that the intervention used is feasible (Monsen & Van Horn 2010). Researchers used a double-blind RCT research method because the researchers and participants did not know each other. The participants in the intervention group were given intravenous injections of ketorolac 30 mg or intravenous infusions of paracetamol 1000 mg. The population for this study was post mild to moderate surgery patients with General Anesthesia or Regional Anesthesia receiving 30mg Ketorolac injection as a pain reliever, and patients post mild to moderate surgery with General Anesthesia or Regional Anesthesia receiving 1000mg Paracetamol infusion at PKU Muhammadiyah Gamping Hospital. The sample in this study was 20 people for every group so that for 2 groups, the sample required was 40 people.

This research was conducted at PKU Muhammadiyah Gamping Hospital, in Sleman Regency, Yogyakarta Special Region Province, from April to July 2021. This research was carried out at PKU Muhammadiyah Gamping Hospital because PKU Muhammadiyah Gamping Hospital is one of the hospitals that frequently performs surgery and has complete surgical equipment and an operating team that meets standards, and PKU Muhammadiyah Gamping Hospital is one of the hospitals that collaborates with Muhammadiyah University Yogyakarta. To make the data analysis process easier, researchers used computerization with the Statistical Package for Social Science (SPSS) program. The results obtained from the questionnaire will be analyzed using statistical testing, researchers use the "Chi-Square" test because it is used to test the relationship between 2 unpaired categorical variables. The variable in question is the level of patient satisfaction after mild to moderate surgery and the administration of analgesics, either in the form of a 30mg ketorolac injection or a 1000mg paracetamol infusion.

RESULTS

In this study, the samples used were mild to moderate post-operative patients with general anesthesia and regional anesthesia who were given the analgesic intravenous injection of Ketorolac 30mg and patients after mild to moderate surgery with general anesthesia and regional anesthesia who were given the analgesic intravenous infusion of paracetamol 1000mg at PKU Muhammadiyah Gamping Hospital. In this study, primary data was used, the data collection process was carried out face to face by the researcher giving questionnaires to respondents to answer. From the research results, an overview of the characteristics of the respondents was obtained.

Respondent Characteristics

In this study, there were 40 respondents who met the inclusion and exclusion criteria, so the number of respondents had met the target. The characteristics of the respondents obtained in this study were, age and gender.

Table 1. Characteristic Respondent

Characteristic	Frequency	Percentage
Age Groups		
21-30 years	14	35.0
31-40 years	9	22.5
41-50 years	10	25.0
51-60 years	7	17.5
Gender		
Female	24	60.0
Male	16	40.0

From this research, several age groups of respondents were obtained, the largest age group of respondents was in the 21-30 year age range (35%) with 14 respondents. Next, there were 10 respondents aged 41-50 years (25%), and 9 respondents aged 31-40 years (22.5%), then the last group aged 50-60 years (17.5%) was 7 people. respondents.

In this study, of the 40 total respondents, the majority of respondents were female, namely 24 respondents (60%). Meanwhile, there were 16 male respondents (40%).

Univariate Analysis

1) Use of Painkillers

Based on the research results, the characteristics of respondents based on groups can be described as follows :

Table 2. Use of Anti-Pain

Category	Frequency	Percentage
Paracetamol	20	50.0
Ketorolac	20	50.0
Total	40	100.0

Source: Primary data processed by researchers, 2021

Based on table 2, it can be seen that the characteristics of respondents based on the group of respondents using analgesics are the group using the anti-pain intravenous infusion of Paracetamol 1000mg, namely 20 respondents (50%) and the group using the anti-pain intravenous injection Ketolorak 30mg, namely 20 respondents (50%). The total number of respondents was 40 respondents (100%).

2) Level of Satisfaction

Based on the research results, the characteristics of respondents can be described based on the level of satisfaction, namely as follows:

Table 3. Level of Satisfaction

Category	Frequency	Percentage
Dissatisfied	12	30.0
Satisfied	28	70.0
Total	40	100.0

Source: Primary data processed by researchers, 2021

Based on table 3, it can be seen that the characteristics of respondents based on the level of respondent satisfaction are 28 respondents (70%) feel satisfied and 12 other respondents (30%) feel dissatisfied.

