International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

Post Operative Pain Assessment in Total Knee Arthroplasty (TKA)-A Prospective Observational Study in a Major Trauma Care Center

Sandra paul, Dr. J. Balavenkatasubramanian, Dr. L. Britto Duraisingh, Brighty Baby, Bilmie Benedict. A

Pharm D intern, Nandha college of pharmacy, Erode, Tamil nadu,638052 INDIA

Submitted: 10-12-2022 Accepted: 23-12-2022

ABSTRACT

A prospective observational study of post operative pain assessment in total knee arthroplasty is to give clinical support for improving analgesic strategy and comparing the intensity of pain in the bilateral TKA. A total of 100 samples were gathered, and all patients underwent standard operative management and received a multimodal analgesic regimen.TKA is followed by moderate to severe postoperative pain, and pain management is essential for a successful recovery, patient satisfaction, and for better result. Patients were given analgesics, sedatives, and nerve blocks (dual subsartorial block) for the treatment of post-operative pain relief and was documented. Post operative pain score, presence of pain during ambulation, sleep, h/o constipation and h/o nausea & vomiting were recorded from POD1 to POD4. Post operative Pain intensity was assessed on the basis of Visual Analogue Scales (VAS). If the postoperative pain intensity was greater, the analgesic strategy's efficacy was raised. The difference in pain scores were observed with time as there was significant reduction in pain during each follow ups. The most painful activities were walking, and exercising. 81% of patients had pain interference with walking and are given with analgesics prior to mobilization. Benzodiazepines were prescribed to 23% of the patients who had sleep disturbances. Multimodal analgesia is regarded as optimal postoperative pain management strategy for TKA because it promotes earlier mobilization, improved postoperative analgesia, and lowers opioid intake and its adverse effects. The visual analogue scale (VAS) was used to compare the postoperative pain in the first and second knees after staged bilateral TKA, and the results showed that the second knee had more postoperative pain than the first knee. As a result, during bilateral staged TKA(second surgery), the analgesic strategy is modified.

KEY WORDS: Total knee arthroplasty, post operative pain, bilateral, multimodal analgesia, visual analogue scale(VAS), osteoarthritis, ambulation.

I. INTRODUCTION

Total knee arthroplasty (TKA) is frequently done on patients with end-stage osteoarthritis or rheumatoid arthritis of the knee to decrease joint pain, restore mobility, and enhance quality of life. (1) Since the 1970s, it has been a very popular and effective procedure, and each year, more primary TKR surgeries are being performed worldwide.(2) More than 250,000 TKAs are performed annually in the United States, with success rates ranging from 80% to more than 90%. An ageing population is more prone to have knee dysfunction, which will increase demand for surgery and raise the overall cost of recovery and operation. (3) However, according to recent studies, 15% to 20% of patients do not feel satisfied with their TKA results. The most frequent reasons for patient dissatisfaction are limited function and persistent discomfort. As a result, effective pain management following TKA can be anticipated to speed up functional recovery and raise patient satisfaction. Analgesia and pain management have also seen significant advancements.(4)

Bilateral involvement in osteoarthritis of the knee is frequently seen; according to some researchers, 18.6% of patients receiving TKA need bilateral knee replacements (5) The operation can be completed in a staged sequential TKA at a 1-week interval for patients who require bilateral TKA, and it is regarded as safe and effective in terms of the complication rate, recovery time, and length of hospital stay. Patients undergoing staged TKA, however, may run the risk of developing hyperalgesia on the second operated knee as a result of the repeat of surgical injury, as tissue

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

damage can generate hyperalgesia via central sensitization. (6)

People who choose to have TKR typically do so because they are suffering from chronic pain, therefore pain alleviation is a crucial post-operative result. It is becoming more common to gauge a patient's perception of TKR success by the degree to which they are satisfied with the treatment's results. It has been demonstrated that satisfaction is highly correlated with pain, functional capacity, social functioning, and mental health. (7) The results of TKA have traditionally been assessed based on the doctor's judgement of the patient's level of pain, standard radiographic analysis of alignment and periprosthetic bone quality, and the patient's level of functional capacity (3). The procedure aids in regaining physical function, can enhance quality of life in terms of health, and allows some people to resume social, recreational, and athletic activities. Despite the fact that TKR is effective in relieving pain for the majority of patients, 20% of patients report that their replaced knee still hurts. (8) Moderate to severe postoperative discomfort is common after TKA. In patients who underwent TKA, 30% of patients report moderate pain and 60% report severe postoperative knee pain. Some patients even put off this operation because of the possibility of this intense postoperative pain (1)

It has long been understood that pain is a very subjective and personal experience that differ from personal to person. The International Association for the Study of Pain (1979) provided the most widely accepted definition of pain as "an unpleasant sensory and emotional experience linked with real or potential damage or characterized in terms of such damage." The perception of pain is known to be influenced by a variety of factors, including gender, age, past experiences, and a variety of psychological aspects. It is impossible to predict how much pain each individual will feel after having surgery because of the complicated interaction of these several elements. This implies that each individual's experience of pain can only be evaluated and properly addressed on an individual basis given the lack of a relationship between tissue damage and physical discomfort.(9)

Poor post-operative pain assessment and management can have significant negative impacts on the patient, including increased anxiety, sleep problems, trouble getting around, restlessness, irritability, aggression, and—perhaps most importantly—unnecessary levels of agony and suffering. Patients may experience physiological repercussions from poorly diagnosed and managed post-operative pain, such as an increase in heart rate and blood pressure, a delay in stomach emptying, and paralytic ileus. To ensure that pain is adequately controlled, an accurate assessment of post-operative pain is necessary.

