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PATIENT PERCEPTION OF EFFECTIVENESS OF PATIENT CONTROL ANALGESIA (PCA) IN POSTOPERATIVE PAIN MANAGEMENT AT SHAUKAT KHANUM MEMORIAL CANCER HOSPITAL & RESEARCH CENTRE (SKMCH&RC)

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Abstract

Introduction: *Wang et al (2020) emphasizes that management of pain is a big treatment concern for patients who have had surgery, and the anesthesiologists are always on the lookout for new ways to help them. Devin & McGirt (2015) highlights that the management of postoperative pain, on the other hand, is far from ideal. In patients who undergo major surgeries and are expected to experience severe postoperative pain are provided with multimodal analgesia including patient control analgesia. At SKMCH&RC, we deal mostly with cancer surgeries. Pain management is an important issue during intraoperative and postoperative period. Post- operative pain control depends on type & extent of surgery. In patients who undergo major surgeries are expected to experience severe postoperative pain are provided with multimodal analgesia including patient control analgesia (PCA).*

Objective: *To assess patient perception of the effectiveness of PCA for post-surgical pain management in abdominal surgeries (Gastrointestinal & Gynecological).*

Methodology: *This is a qualitative descriptive study. Setting: Shaukat Khanum Memorial Cancer Hospital & Research Centre. Duration: The study has been conducted within 14 weeks after approval from Institutional Review Board (IRB). Sample Size and Sampling Techniques: Convenient sample of 50 adult patients (age 18 & above), received Patient Controlled Analgesia (PCA) after abdominal surgeries (Gastrointestinal & Gynecological) in the month of May - July 2022 has been included in this study. Data analysis and Statistical methods: Patient demographics and basic information was analyzed through descriptive statistics e.g. calculation of percentages and central tendency of the data. Patient perception was analyzed through the thematic analysis of responses provided by the patients. For Studies involving Surveys/Questionnaires: Patients were interviewed through open-ended questions about their perception (Please see attached Appendix 1).*

Results: *The overall results showed highest quality experience and perception of Effectiveness of Patient Control Analgesia, postoperatively*

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in SKMCH & RC. Conclusion: Conclusion has shown that PCA is a very effective and safe method of pain relief and may allow easier individualization of therapy compared with conventional methods of opioid analgesia.

Introduction

Wang et al (2020) emphasizes that pain management is a big issue for patients who have had surgery, and anesthesiologists are always interested to discover new ways to help them.

Devin & McGirt (2015) highlights that the management of postoperative pain, on the other hand, is far from ideal. Patients who undergo major surgeries and are expected to experience severe postoperative pain that is provided with multimodal analgesia including patient control analgesia. According to NCCN Guidelines Version 1. 2019, Unrelieved pain greatly affects patients work, activities, motivation, mood, and overall quality of life, and denies patients comfort.

Imani (2011) describes that acute postoperative pain is common, because its management is one of the most important components in relation to adequate post-surgical care. Small and Laycock, (2020) also stresses that nearly 20 percent of patients experience severe pain in the first 24 h after surgery. Moreover Ammianickal et al (2018) states that over the last few decades, significant progress has been made in the development of new analgesics and pain management strategies. Additionally, Babazade et al (2019) clarify the different modalities of pain management that have been effectively used and compared with each other includes Patient-Controlled Analgesia (PCA), epidural analgesia and Transversus Abdominis Plane (TAP) infiltrations are frequently used for postoperative pain management modalities. Patients having various procedures, both Patient Control Analgesia and epidural approaches with a combination of analgesics provide sufficient postoperative pain control. In addition, Moslemi et al (2015) identify that although epidural plays a significant role in pain managing postoperative pain with less sedation than intravenous Patient Controlled Analgesia, yet PCA is also a safe and effective analgesic approach for postoperative analgesia and is known as the gold standard for pain treatment following major abdominal operations. Over and above, Imani (2011) point out that Patient Control Analgesia (PCA) is usually used for postoperative pain management and is also regarded one of the most common methods for postoperative pain relief due to its on-demand intermittent, intravenous administration of opioids under patient control. In supporting the Imani (2011) view, McNicol et al (2015) also pinpoints that Patient Controlled Analgesia (PCA) is an effective method for controlling acute pain, including postoperative pain, providing slightly better pain control that increase patient satisfaction when compared with non - patient controlled methods which includes; nerve blocks, paravertebral blocks and use of local anesthetics. Besides that, D'Arcy (2008) trace out that PCA makes it possible for patients to get benefit of proper pain control by themselves with titrated doses of analgesics.

According to the Wójcik and Rogalska (2022), the measurement of patient satisfaction is a helpful and necessary procedure which will influence the outcomes of pain management because advancing pain management by standardizing and individualizing pain treatment to patients is important to improve pain management outcomes. To bridge the gap between the ever-increasing need for better pain control and the unsatisfactory practice of pain management, more new ideas and viewpoints must be considered.

At SKMCH&RC, we deal mostly with cancer surgeries. Pain management is an important issue during intraoperative and postoperative period. Post- operative pain control depends on type & extent of surgery. In patients undergoing major surgeries are expected to experience severe postoperative pain therefore, are provided with multimodal analgesia including patient control analgesia (PCA) to manage their pain. So far, there is no study conducted to evaluate patient

perception about effectiveness of this modality. Therefore, this study is aimed to assess patient perception of the effective pain management through patient control analgesia in abdominal surgeries (Gastrointestinal & Gynecological).

Objective:

To assess the patient perception of the effectiveness of PCA for post-surgical pain management in abdominal surgeries (Gastrointestinal & Gynecological).

Definitions:

PCA: A method of pain relief in which the patient controls the amount of pain medicine that is used. When pain relief is needed, the person can receive a preset dose of pain medicine by pressing a button on a computerized pump that is connected to a small tube in the body. (National Cancer Institute).

Efficacy: The ability especially of a medicine or a method of achieving something, to produce the intended result. (Cambridge Dictionary).

Effectiveness: the fact of producing the result that is wanted or intended; the fact of producing a successful result (Oxford Advanced Learners' Dictionary).s

Postoperative Period: The postoperative period for this study is defined as first 24 hours post the surgery.

Perception: the ability to see, hear, or become aware of something through the senses (Oxford Advanced Learners' Dictionary).

Literature review:

Literature Review:

Small and Laycock (2020) emphasizes that adequate pain management is integral to patient care and outcomes because it will affect the quality of life of patients who undergo extensive surgeries and may contribute to postoperative complications includes hemodynamic instability, immobility, hemorrhage and wound infection. Tseng et al (2019) highlights that acute pain and injury of various types are inevitably interrelated and, if severe and prolonged, the injury response becomes counterproductive and can have adverse effects on outcome such as impaired immune function, muscular system, coagulation, and delayed wound healing. Finally, poorly controlled pain after surgery may impair sleep and have negative psychological effects, such as demoralization and anxiety. According to Motamed et al (2020), Pain is an individual, multifactorial experience influenced by culture, previous pain events, beliefs, mood and ability to cope and significant improvement has been made in the anticipation and management of postoperative pain in recent decades. Imani (2011) describes that postoperative pain management and its implications have gained a significant attention in health care during last three decades, it continues to be a major challenge that still needs attention for better pain control specifically in extensive surgeries that includes abdominal surgeries and gynecological surgeries and failure to relieve acute pain can lead to psychological distress. Moreover, Sujka (2020) states that effective relief of pain is of the utmost importance to anyone treating patients undergoing surgery and this is the main point that postoperative pain control remains the primary reason for inpatient stay after surgery. Additionally, Garimella and Cellini (2013) clarify that pain relief has significant physiological benefits; hence, monitoring of pain relief is increasingly becoming an important postoperative quality measure.

In addition, Helander et al (2017) points out strategies for postoperative pain treatment, continue to evolve rapidly in the context of an increasing focus on enhanced postoperative recovery and current analgesic options for acute post-thoracotomy pain include patient Control Epidural Analgesia (PCEA), Patient Control Analgesia (PCA), paravertebral block, and continuous paravertebral infusion with local anesthetics, because it helps to speed up recovery and reduces chances of complications, such as pneumonia and blood clots.