Bivariate Analysis

Bivariate analysis at this stage examined "Comparison of Levels of Satisfaction with the Use of the Analgesic Ketorolac 30mg and Paracetamol 1000mg in Mild to Moderate Postoperative Patients at PKU Muhammadiyah Gamping Hospital" using the Chi-Square test, it can be seen as follows :

Table 4. Bivariate Analysis

Category	Satisfaction						p-*value*
	dissatisfied		satisfied		Total		
	n	%	n	%	n	%	
Paracetamol	10	25	10	25	20	50	0,006
Ketolorac	2	5	18	45	20	50	
Total	12	30	28	70	40	100	

Source: Primary Data 2018

Table 4 above states that there is a difference in satisfaction with the use of the analgesic intravenous injection of ketorolac 30mg and the use of the analgesic intravenous infusion of paracetamol 1000mg in moderately mild post-operative patients at PKU Muhammadiyah Gamping Hospital, with the significance value of the results showing ($p = 0.006 < 0.05$).

Most respondents were satisfied with the ketolorak group, 18 respondents or 45%. The effectiveness of the use of analgesics in mild to moderate post-operative patients is to measure the level of patient satisfaction in the use of analgesics by intravenous injection of ketorolac 30mg and intravenous infusion of paracetamol 1000mg. The use of analgesics is said to be effective if the patient's perception shows satisfaction after using the analgesic.

DISCUSSION

Researchers used the Iowa Satisfaction with Anesthesia Scale (ISAS) instrument which has been used by other researchers in several different countries. This research instrument was also validated and developed by Franklin Dexter, MD, PhD and Keith A. Candiotti, MD in 2011. In the results of this research, researchers obtained a level of satisfaction based on the average value obtained on the questionnaire that had been filled in by respondents, namely, the first level is at the average questionnaire score of 1-11, it is stated that the respondent is very dissatisfied with the analgesics given, the second level is the average questionnaire score of 12-22, it is stated that they are quite dissatisfied, then the third level is the average questionnaire score is 23- 33 were declared slightly dissatisfied, then the fourth level, namely the average questionnaire score of 34-44, was declared slightly satisfied, and the fifth level, with an average questionnaire score of 45-55, was declared quite satisfied, the last level or sixth level was with an average questionnaire value of 56 -66 declared very satisfied.

The results of testing using Chi-Square on the level of satisfaction with the use of the analgesic intravenous injection ketorolac 30mg and the use of the analgesic intravenous infusion paracetamol 1000mg in moderately mild post-operative patients at PKU Muhammadiyah Gamping Hospital showed a significance value of 0.006 < 0.05. Thus, it can be concluded that there is a difference in satisfaction with the use of the analgesic intravenous injection ketorolac 30mg and the use of the analgesic intravenous infusion paracetamol 1000mg in moderately mild post-operative patients at PKU Muhammadiyah Gamping Hospital. This is in line with research conducted by (Imani et al., 2018) which found that there were differences in satisfaction and effectiveness of using the painkillers ketorolac and paracetamol. This study supports the finding that paracetamol can reduce opioid use but is not quite effective as the sole pain control, along with the finding that oral paracetamol as a preemptive analgesia is effective in reducing postoperative pain under general anesthesia (Hudyarisandi, 2016; Pratama et al., 2020) Another study by that the administration of analgesics, especially opioids, needs to be considered in doses appropriate to the patient's pain intensity level, as suggested in previous studies (Hidayatulloh, 2020).

According to Boesoirie (2015), this situation is possible because of the working mechanism of ketorolac as an analgesic belonging to the non-steroidal anti-inflammatory category which will suppress the inflammatory reaction that occurs post-surgery as a cause of inflammatory pain. This situation is in line with the principle of pre-emptive analgesia, namely treatment that begins before surgery and prevents the formation of sensitization centers caused by incisional injury and inflammation (covering the surgical period and the early post-surgical period). According to Haris (2016), ketorolac works by inhibiting the production of chemical compounds that can cause inflammation and pain. Ketorolac does not cause dependence. This drug can be used as a single therapy or in combination with other pain relievers, including opioid pain relievers. According to Hinshaw and Atwood Sari (2019), there are several aspects of patient satisfaction, namely, Professional Service Techniques, Trust, and Patient Education.