One of the biggest concerns for patients thinking about a TKA is adequate postoperative pain management. The Joint Commission on Accreditation of Healthcare Organizations places a strong emphasis on the evaluation and management of pain. For optimal postoperative rehabilitation and result, pain management is essential. In addition to increased narcotic use and extended hospital stays, severe pain can also cause nausea and vomiting. Extreme pain may result in arthrofibrosis and a reduced postoperative range of motion (ROM) for the knee. (9)

Accurate assessment of pain depends on effective communication. Healthcare workers should give patients plenty of opportunity to talk and be heard. Patients frequently put off reporting discomfort or wait until it becomes severe because they think medical personnel are "too busy," are taking care of more significant or dangerously ill patients, or are simply trying to avoid problems. (10)

Drug effectiveness and patient improvement could be correctly assessed if pain could be measured precisely and consistently. In rheumatology, the visual analogue scale (VAS) is extensively employed for this purpose and is regarded as a sensitive and reliable way to convey the intensity. Additionally, it requires little time to finish and enables cross-cultural comparisons because there are little language translation challenges. It offers a linear measurement of pain. (11) Prior to surgery and at each follow up, pain at the TKA site was assessed using the VAS system. The scale is a 10-mm horizontal line ranging from 0 (no pain) to 10 (intolerable pain). (3) Every 4-6 hours, analogue pain score values were recorded. Patients were asked to rate their pain on a scale of 0 to 10, with 0 being no pain and 10 the most excruciating pain possible. Individual analogue pain scale values for each day were averaged to provide a single score of pain on the day of surgery, postoperative days 1, 2, and 3, and for the day of discharge. (12) The VAS is frequently used to assess the analgesic efficacy of various treatments, and it does so by determining the degree of pain relief or pain intensity (11)

According to their temporal associations, Laskin classified the etiologies of pain following TKA which includes start-up pain, pain while

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

weight bearing, early postoperative pain, pain associated with full flexion, pain during stair climbing or descent, resting pain, and ongoing postoperative pain. Start-up pain may be attributed to component loosening. Activity-related pain that is accompanied by persistent swelling may have a mechanical cause and point to instability. Contrarily, pain that persists and does not subside with rest and activity limitation may raise concerns about an infection of the periprosthetic joint. Extensor mechanism pathology may be the cause of stair climbing pain. Infection, instability, misplaced implants, or soft tissue impingement are all possible causes of pain that appear within the first year following TKA. Pain that appears more than a year after surgery, on the other hand, may be the result of wear, osteolysis, aseptic loosening, or infection. A neuropathic origin may be indicated by pain that is described as burning, tingling, prickling, shooting, electric shock-like, squeezing, spasming, or cold. (4)

The most frequently reported issue that surgeons deal with is postoperative pain from TKA. One of the key elements influencing patients' postoperative knee function is postoperative pain. It not only causes patients to be dissatisfied with the results of their treatment, but it also prevents them from exercising their knees after surgery, ambulation, limits their range of motion, puts them at risk for thromboembolism, and delays their hospital discharge and rehabilitation. (5)

The peri-operative management of pain has improved recently by taking into account the effects of nociceptive stimulation brought on by surgery. This has been done with the aim of not only treating pain but also of preventing opioid-related side effects and short- and long-term chronic pain.Patient satisfaction has significantly enhanced as a result of multimodal analgesia. However, as opioids have a narrow therapeutic range, care must be used when prescribing them for effective pain treatment following knee replacement.Inappropriate opioid prescriptions may not be effective at relieving pain and may be linked to digestive and cardiorespiratory complications.The risks of a poor outcome and a longer hospital stay following joint replacement are increased by such adverse events, especially for elderly patients with concomitant diseases. (13)

The amount of opioids needed varies greatly depending on pharmacokinetic and pharmacodynamic parameters, including pain and pharmacogenetic factors.The mu-opioid receptor modifies pain perception in the central nervous system by regulating the effects of opioids through both endogenous opioid peptides and exogenous ligands.The metabolic pathways of catecholaminergic neurotransmitter degradation involve the enzymeCOMT, which plays a significant role.The Val 158 allele lowers the stability of the COMT protein and is linked to individual variations in pain nociception and opioid use. (13)

The American Pain Society defined pain as "the fifth vital indicator" in 1996.The use of preemptive analgesia, opioids, cyclooxygenase-2 inhibitors, epidural anaesthesia, peripheral nerve blockade, local infiltration analgesia, patient-controlled analgesia, and multimodal analgesia have all been suggested as common techniques to treating severe postoperative pain.Adequate postoperative analgesia could decrease pain, opioid intake, and, as a result, opioid-related adverse events; in addition, it could shorten hospital stays, lower expenses, and enhance patient satisfaction and recovery.In order to improve patient outcomes, surgeons must have a thorough understanding of the current anaesthetic and analgesic regimens for TKA. (1)

A small number of studies have also examined the pain following surgery in the first and second knees in staged bilateral TKA. Despite the fact that the second knee in a staged bilateral TKA procedure also falls within the initial knee replacement category, the pain is addressed in accordance with the standard initial knee replacement pain management protocol.Due to more intense pain than after the first TKA, patients who have undergone two surgeries require an intensive analgesic treatment. (5)

Oral or parenteral anesthetic, intravenous patient-controlled analgesia (PCA), nerve blocks, periarticular injections (PAIs), and continuous epidural or intraarticular analgesia are all used as pain management techniques after TKA. Nerve blocks and PAIs are becoming more common because they are associated with less side effects than systemic regimens.