In supporting the view of Helander et al (2017), Hemmerling (2018) states that abdominal wall blocks, NSAIDs, and short-acting opioids and PCA present the best multimodal pain strategy in abdominal surgery because using a combination of different classes of analgesics provides superior

pain relief and minimizes opioid use and opioid-related adverse events while epidural analgesia and spinal anesthesia have become second-line options or are reserved for specific patient morbidities or surgical requirements. Besides that Paterno et al (2022) narrates that Patient Control Analgesia (PCA) has been used since the early 1970s to relieve multiple categories of pain, including acute, such as postoperative or labor pain, or chronic, such as palliative care or cancer pain. Furthermore, Mitra et al, (2018) states that different studies have advocated use of PCA because it is an effective and safe way to administer narcotics in the right patient population and it has gained wide acceptance as a standard method of postoperative pain management because of its extensive effectiveness and it is found an efficacious and safe method of providing for postoperative pain relief.

Over and above, Yu et al (2022) describes that with PCA analgesia, patients are reportedly able to maintain a near optimal state of analgesia with minimal sedation and few side effects. The potential for overdose can be minimized if small bolus doses are used with a mandatory lockout interval between successive doses. Pain management is a key factor influencing patients' satisfaction with nursing care. Therefore, understanding patients' satisfaction with pain management is crucial for effective cancer pain management. Pastino and Lakra (2021) defines that Patient-Controlled Analgesia (PCA) has been utilized to optimize pain relief since 1971, with the first commercially available PCA pump appearing in 1976. The goal of PCA is to efficiently deliver pain relief at a patient's preferred dose and schedule by allowing them to administer a predetermined bolus dose of medication on-demand at the press of a button. Each bolus can be administered alone or coupled with a background infusion of medication. Motamed (2022) relates that PCA is used to treat acute, chronic, postoperative, and labor pain. PCA, as a component of multimodal analgesia for acute postoperative pain, remains a well-accepted technique by patients and health care providers, resulting in a high level of satisfaction. Wilder-Smith and Schuler (1992) states that postoperative pain control can be unsatisfactory for a variety of reasons, including patients' attitudes towards pain treatment itself, so successful management of acute pain requires close liaison between all personnel involved in the care of the patient.

Methodology

The objective of the study was to assess the patient perception of the effectiveness of PCA for post-surgical pain management in abdominal surgeries (Gastrointestinal & Gynecological). This is a qualitative descriptive study. Polit & Beck 2014 describes that Qualitative Description is a label used in qualitative research for studies, which are descriptive in nature, particularly for examining health care and nursing-related phenomena.

The study was conducted in Shaukat Khanum Memorial Cancer Hospital & Research Centre, in In-patient Department I, which was a 50 bedded surgical floor, whereas four beds were allocated to Surgical Extended Care Unit for those patient who do require frequent monitoring than routine. The study duration for completion was within 14 weeks after approval from Institutional Review Board (IRB)

Sample Size was of 50 adult patients (age 18 & above) received with Patient Controlled Analgesia (PCA) after abdominal surgeries (Gastrointestinal & Gynecological) in the month of May - June 2022 has been included in this study. Convenient sample technique was opted because of limited consumption data of PCA provided by hospital pharmacy department in all types of surgery in last 3 months. However, as per reference article 202- sample size was recommended, please the details below:

Formula:

Sample size was calculated by using the formula:

$n = (Z2 \times P \times (1 - P))/e2$

Where:

Z = 1.96 for 95% CI = 1.96

P = Proportion of Patient perception of Effectiveness in PCA group with morphine = 84.4% or 0.844 REFERENCE ARTICLE

e = Desired precision = % or 0.5

So,

n = (1.96)2 *(0.844)*(1-0.844) / (0.05)2
n = (3.8416*0.131664) / (0.0025) = 202

The calculated sample for this study would be 202 patients however in the current situation, the number of patient receiving PCA is not very high in the study setting so, a convenient sample of 50 patient undergone abdominal surgeries (Gynecology & GI) has been included. As per data provided by the hospital pharmacy, there are approximately 25-30 PCA consumed in the months of January and February 2022 whereas the data in March showed above 40 consumption of PCA including all types of surgeries.

Patient age 18 years and above, receiving PCA to manage post-operative pain after abdominal surgery from the beginning and will continue with PCA and mentally coherent are included in this study whereas: children receiving PCA to manage post-operative pain, substance abuser, mentally compromised/ incoherent, patient with chronic pain, palliative care patients and patient with ineffective epidural analgesic shifted to PCA are excluded from this study.

Prior to study Informed consent was obtained by rationalizing the objective of the study, benefits, Risks assessment (risks, discomfort and potential harm) and mitigation (management).

Assurance regarding confidentiality by resources: provided information will be maintained by mean of names, contact information will not be mentioned, and all relevant documents will be kept under locked cabinet. A password protected computer system will be used for data storage and analysis.

Study tool was adopted questionnaire already in practice by the Pain Nurses for PCA .Patients interviewed through open-ended questions, which were organized in 02 parts, firstly patient demographic information and secondly about their perception of PCA. Patient demographics and basic information has been analyzed through descriptive statistics e.g. calculation of percentages and central tendency of the data. Patient perception has been analyzed through the thematic analysis of responses provided by the patients. Ewens et al (2014) illustrated descriptive statistical analysis using both quantitative and qualitative data and counting the frequencies of codes/themes. Data was collected, on Day 01 (24 hours after surgery) in an in-patient unit.

Furthermore, the transcribing of the sample responses facilitates us for conclusion of final perceptive perspective of patient regarding patient control analgesia. For further insight of tool, (Please see attached Appendix 1).

Results

This section will highlight the key findings of the study titled "Patient Perception of Effectiveness of Patient Control Analgesia (PCA) in Postoperative Pain Management at SKMCH & RC. The objective of this study was to assess the patient perception of the effectiveness of PCA for post-surgical pain management in abdominal surgeries (Gastrointestinal & Gynecological) at SKMCH & RC and different responses were received from the total number of 50 respondents in terms of individualized perception in four sections includes patients demographics, individualized data on proposed analgesia, effects of Patient Control Analgesia assessed on different parameters and study participants interviews.

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Section: 01 Patients' Demographics