CONCLUSIONS

The level of satisfaction with the use of the analgesic intravenous injection Ketorolac 30mg in moderately mild post-operative patients at PKU Muhammadiyah Gamping Hospital is higher than the use of intravenous infusion Paracetamol 1000mg.

The results of research and testing on the level of satisfaction with the use of the analgesic intravenous injection ketorolac 30mg and the analgesic use intravenous infusion paracetamol 1000mg in moderately mild post-operative patients at PKU Muhammadiyah Gamping Hospital

showed the results of the Chi-square test had a significance value of 0.006 < 0.05. Thus, it can be concluded that there is a significant relationship between the level of satisfaction with the use of the 30 mg ketorolac intravenous injection analgesic and the 1000 mg paracetamol intravenous infusion analgesic use in moderately mild post-operative patients at PKU Muhammadiyah Gamping Hospital, but the level of satisfaction in post-operative patients who use intravenous injection analgesics ketorolac 30mg was higher than in postoperative patients who used the analgesic intravenous infusion of paracetamol 1000mg. We suggest conducting additional research with a larger and more diverse sample to yield results applicable to a broader population. We also recommend the routine use of 30mg ketorolac injection.

REFERENCE

Admassu, W. S., Hailekiros, A. G., & Abdissa, Z. D. (2016). Severity and risk factors of post-operative pain in University of Gondar Hospital, Northeast Ethiopa. *Journal of Anesthesia & Clinical Research*, *7*(10), 675.

Aweke, Z., Seyoum, F., Shitemaw, T., & Doba, D. N. (2020). Comparison of preemptive paracetamol, paracetamol-diclofenac & paracetamol-tramadol combination on postoperative pain after elective abdominal surgery under general anesthesia, Ethiopia: a randomized control trial study, 2018. *BMC Anesthesiology*, *20*(1), 1–9.

Boesoirie, M. A., Oktaliansah, E., & Bisri, T. (2015). Perbandingan Parasetamol dengan Ketorolak Intravena Sebagai Analgesia Pre-emtif Terhadap Skala Nyeri Pascabedah Labioplasti pada Pasien Pediatrik. *Jurnal Anestesi Perioperatif*, *3*(2), 81–86.

Bonnal, A., Dehon, A., Nagot, N., Macioce, V., Nogue, E., & Morau, E. (2016). Patient-controlled oral analgesia versus nurse-controlled parenteral analgesia after caesarean section: a randomised controlled trial. *Anaesthesia*, *71*(5), 535–543.

Coşar, M., Kandemir Demirci, G., & Çalışkan, M. K. (2023). The effect of two different root canal sealers on treatment outcome and post-obturation pain in single-visit root canal treatment: A prospective randomized clinical trial. *International Endodontic Journal*, *56*(3), 318–330.

Dobson, G. P. (2020). Trauma of major surgery: a global problem that is not going away. In *International Journal of Surgery* (Vol. 81, pp. 47–54). Elsevier.

Eldor, J., Kotlovker, V., & Orkin, D. (2013). Pain free hospital-availability (24 hours) of anesthesiologists. *J. Anesth. Clin. Sci*, *2*(17), 10–7243.

Gan, T. J. (2017). Poorly controlled postoperative pain: prevalence, consequences, and prevention. *Journal of Pain Research*, 2287–2298.

Godman, B., Basu, D., Pillay, Y., Almeida, P. H. R. F., Mwita, J. C., Rwegerera, G. M., Anand Paramadhas, B. D., Tiroyakgosi, C., Patrick, O., & Niba, L. L. (2020). Ongoing and planned activities to improve the management of patients with Type 1 diabetes across Africa; implications for the future. *Hospital Practice*, *48*(2), 51–67.

Guo, S., Cui, J., Zhao, Y., Wang, Y., Ma, Y., Gao, W., Mao, G., & Hong, S. (2020). Machine learning–based operation skills assessment with vascular difficulty index for vascular intervention surgery. *Medical & Biological Engineering & Computing*, *58*, 1707–1721.