There have been reports that PAI can effectively manage acute postoperative pain without having systemic adverse effects associated with systemic opioids. The purpose of PAI is to lessen both central and peripheral pain while reducing side effects, promoting patient involvement in postoperative rehabilitation, enabling early discharge, and enhancing overall function outcomes.Local anesthetics, opioids, non-steroidal anti-inflammatory medications, and corticosteroids may also be employed as components of PAIs.

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

Techniques for regional anesthetic appear to be the best way to offer intraoperative analgesia and to reduce postoperative pain. However, it does have certain adverse effects, including neurological issues, infection risk, and deterioration of motor function and danger of falls.Success rates have risen, problems have been reduced, and a variety of procedures have gained popularity as a result of the continued development of regional anesthetic and the creation of ultrasound guidance. After TKA, FNB is routinely used to manage postoperative pain. It demonstrated better results than opioid-based analgesia. When compared to epidural analgesia, it produced comparable analgesia but less nausea and vomiting, and improved patient satisfaction. (4)

II. METHODOLOGY

- Study design:

A prospective observational study on post operative pain assessment in TKA in a major trauma care centre.

- Inclusion criteria:

Every patient with rheumatoid arthritis and osteoarthritis scheduled for TKA.

- Exclusion criteria:

Patients with bilateral TKR surgery duration more than 1 month.

Patients with OA managed conservatively.

Previous history of knee surgery or infection, underwent revision surgery during follow-up due to infection.

Patients with a history of pain syndrome.

- Study site:

The study was conducted at department of Orthopedics and plastic surgery, Ganga medical centre and Hospital, Coimbatore.

- Study duration:

The study was carried out for a period of six months (february 2022 to july 2022).

- Study population:

Sample size- 100 data.

- Parameters involved:

Pain score

- Data collection method:

From February 2022 to July 2022, we performed a prospective observational study of all patients scheduled to undergo TKA for osteoarthritis. The total number of samples collected is 100, which include 22 male patients and 78 female patients. They were between the ages group of 40 and 85 years. One skilled orthopedic surgeon used the standard technique to complete all TKA surgeries. In each case, the patella was resurfaced, and bone cement was used to fix the implant.

Patients are given nerve blocks (dual subsartorial block), analgesics, and sedatives for pain reduction in accordance with normal pain management procedure. One indicator for measuring pain in postoperative patients is the usage of narcotics. Narcotic use was recorded from POD1-POD4.A uniform clinical postoperative rehabilitation pathway was followed by all patients.

Pain in the TKA site was measured using the VAS method following surgery and at each follow-up (POD1-POD4). The scale has values from 0 (no pain) to 10 (maximum pain) (intolerable pain). Patients were told to mark the location on the line where their pain score matched. Analog pain score data were gathered every 4 hours or more frequently. On the day of surgery, the first three postoperative days, and on the day of discharge, the individual analogue pain scale ratings for each day were averaged. The same surgical procedure, the same implant, the same analgesic regimen, and the same rehabilitation plan were employed during each patient's surgeries on both sides. The severity of the pain in both knees is compared if the patient had bilateral TKR surgery. In these situations, the VAS evaluations were conducted while the knee on the opposing side was at rest. When giving their VAS score, patients were adamantly instructed to perceive knee pain on each side distinctly.

Physical therapy was given to patients twice a day. When mobilizing, the degree of pain is also evaluated.The physical therapist determined and noted the maximum ambulatory distances for each of the two daily physical therapy sessions.The ambulatory capacity for each day was determined by combining longest single distance walked in the two sessions. Data were gathered during the first, second, and third postoperative days as well as the day of discharge. Sleep quality is assessed by direct interaction with patient. The patient's history of constipation, nausea and vomiting was also documented.

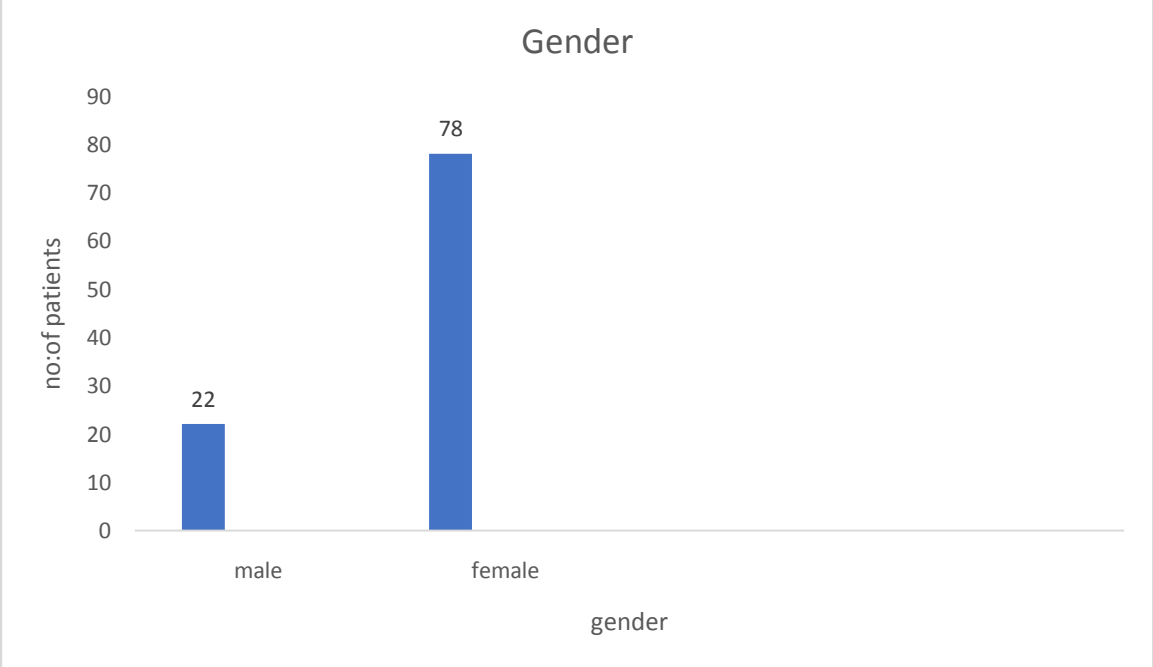
III. RESULT:

Total number of samples(n)	100
L.TKR	43
R.TKR	45

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

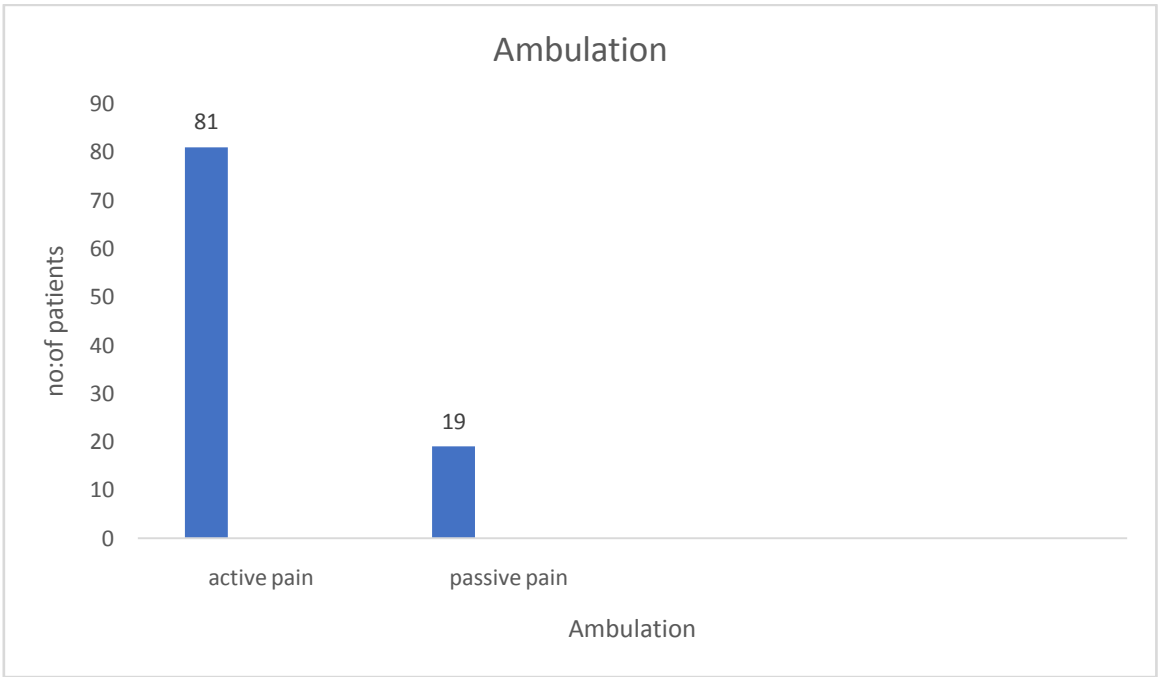
Bilateral TKR	12(11 patients experienced more pain during 2nd surgery)