Figure 1.1: Age of the participants N: 50

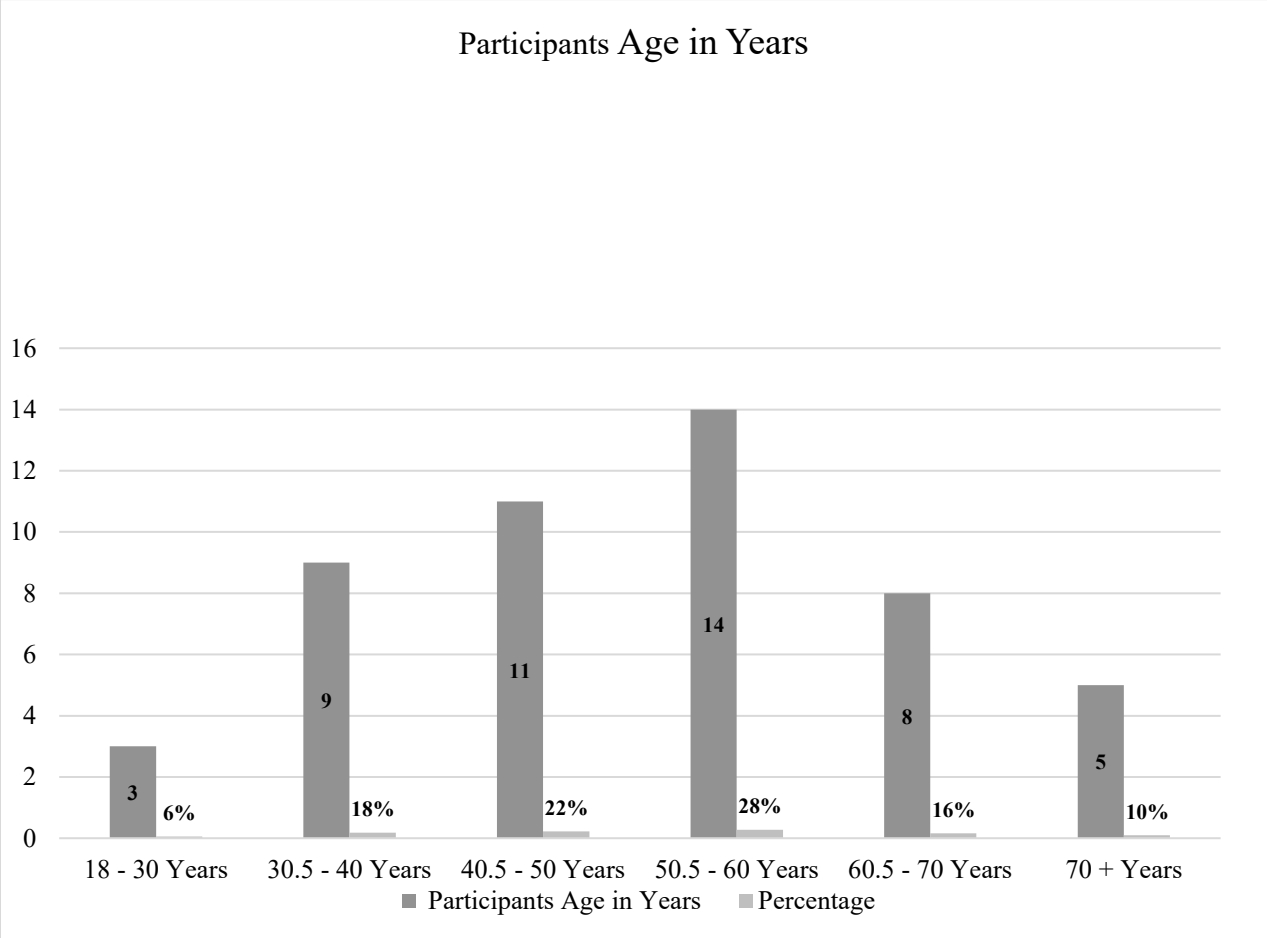


Figure 1.1 describes the age of the study participant's (patients). The age range of the participants was from 18-91 years with a mean age 51 Years with the majority of the patients age of middle age.

Figure 1.2: Gender of the participants N: 50

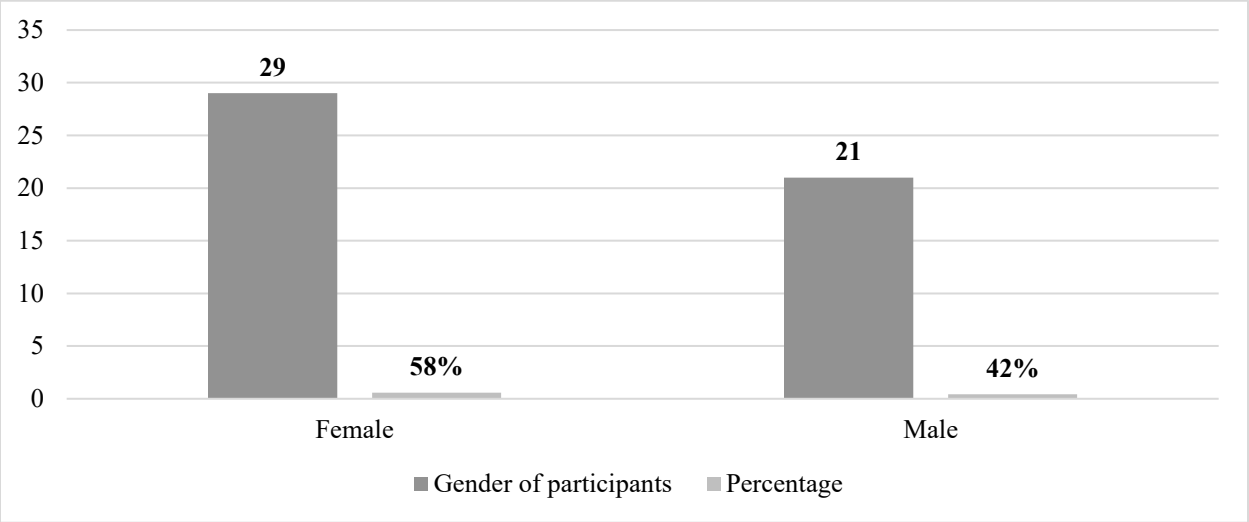


Figure 1.2 shows the gender of the participant's (patients). More than half of the patients, 58% were female. Rest 42% being males.

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Figure 1.3: Education status of the participants N: 50

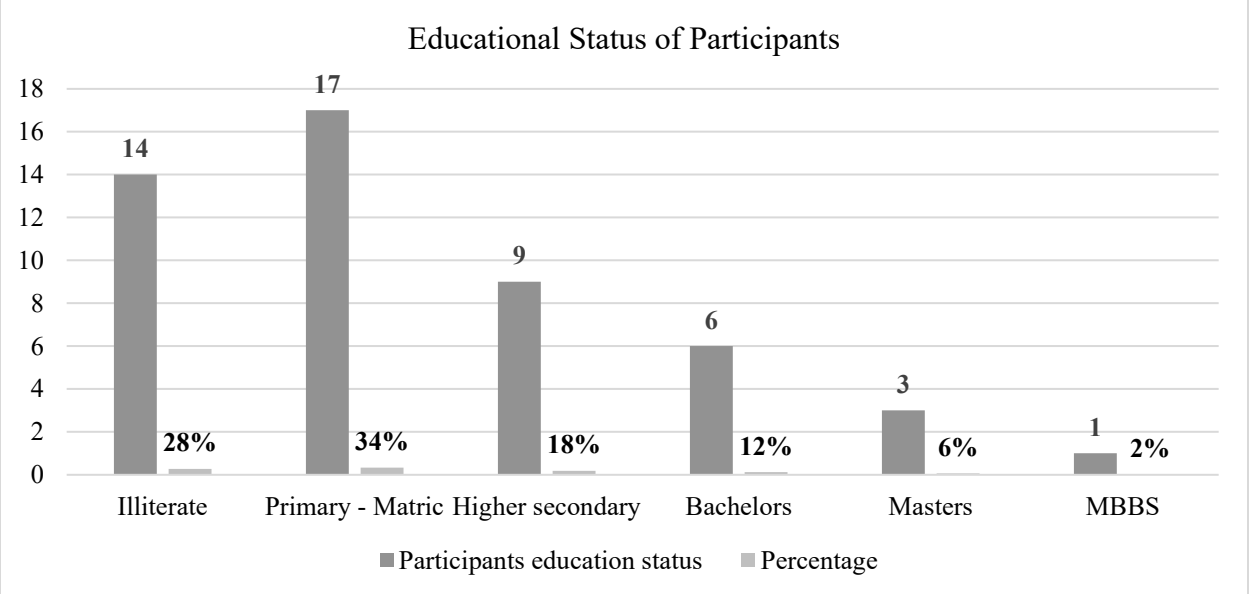


Figure 1.3 indicates the educational status of participant's (patients). A higher percentage, 72% of the participants, who had formal education, had completed the basic level to onward (Matriculation to MBBS) with only 28% who had no form of formal education in their lifetime.