Haris, R. R., Mughni, A., & Margawati, A. (2016). *Pengaruh Pemberian Injeksi Ketorolac Tromethamine Intraperitoneal Terhadap Gambaran Mikroskopis Gaster Tikus Wistar Dewasa Dengan Fraktur Kruris*. Diponegoro University.

Hidayatulloh, A. I. (2020). Pengalaman dan Manajemen Nyeri Pasien Pasca Operasi di Ruang

Kemuning V RSUP Dr. Hasan Sadikin Bandung: Studi Kasus. *Jurnal Ilmu Keperawatan Dan Kebidanan*, *11*(2), 187–204.

Hudyarisandi, W. (2016). *Efektivitas Kombinasi Tramadol Dan Paracetamol Oral Sebagai Preemptive Analgesia Terhadap Nyeri Intraoperatif Dan Pascaoperatif Pada Pasien Yang Menjalani Operasi Dengan Anestesi Umum Di Gedung Bedah Pusat Terpadu RSUD Dr. Soetomo Surabaya*. Airlangga university.

Imani, F., Rahimzadeh, P., Faiz, H.-R., Nowruzina, S., Shakeri, A., & Ghahremani, M. (2018). Comparison of the post-caesarean analgesic effect of adding dexmedetomidine to paracetamol and ketorolac: A randomized clinical trial. *Anesthesiology and Pain Medicine*, *8*(5).

Lyngstad, G., Skjelbred, P., Swanson, D. M., & Skoglund, L. A. (2021). Analgesic effect of oral ibuprofen 400, 600, and 800 mg; paracetamol 500 and 1000 mg; and paracetamol 1000 mg plus 60 mg codeine in acute postoperative pain: a single-dose, randomized, placebo-controlled, and double-blind study. *European Journal of Clinical Pharmacology*, *77*, 1843–1852.

Meissner, W., Coluzzi, F., Fletcher, D., Huygen, F., Morlion, B., Neugebauer, E., Pérez, A. M., & Pergolizzi, J. (2015). Improving the management of post-operative acute pain: priorities for change. *Current Medical Research and Opinion*, *31*(11), 2131–2143.

Pratama, R. A., Laksono, B. H., & Fatoni, A. Z. (2020). Manajemen Nyeri Akut Pasca-Kraniotomi. *Journal of Anaesthesia and Pain*, *1*(3), 28–38.

Raffaeli, W., Tenti, M., Corraro, A., Malafoglia, V., Ilari, S., Balzani, E., & Bonci, A. (2021). Chronic pain: what does it mean? A review on the use of the term chronic pain in clinical practice. *Journal of Pain Research*, 827–835.

Rismawan, W. (2019). Tingkat kecemasan pasien pre-operasi di RSUD dr. Soekardjo Kota Tasikmalaya. *Jurnal Kesehatan Bakti Tunas Husada: Jurnal Ilmu-Ilmu Keperawatan, Analis Kesehatan Dan Farmasi*, *19*(1).

Sari, I. M., Nasution, S. W., Girsang, E., & Ginting, C. N. (2019). Relationship of Nursing Service Quality to Patient Satisfaction Levels in Balimbingan Hospital 2018. *International Journal of Research & Review*, *6*(8), 77–85.

Siraneh, A. G., Dendir, G., & Paulos, K. (2020). Factors associated with patient satisfaction in perioperative anesthesia care at Hawassa university comprehensive specialized hospital, Ethiopia. Cross-sectional study design. *International Journal of Surgery Open*, *26*, 114–118.

Sudin, A., Chong, C., & Hassan, R. (2023). Incidence and factors associated with Post Sternotomy Pain Syndrome in National Heart Institute, Malaysia. *Journal of Cardiothoracic and Vascular Anesthesia*.

Thompson, L. A., Zhang, S., Black, E., Das, R., Ryngaert, M., Sullivan, S., & Roth, J. (2013). The association of maternal pre-pregnancy body mass index with breastfeeding initiation. *Maternal and Child Health Journal*, *17*, 1842–1851.

Thomson, B. N. J., & Francis, D. M. A. (2019). Surgical techniques. *Textbook of Surgery*, 35–44.

World Health Organization. (2015). *Strengthening emergency and essential surgical care and anaesthesia as a component of universal health coverage Report by the Secretariat. Provisional Agenda Item 5.1*.