Gender	
Male	22
Female	78

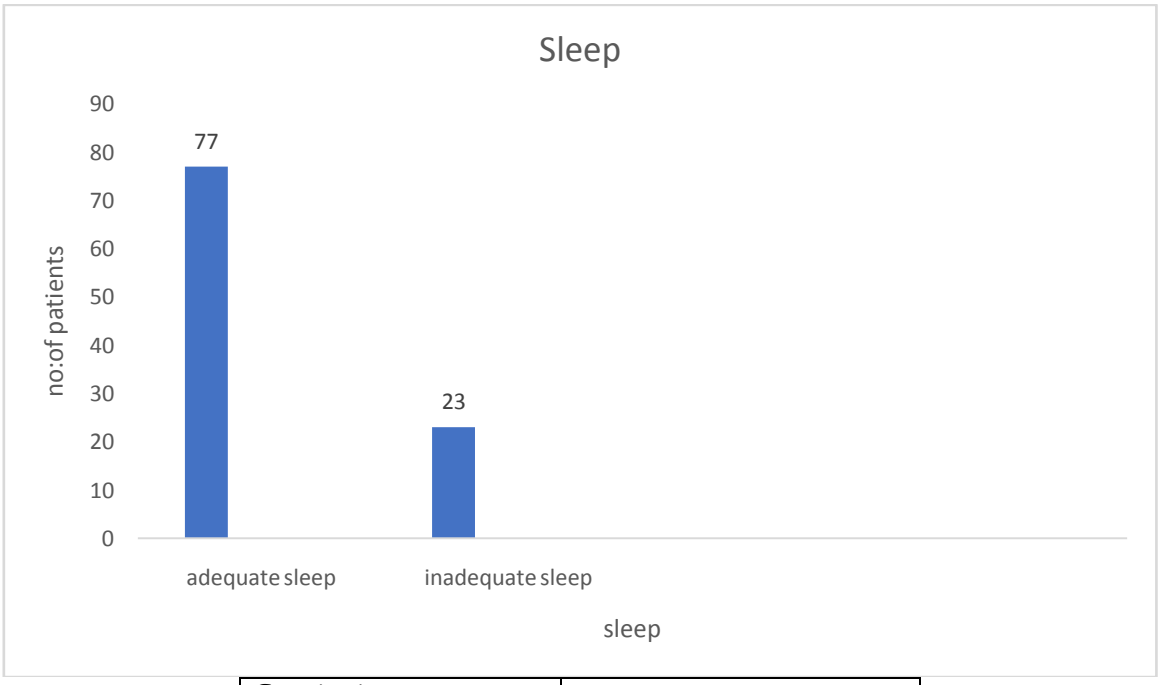


Ambulation	
Active	81
Passive	19

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

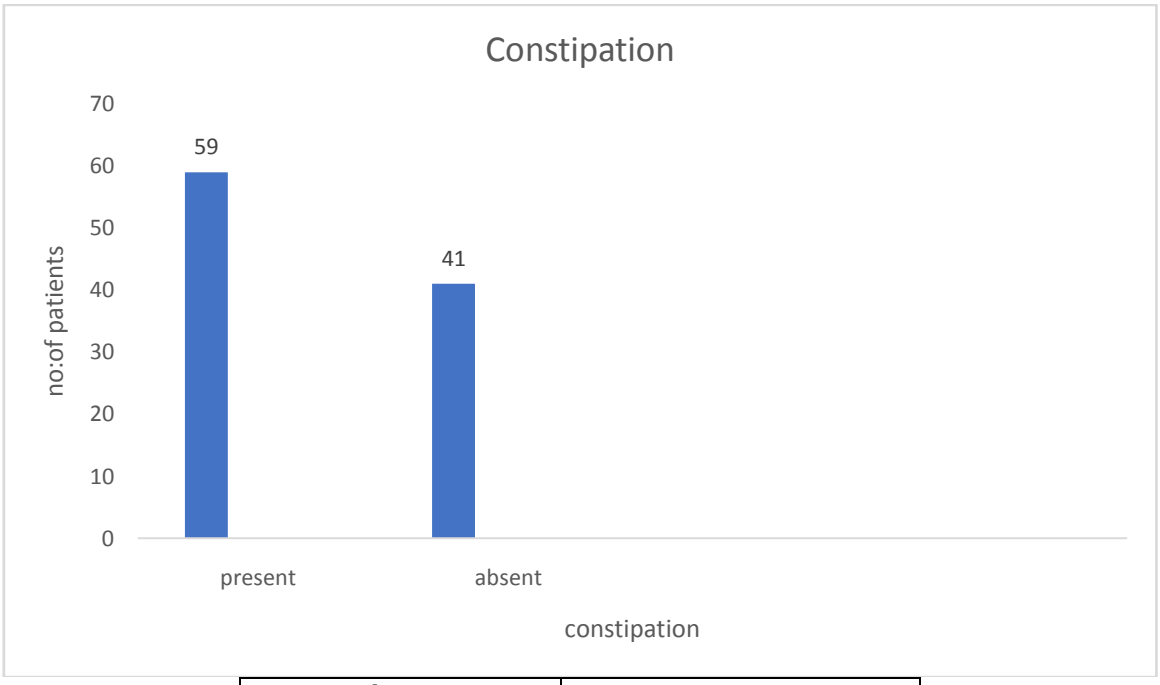


Sleep	
Adequate sleep	77
Inadequate sleep	23

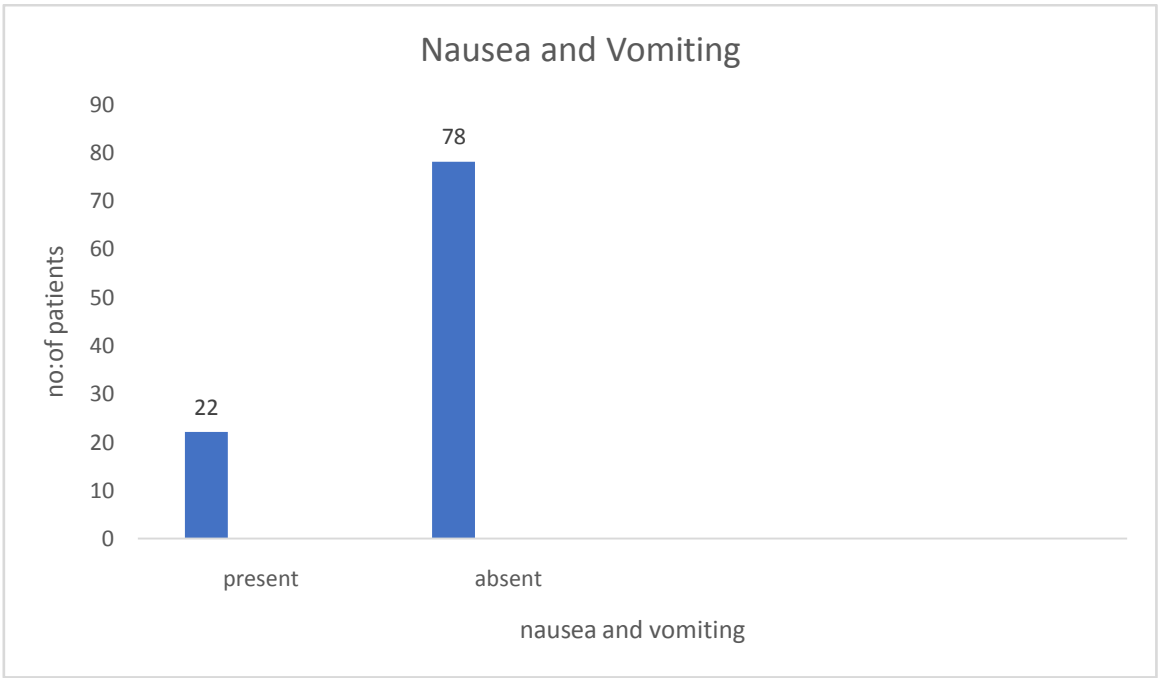


Constipation	
Present	59
Absent	41

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494



Nausea and vomiting	
Present	22
Absent	78



IV. DISCUSSION:

Out of 100 arthroplasty cases, 43 patients underwent left TKR and 45 patients underwent right TKR surgery and 12 patients underwent bilateral TKR. The ratio of osteoarthritis in male: female is 2:8 because females are more susceptible to osteoarthritis.

The majority of post-operative pain is caused by tissue damage at the surgical site. In the case of elective surgery, the cause of pain, the time of initiation, the location of generation, and the

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

anticipated period of the pain are all known in advance. It is obvious that preemptive action should be taken in this case to stop the generation and transmission of pain impulses at the source of origin before central processing further complicates the situation. (16)

Post surgery, pain at the TKA site was assessed using the VAS system.In patients with TKR, on the day of surgery patient had dull pain or no pain followed by throbbing like pain. Over 50% of patients described their pain as throbbing and aching on POD2. Bone, joint, tendon, and facia injuries cause a throbbing and aching pain.The intensity of pain was more on POD2 than POD1.The differences became apparent over time as the pain at every follow-up greatly diminished. According to this study, even though pain assessments ranged from mild to severe, the average level of pain on the third postoperative day was moderate. If the pain intensity is higher, then the analgesic strategy is modified.

If the patient had undergone bilateral TKR surgery, then the pain intensity of both knees are compared. Out of 12 bilateral TKR surgery 11 patients experienced more pain during second surgery and 1 patient had more pain during first surgery. A tissue injury occurs during TKA surgery, and nociceptors transmit this signal to the spinal cord. Thus, the peripheral sensitization occurs and then it goes to the opposite side and goes up and central sensitization happens in the sensory cortex. The nerves act within the PNS and CNSthrough the chemicals that are released at the nerve endings. However, certain interneurons in the spinal cord become active due to this procedure. For instance when we did right TKR because of the spinal interneurons that are present, those that are represented the left TKR already got stimulated during the first time. Though there is no tissue injury because of this electrical connect those areas were stimulated. They are being stimulated without an injury. And now when the injury happens the pain is perceived more. So even a small stimulus can aggravate the pain.