Figure 1.4: Social habits of the participants N: 50

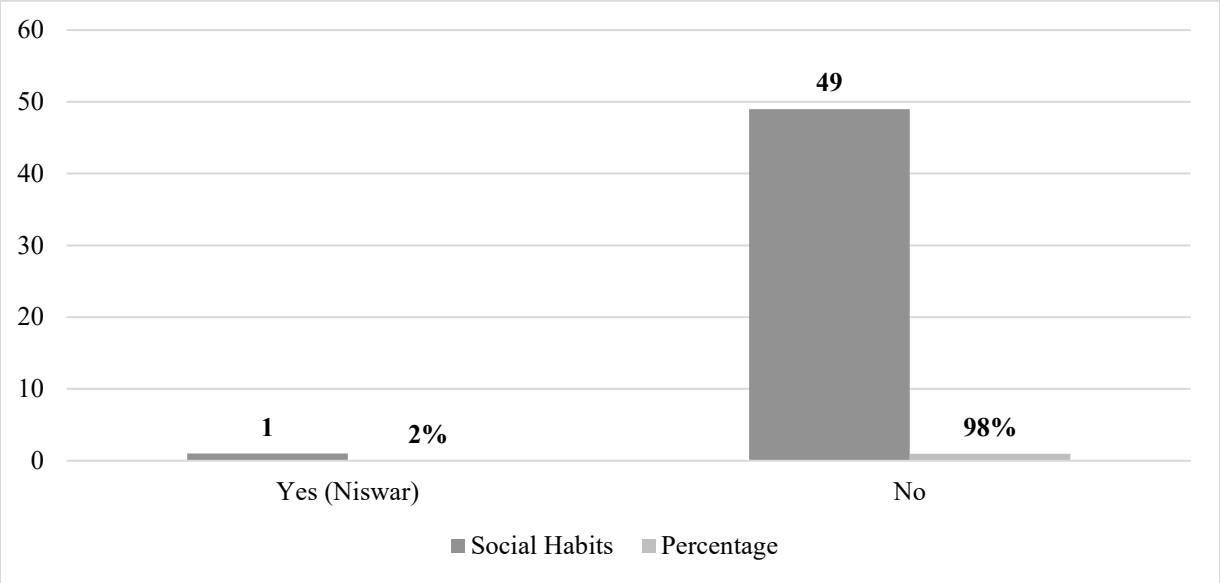


Figure 1.4 reveals the social habits of participant's (patients). The study also assessed the social habits of participants related to smoking habit, use of Niswar, Alocohol etc and a higher proportion 98%, from the total population (50) reported having no social habits while 2% reported persistent use of Niswar history of 20 years.

Section: 02 Patients' data on proposed analgesia

Figure 2.1: Types of surgical procedures of the participants N: 50

They were all cancer surgeries with different diagnosis includes: gastrointestinal cancers and gynecological cancers (CA Ovary, CA Cervix) that were resected either through laparoscopic procedures or exploratory laparotomy according to the nature and extensiveness of the cancer to other organs.

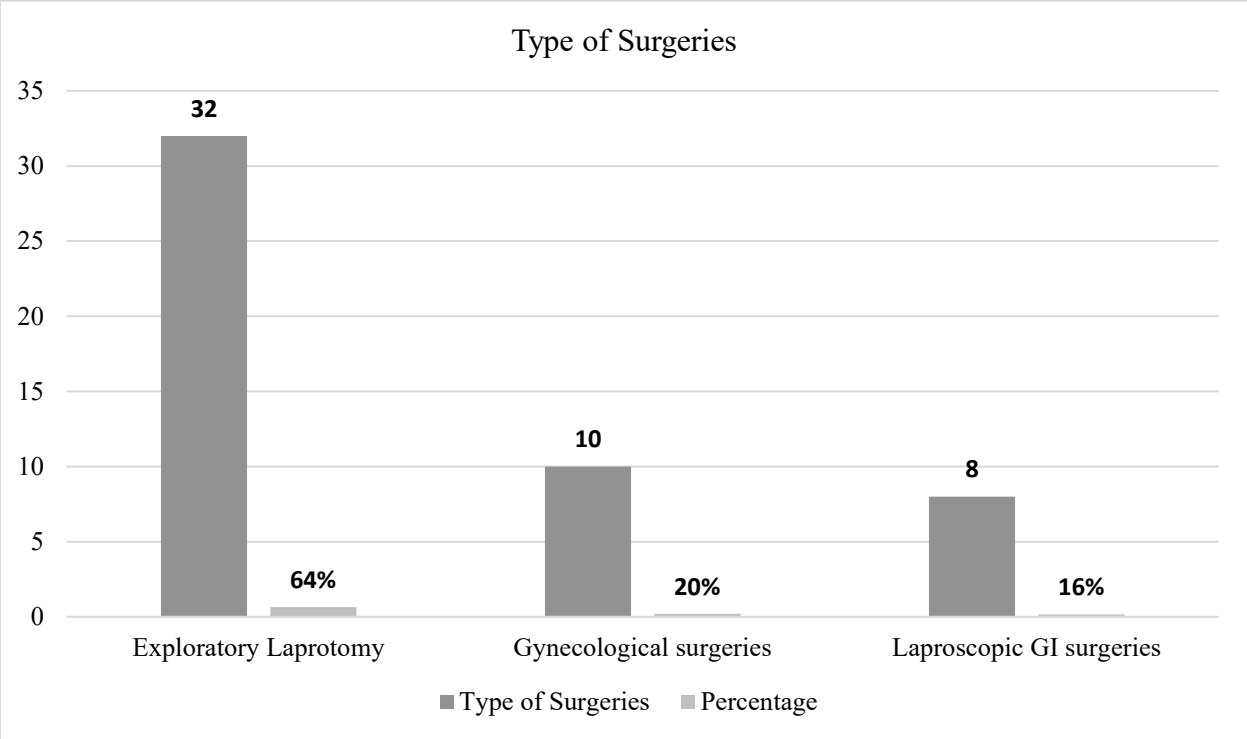


Figure 2.1 illustrates the types of surgery that patients have done. A higher proportion of the total sample population, 64% had exploratory laparotomy performed followed by 16% of laparoscopic and 20% of gynecological surgeries.

Figure 2.2: Type and volume of prescribed infusion of the participants N: 50

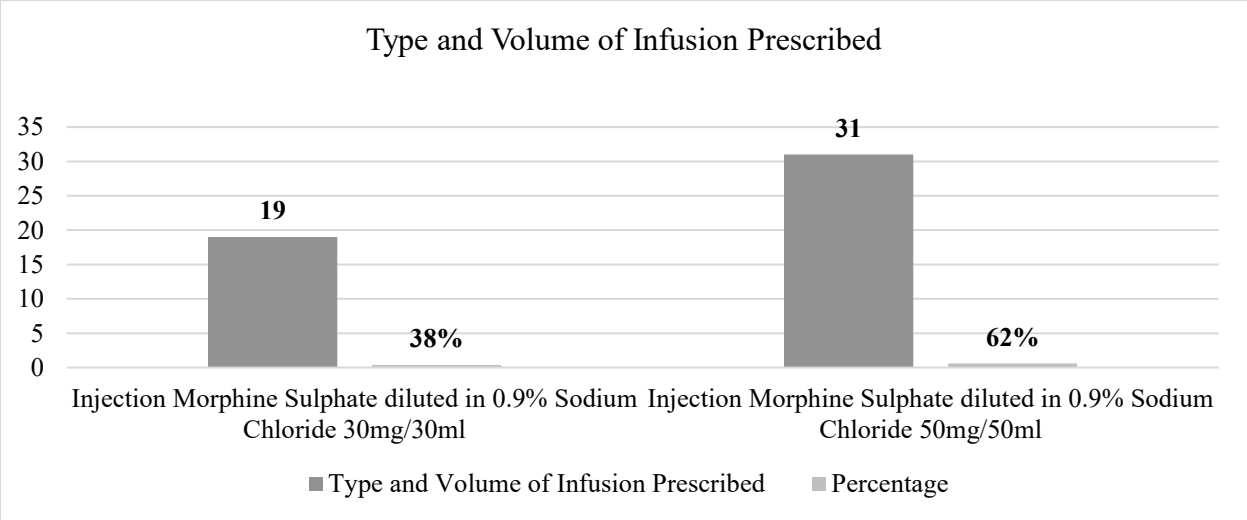


Figure 2.2 describes more than half of the proportion 62% from the total participants were administered Injection Morphine Sulphate diluted in 0.9% Sodium Chloride

50mg/ 50ml for PCA in extensive surgeries whereas 38% received Injection Morphine Sulphate diluted in 0.9% Sodium Chloride 30mg/ 30ml depending upon the nature and extent of cancer, surgical incision, expected days of wound healing and recovery.