Sun J et al. compared the VAS scores in the first and second knees of staged bilateral TKA patients at 24 hours, 48 hours, and 72 hours following surgery.The second knee's VAS scores were considerably higher than the first knee's within 48 hours of surgery in patients receiving staged bilateral TKA. However, at 72 hours, despite the VAS gradually declining, there was no noticeable difference. The pain stimuli caused by the two operations were similar because they both used the same surgical approach, the same implants, and the same analgesics. Kim proposed that a hyperalgesia state, which is defined by the International Association for the Study of Pain (IASP) as a state in which a general pain stimulus may produce a more intense pain, may be responsible for the significant difference in early postoperative pain in staged bilateral TKA patients. He hypothesized that the first knee surgery might have caused this hyperalgesia state, which would then cause a painin the opposite knee. (5)

According to Kim MH et. al, in staged bilateral TKA, the second operated knee experiences more pain than the first. The same degenerative arthritic pathology, the same TKA methodology, and comparable preoperative knee pain strongly suggest that the nociceptive stimuli radiating from the operated knees for the first and second TKAs would be similar. As a result, hyperalgesia is indicated as second knee's increased perception of pain. In accordance with the theory of tertiary hyperalgesia, this study suggests that pain hypersensitivity might be generated at a site (second knee) far from the area that was initially wounded. Pain-induced neuroplasticity is a potential explanation for this phenomena (central sensitization). Skin, muscle, nerves, and connective tissues that are damaged in the periarticular region next to the surgically removed knee joint during TKA may provide unpleasant sensations. Through a neuronal and humoral mechanism, nociceptive inputs from peripheral tissue injury can change the subsequent sensory nerve processing. The first operated knee in this study may have changed sensory processing and sensitized subcortical areas, causing central sensitization, as a result of chronic nociceptive inputs. The second knee's hyperalgesia may be explained by the possibility of central sensitization, which can lead to the transmission of further nerve impulses from the periphery to the brain. (6)

Furthermore, the analgesic effect of opioid analgesics would eventually diminish with continued usage. Some research suggest that tolerance to opioids may also be linked to the various intensities of postoperative pain. Although opioid analgesics can cause tolerance, Goldstein discovered in his experiments with animals that tolerance vanish entirely after a 48-hour drug withdrawal. If there is a small gap between the two operations, we propose that morphine withdrawal one week prior to the second procedure may lessen the postoperative pain . (5)