Figure 2.3: Participants PCA consumption in last 24 hours after surgery N: 50

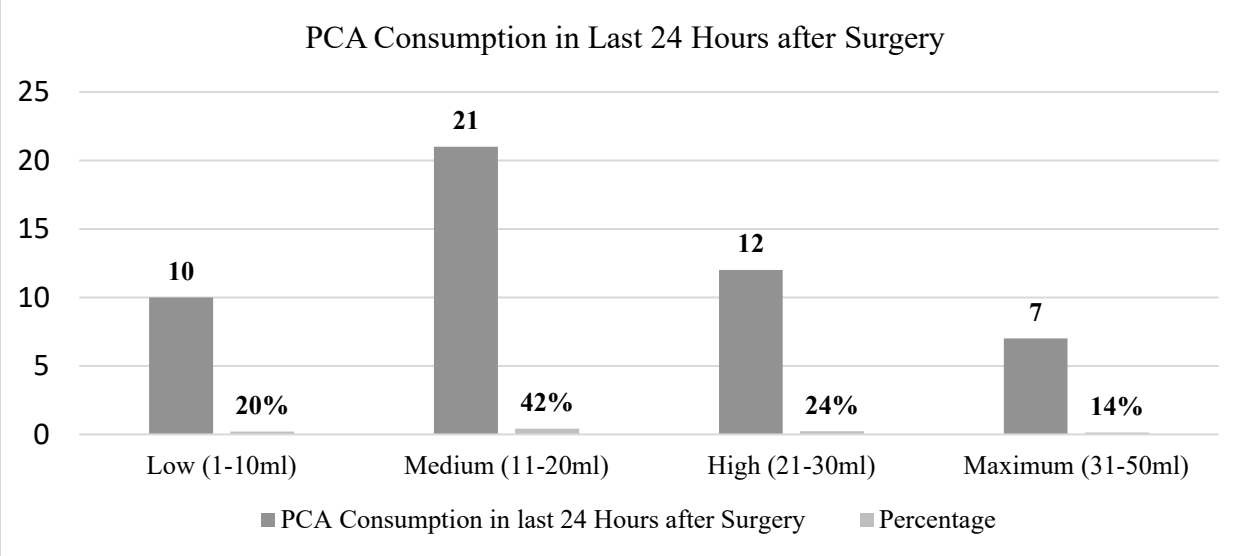


Figure 2.3 shows data regarding the drug consumed in last 24 hours depending upon their minimal to extensive use, 20% had minimal (1-10ml) usage, while 42% had medium (11-20ml) use of Patient Control Analgesia, 24% had high (21-30ml) usage and 14% had maximum (31-50ml) use of PCA in last 24 hours after surgery.

Figure 2.4: PCA Lock-out time status of the patients N: 50

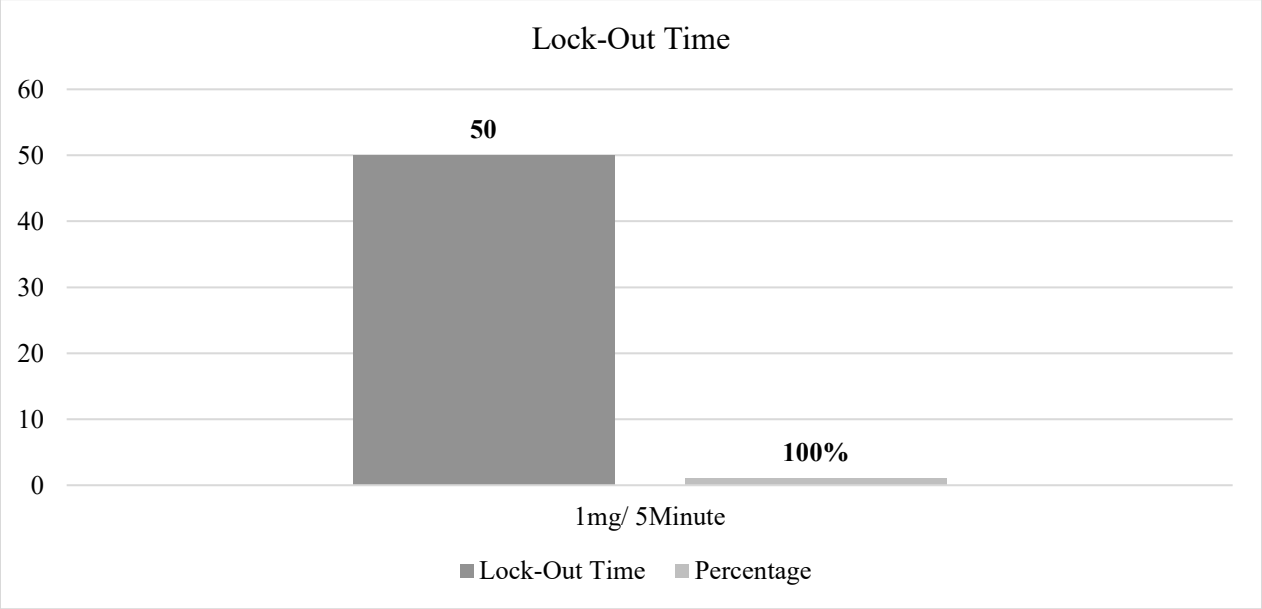


Figure 2.4 displays the PCA Lockout time the participant's (patients). The study showed 100% data of Lockout time (1mg/5 Minutes) in all patients (50).

Figure 2.5: Status of PCA correct connection of the participants N: 50

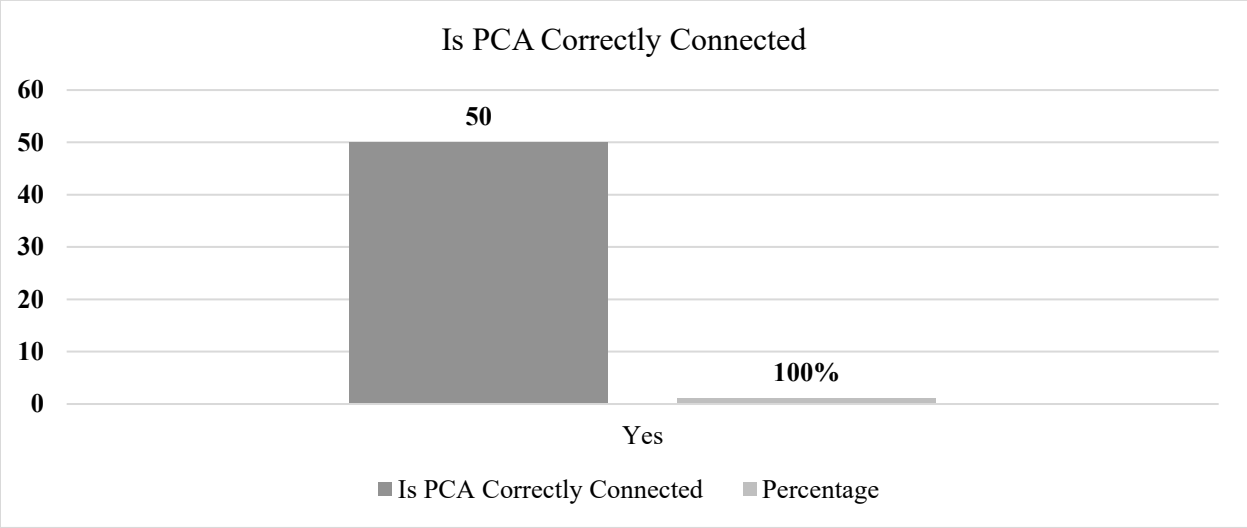


Figure 2.5 establishes the correct connection of PCA. The study showed 100% data of correctly connected proposed analgesia.

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Section: 03 Effects of Patient Control Analgesia

Figure 3.1: Level of consciousness of the participants N: 50

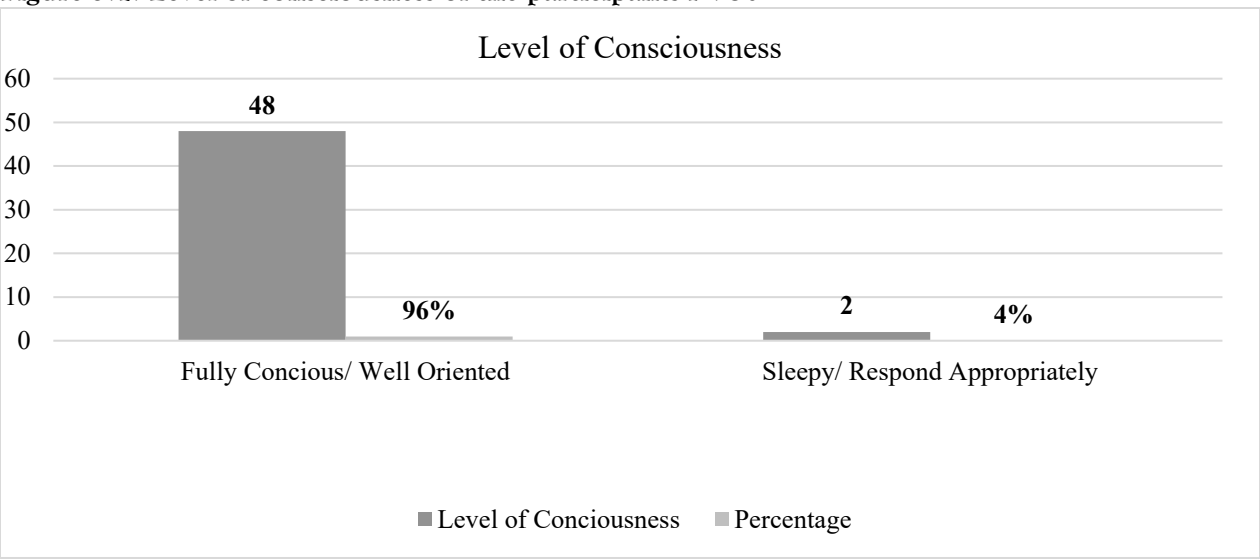


Figure 3.1 indicates the patients' level of consciousness while using PCA. A higher proportion of the total sample population (50), 96% were fully conscious/ well oriented to time, person and place, followed by 4% of sleepy but respond appropriately to the questions accordingly.

Figure 3.2: Participants pain related issues in last 24 hours after surgery N: 50

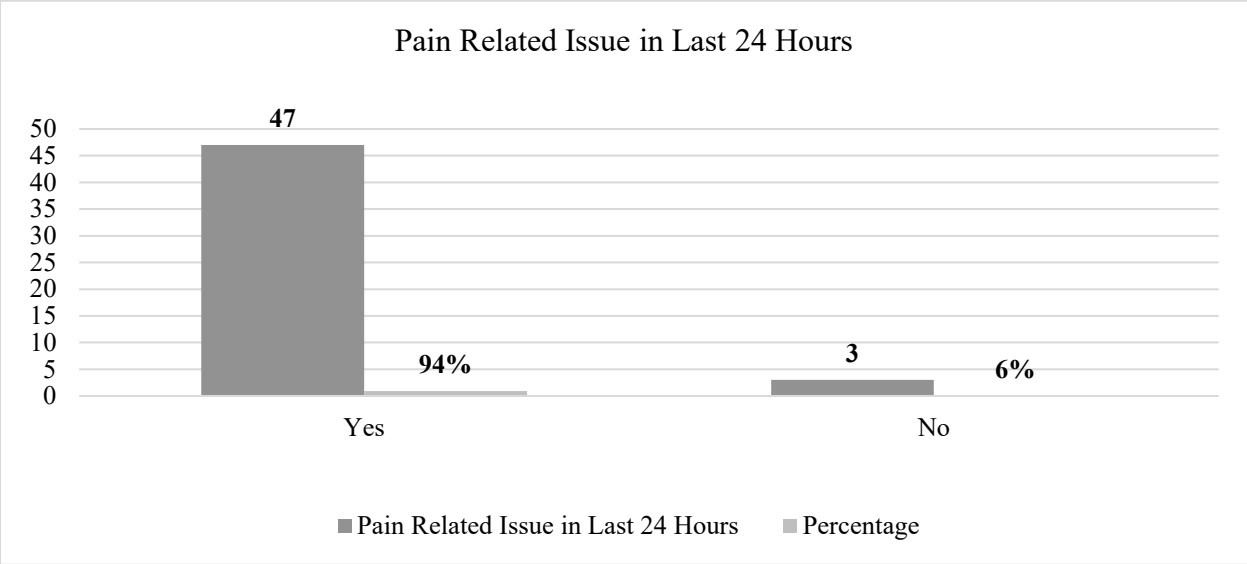


Figure 3.2 clarifies the pain related issues in last 24 hours, 94% population reported that they had experience of pain in last 24 hours followed by 6% with opposite statement that they never felt pain after surgery since the time they came out from operating room till then.

Figure 3.3: Current Numeric Rating Scale (NRS) of the participants N: 50

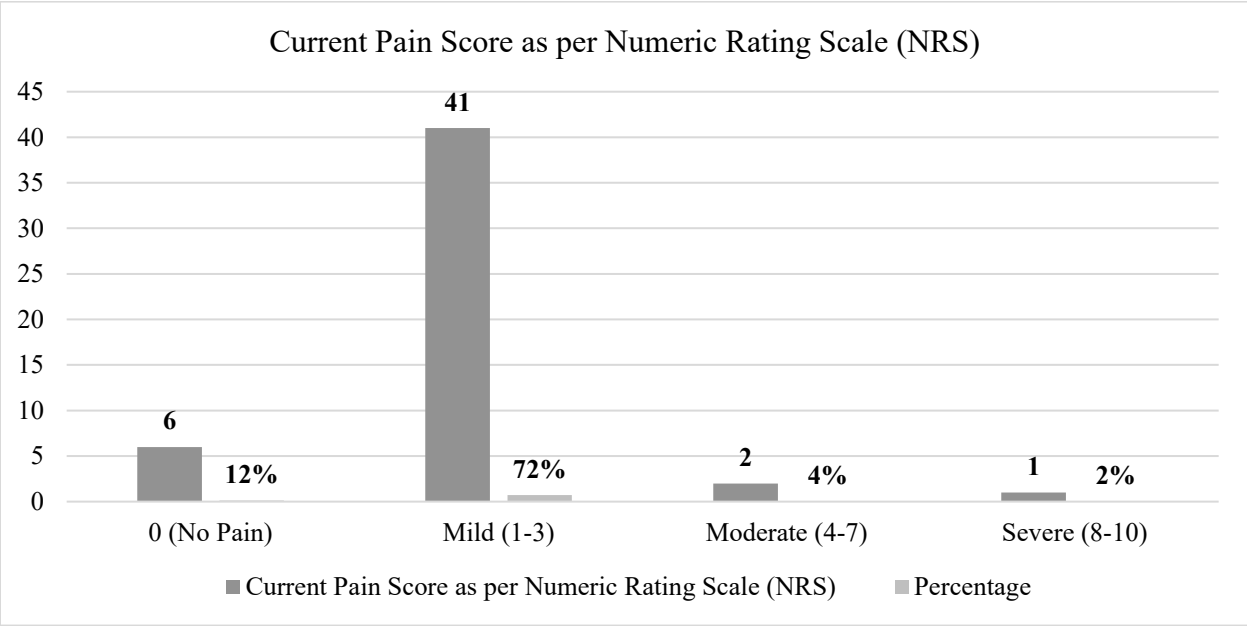


Figure 3.3 demonstrates the current pain score according to Numeric Rating Scale at the time of conducting interview. Regarding the severity of persistent pain assessed on numerical rating scale (NRS), 72% had mild (NRS 1–3) persistent pain, 2% had moderate

(NRS 4-7) persistent pain, whereas 1% had severe (NRS 8–10) persistent pain. Rest of 12% had no any pain and they rated it on zero scale as no pain at all. Regarding the location of persistent pain, the majority of patients had experienced the pain both at the site of the surgery and elsewhere.