Fear that the pain would get worse could be a factor in people's hesitation to walk and exercise.This lengthens the time spent in bed, slows

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

down recovery, and puts patients at risk for surgical problems such deep vein thrombosis, pneumonia, extended hospital stays, and higher hospital expenses (15). A successful pain management plan following TKA is crucial because it supports physiotherapy and encourages mobilization, both of which are essential for a positive outcome. The pain is worse during mobilization than it is at rest, which makes it difficult for the patient to engage in postoperative recovery activities. 81% of patients reported active pain, while only 19% of patients reported passive pain (pain upon mobilization).When compared to other activities like exercise and sleep, walking is found to have much greater pain interference scores. In a research on THR patients, 83% of the patients reported experiencing moderate to severe pain while exercising and mobilization(Morrison, Magaziner, & McLaughlin, 2003). Cremeans-Smith et al. (2006) found that patients' activities were significantly reduced by severe pain after TKR. Similarly, Fitzgerald et al. (2004) discovered that patients undergoing TKR and THR experienced less pain when their physical activity levels were reduced. (15)

Preoperative, operation, acute postoperative, and residual periods are the four phases of surgical pain management. We have used a short-acting spinal anesthetic method (2.6 ml heavy bupivacaine, 0.5%) for the intraoperative phase of pain control. This makes sure that the CNS never receives pain signals prior to the beginning of the infiltration block. In order to allow for early mobilization, the release from spinal blockade is planned to happen around two hours after surgery. This strategy offers a smooth conversion from the central blockage to the infiltration blockade. Local infiltration analgesia can be viewed as a crucial enabling approach for promoting early return to normal activities of daily life and facilitating release from hospital since it manages the acute postoperative pain phase lasting roughly 36 hours.Buprenorphine skin patches and supplementation with infrequent oral analgesics can be used to treat the residual pain phase, which typically lasts for a further 1-2 weeks (mainly paracetamol). (16)

The use of a local infiltration block may be employed to control pain well, and the blockade can be extended to last for around 36 hours by utilizing the right local anesthetic medication (ropivacaine).It is thought that a key mechanism for amplifying and sustaining pain intensity is the sensitization of pain nerves by locally active mediators produced from injured tissue.NSAIDs have the ability to block the synthesis of the prostanoid components, and the infiltration approach appears to be effective in delivering locally high drug concentrations to the desired region. If the local anesthetic in the RKA mixture efficiently blocks pain nerve conduction, the NSAID molecules must also be adjacent the nerve endings and in an ideal location to inhibit prostaglandin synthesis and the ensuing nerve sensitization. Such medications could be delivered effectively using the LIA approach. The current gold standard for analgesia following knee and hip replacements may be considered to be continuous wound infiltration with local anesthetics through wound catheters and continuous nerve block procedures (16)

Single, multiple, or continuous peripheral nerve blocks can be performed as additional pain-control methods. Nerve blocks reduce the probability of complication and adverse effects associated with epidural analgesia.However, blocking the sciatic, femoral, and obturator nerves could be necessary to successfully relieve pain. Following skin closure, injections of local anesthetics, such as a single 150 mg (30 mL) dose of bupivacaine, greatly reduced the utilization of narcotics for the first twenty-four hours following surgery. During the first 48 hours following surgery, ropivacaine is linked to a much relatively low postoperative pain score at rest and during physical activity, as well as a significantly lower narcotics use that lasted for 48 hours.(18)

A multimodal approach's main objective would be to lessen pain at the central and peripheral levels while reducing side effects, promoting patient involvement in postoperative rehabilitation, enabling early discharge, and enhancing overall functional outcome.To prevent and treat pain, multimodal analgesia uses a combination of medications that acts synergistically with one another through several modes of action. Multimodal analgesia aids in pain management while lowering the usage of opioids and minimizing the adverse effects associated with their usage. (14)More and more patients will choose opioids over NSAID analgesics for postoperative pain management, according to the most recent AAOS guidelines, which show that opioid analgesics, like morphine or tramadol, have a higher grade for pain control than NSAID analgesics. (5)

Sleep disorders following TKR vary widely from patient to patient. After surgery, sleep difficulties affected 23% of patients. Patients are prescribed with benzodiazepines if they

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 6 Nov-Dec 2022, pp: 1625-1635 www.ijprajournal.com ISSN: 2456-4494

experiences sleep disturbances. The pain interference scores in sleep given by Sherwood et al. (2003) and McNeill, Sherwood, Starck, and Nieto (2001) were 5.2 and 5.03, respectively. Patients experience poor sleep quality and trouble falling asleep following surgery (Cronin, Keifer, & Davies, 2001; Kain & Caldwell-Andrews, 2003). According to Kain and Caldwell Andrews' 2003 research, 23% of the patients experienced sleep difficulties for two days following surgery. They claimed that patients with sleep difficulties reported higher pain scores. In a research by Fielden, Gander, Horne, Lewer, and Green (2003), 75% of the patients receiving THR claimed that when their postoperative pain was relieved, they did not have sleep disturbances. In their qualitative investigation, Barksdale and Backer (2005) found that patients' inability to sleep was caused by pain. According to some literatures lack of pain management has been shown to have a negative effect on sleep. After surgery, moderate pain made it difficult to sleep. Similarly after surgery, untreated sleep issues might cause longer recovery.(15)

59% of patients had constipation and 22% of patients had experienced nausea and vomiting after surgery. Since geriatric age group make up the majority of total knee replacement patients, as a result many of them reported constipation. These patients are prescribed with laxatives prophylactically.