Figure 3.4: Status of nausea and vomiting of the participants N: 50

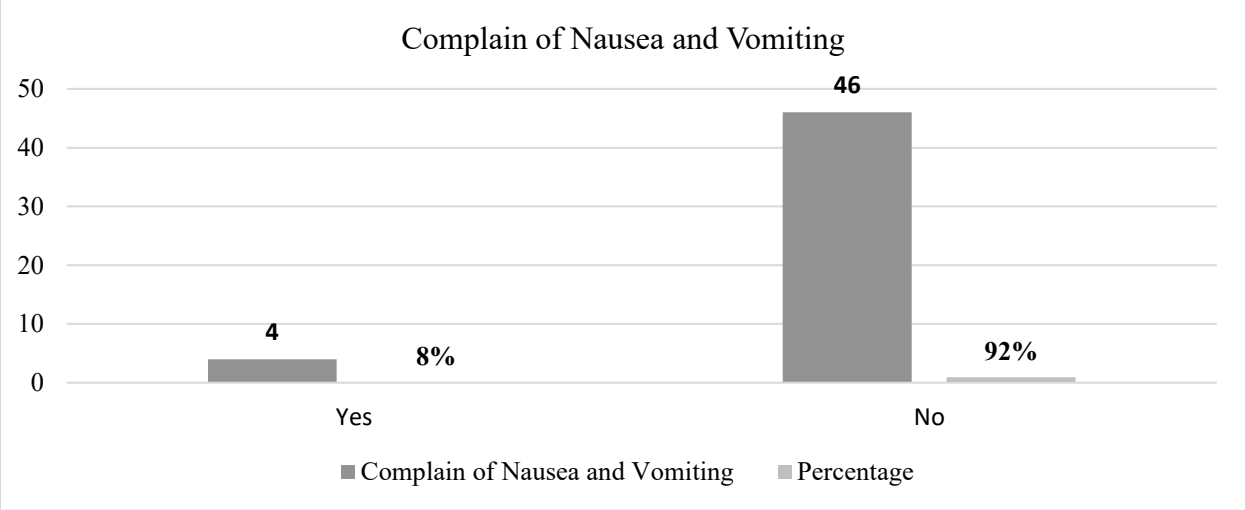


Figure 3.4 shows the status of nausea and vomiting experienced by the participants. In terms of experiencing nausea and vomiting, different patients responded differently. A higher proportion 92% had no any complaint of nausea and vomiting, while 8% answered yes to this question.

Figure 3.5: Severity of nausea and vomiting of the participants N: 50

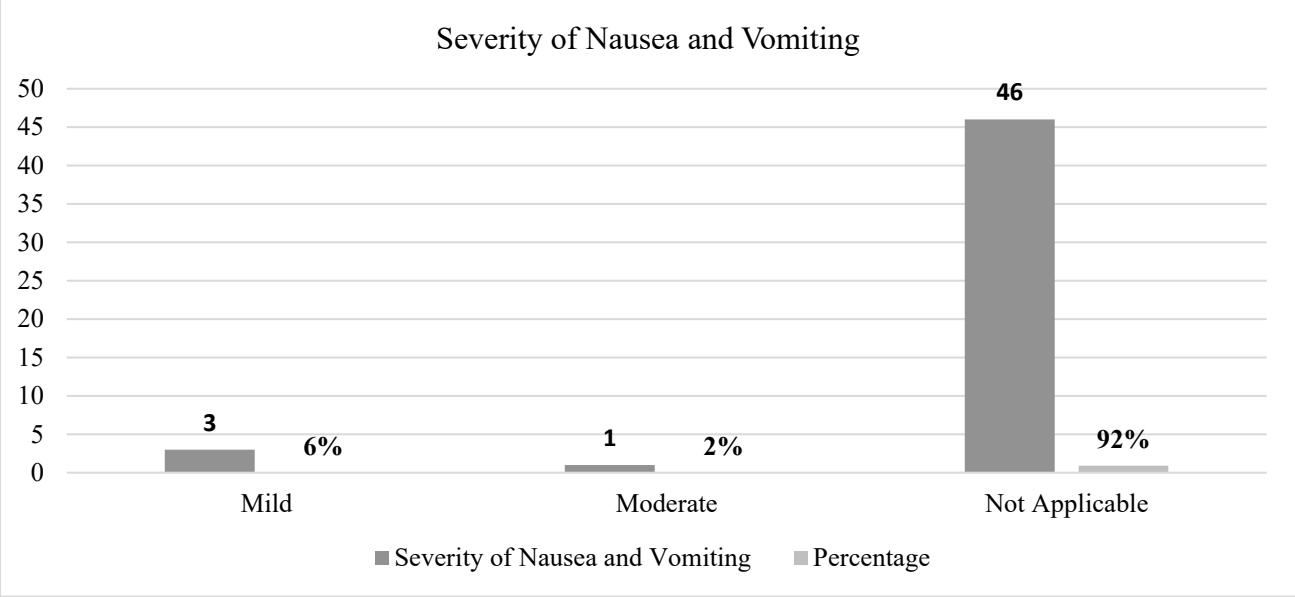


Figure 3.5 highlights the severity of nausea and vomiting experienced by the participants. In terms of severity, different patients responded differently. A higher proportion 92% had no any complaint of nausea and vomiting and is marked as "Not Applicable" criteria to this question, while 6% answered yes rated it on mild and 2% rated on moderate level in response to this question.

Figure 3.6: Effects of Patient Control Analgesia of the participants N: 50

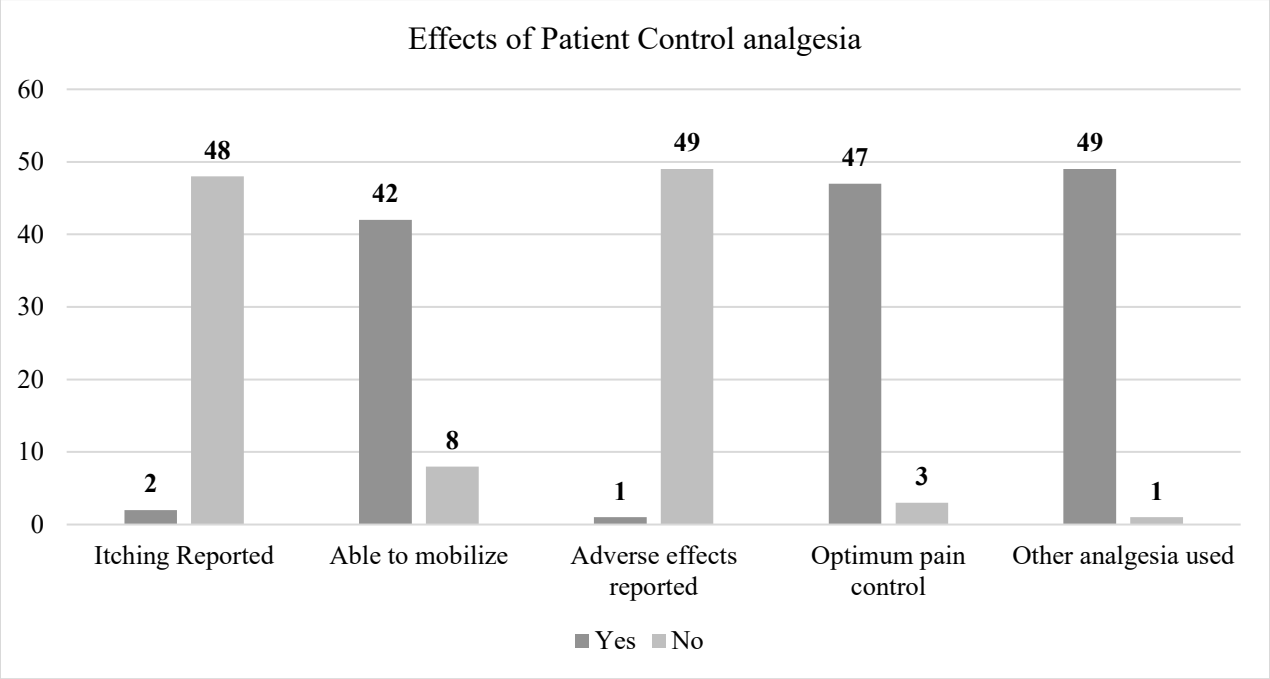


Figure 3.6 validates the effects of PCA regime on the end users (patients). In relation to the Patient Control Analgesia Effects on various parameters, a higher proportion of 96% did not experience itching, while 4% reported mild to severe itching all over the body after using PCA.

On assessing the patients ability to mobilize after 24 hours of surgery, majority 84% population were found able to mobilize out of bed, but 16% were not mobilized out of bed.

On asking and observing the adverse effects of PCA, higher percentage 98% reported no any adverse side effects, while 2% experienced severe itching all over her body after using PCA.