V. CONCLUSION

In the post-operative phase, effective pain management is crucial to prevent patient suffering and promote rapid healing. The patient's pain management protocol should aim to prevent pain from interfering with routine tasks like sleeping and mobilization.The multimodal analgesic approach utilized in this study has been shown to be beneficial in treating pain following TKA because it increases patient satisfaction by combining different analgesic regimens, while lowering the need for opioids and opioid related adverse effects. If the level of pain is higher, the analgesic strategy can be changed. Since the proportion of active pain cases is higher than that of passive pain, appropriate doses of analgesics can be given round the clock or prior to mobilization. Greater postoperative pain is felt in the patient's second knee following bilateral TKA than in the first knee. This suggests that any series of sequential surgeries should take into consideration increasing the dosage of analgesics or adding additional analgesic modalities during the second postoperative period since the pain management protocol for the first knee replacement is commonly less effective when used for pain relief in the second knee. The second knee's postoperative pain will be alleviated, and patient satisfaction will enhance.

REFERENCE:

[1]. 1.Li JW, Ma YS, Xiao LK. Postoperative pain management in total knee arthroplasty. Orthopaedic surgery. 2019 Oct;11(5):755-61.

[2]. 2.Drosos GI, Triantafilidou T, Ververidis A, Agelopoulou C, Vogiatzaki T, Kazakos K. Persistent post-surgical pain and neuropathic pain after total knee replacement. World Journal of Orthopedics. 2015 Aug 8;6(7):528.

[3]. Brander VA, Stulberg SD, Adams AD, Harden RN, Bruehl S, Stanos SP, Houle T. Ranawat Award Paper: Predicting total knee replacement pain: A prospective, observational study. Clinical Orthopaedics and Related Research®. 2003 Nov 1;416:27-36.

[4]. 4.Lee YS. Comprehensive analysis of pain management after total knee arthroplasty. Knee surgery & related research. 2017 Jun;29(2):80.

[5]. 5.Sun J, Li L, Yuan S, Zhou Y. Analysis of early postoperative pain in the first and second knee in staged bilateral total knee arthroplasty: a retrospective controlled study. PLoS One. 2015 Jun 11;10(6):e0129973.

[6]. 6.Kim MH, Nahm FS, Kim TK, Chang MJ, Do SH. Comparison of postoperative pain in the first and second knee in staged bilateral total knee arthroplasty: clinical evidence of enhanced pain sensitivity after surgical injury. PAIN®. 2014 Jan 1;155(1):22-7.

[7]. 7.Wylde V, Dieppe P, Hewlett S, Learmonth ID. Total knee replacement: is it really an effective procedure for all?. The Knee. 2007 Dec 1;14(6):417-23.

[8]. Wylde V, Bruce J, Beswick A, Elvers K, Gooberman-Hill R. Assessment of chronic postsurgical pain after knee replacement: a systematic review. Arthritis care & research. 2013 Nov;65(11):1795-803.

[9]. Kelley TC, Adams MJ, Mulliken BD, Dalury DF. Efficacy of multimodal perioperative analgesia protocol with periarticular medication injection in total

knee arthroplasty: a randomized, double-blinded study. The Journal of arthroplasty. 2013 Sep 1;28(8):1274-7.

[10]. Mackintosh C. Assessment and management of patients with post-operative pain. Nursing standard. 2007 Oct 10;22(5):49-56.

[11]. Langley GB, Sheppeard H. The visual analogue scale: its use in pain measurement. Rheumatology international. 1985 Jul;5(4):145-8.

[12]. Powell RS, Pulido P, Tuason MS, Colwell Jr CW, Ezzet KA. Bilateral vs unilateral total knee arthroplasty: a patient-based comparison of pain levels and recovery of ambulatory skills. The Journal of arthroplasty. 2006 Aug 1;21(5):642-9.

[13]. 13.Thomazeau J, Rouquette A, Martinez V, Rabuel C, Prince N, Laplanche JL, Nizard R, Bergmann JF, Perrot S, Lloret-Linares C. Acute pain factors predictive of post-operative pain and opioid requirement in multimodal analgesia following knee replacement. European Journal of Pain. 2016 May;20(5):822-32.

[14]. Lubis AM, Maruanaya S, Tantri AR, Pontoh LA, Ifran NN. The use of combination paracetamol and ibuprofen in postoperative pain after total knee arthroplasty, a randomized controlled trial. Pain Physician. 2021;24(8):E1199.

[15]. Akyol Ö, Karayurt Ö, Salmond S. Experiences of pain and satisfaction with pain management in patients undergoing total knee replacement. Orthopaedic Nursing. 2009 Mar 1;28(2):79-85.

[16]. Kerr DR, Kohan L. Local infiltration analgesia: a technique for the control of acute postoperative pain following knee and hip surgery: a case study of 325 patients. Acta orthopaedica. 2008 Jan 1;79(2):174-83.

[17]. Rakel BA, Blodgett NP, Zimmerman MB, Logsden-Sackett N, Clark C, Noiseux N, Callaghan J, Herr K, Geasland K, Yang X, Sluka KA. Predictors of postoperative movement and resting pain following total knee replacement. PAIN®. 2012 Nov 1;153(11):2192-203.

[18]. Vendittoli PA, Makinen P, Drolet P, Lavigne M, Fallaha M, Guertin MC, Varin F. A multimodal analgesia protocol for total knee arthroplasty: a randomized, controlled study. JBJS. 2006 Feb 1;88(2):282-9.