On extracting the data regarding optimum pain control, 94% population reported yes, whereas 6% reported gap in achieving their optimum pain control with PCA.

A striking data 98% was also extracted, on using other analgesics parameter (Injection Paracetamol 1gm, TID) on routine basis.

Figure 3.7: Status of non-pharmacological interventions used by the participants N: 50

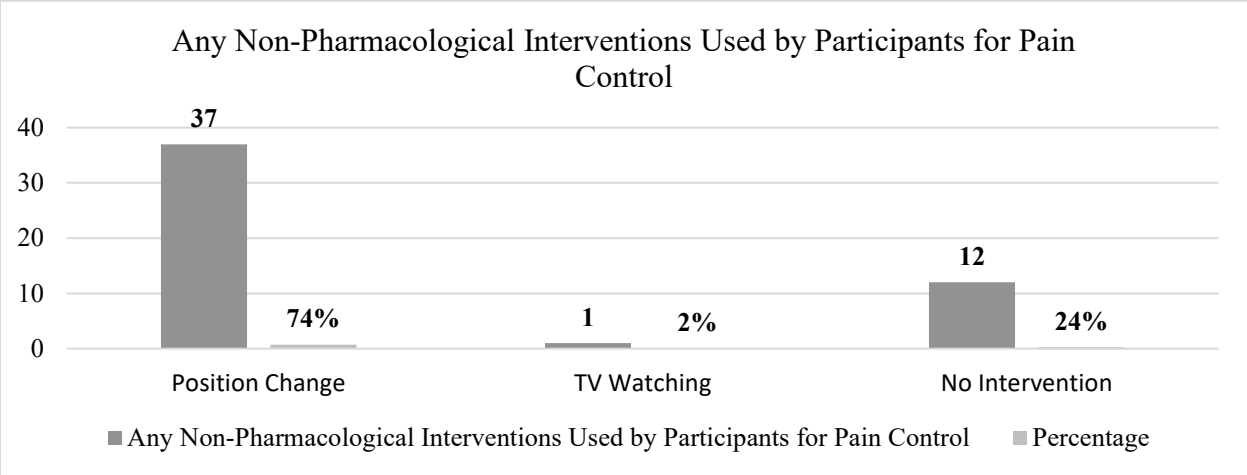


Figure 3.7 displays the different types of non-pharmacological interventions used by the participants. The study also recorded data on any non-pharmacological interventions used along
with PCA and a large proportion 74% of sample answered that they feel comfortable with
Changing their positioning/ posture according to their need, because certain positions made them
feel comfortable, while 24% reported that they did not use any non-pharmacological intervention to manage their pain and 2% answered to feel comfortable while watching TV.

Section: 04: Study Participants Interviews
The data in this section was collected by asking open-ended questions with prompts in order to get detailed data on patients' individualized perceptions more clearly related to the proposed analgesia postoperatively.

Figure 4.1: Assessment of patients own understanding about PCA N: 50

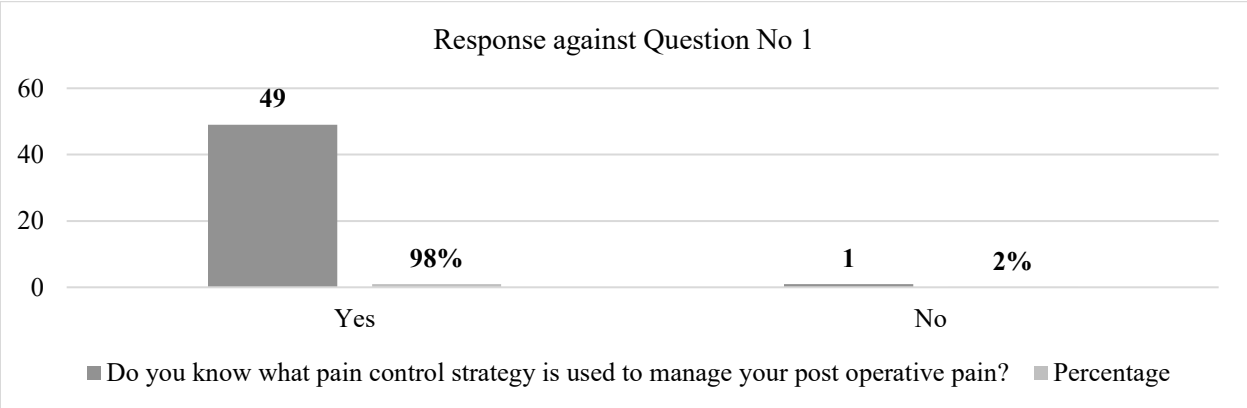


Figure 4.1 shows the patients' perception of pain with regard to interview guide and different answers were received from this open-ended section of questions. On asking,

whether they know about, what pain control strategy is used to manage their post-operative pain, 98% reported that they know about the proposed regime to control their pain after surgery. One patient stated that

"Yes I know that this is a medicine which is connected to my intravenous cannula to control my postoperative pain whenever I needed, as I had an extensive incision that is needed to be treated with strong analgesia for 1 to 2 days at least. And I need it especially before and after doing the Incentive Spirometry (ISM) of 5 minutes before and after doing that exercise. Even when I have to mobilize out of bed, I used it to give a bolus before and after mobilization out of bed."

Another response extracted that *"I have been educated that this is a pain medication machine that is given to me to control my pain after this major operation. I feel very comfortable that pain control machine is in my hand and I don't need to call again and again to the doctor and my attending nurse to give me pain killer medication.*

One more patient stated that *"This is a magical way to control my pain according to the need. I feel very satisfied that at least the pain control tool is in my hand and it is just one push away from my physical comfort as I was so worried even before and after the surgery due to fear of pain.* A different response was that *"This pain control medication explained to me by doctor and I know that this is a self-administering way drug to control my pain after this major surgery and I have been also educated about its use according to my physical need during hospitalization.*

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Figure 4.2: Assessment of PCA regime given education to patients at the time of surgery planning N: 50

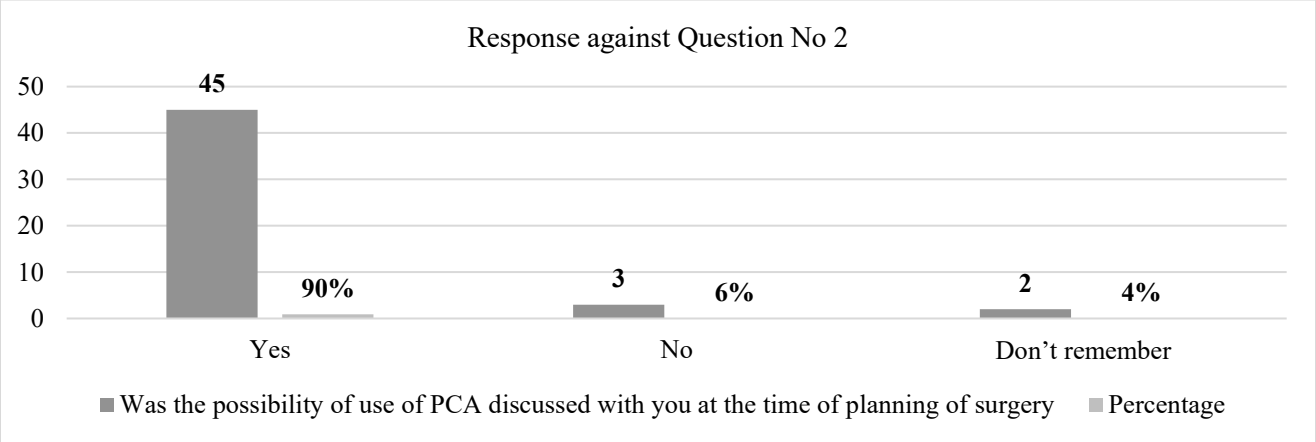


Figure 4.2 shows the discussion of possibility of use of PCA at the time of planning of surgery. The majority 90% of the respondents said that they have been informed by anesthesia team to have Patient Control Analgesia regime to control their pain after surgery, whereas 6% answered No while 4% rated it on "Don't Know" criteria.

Figure 4.3: Assessment of patients education and understanding about PCA N: 50

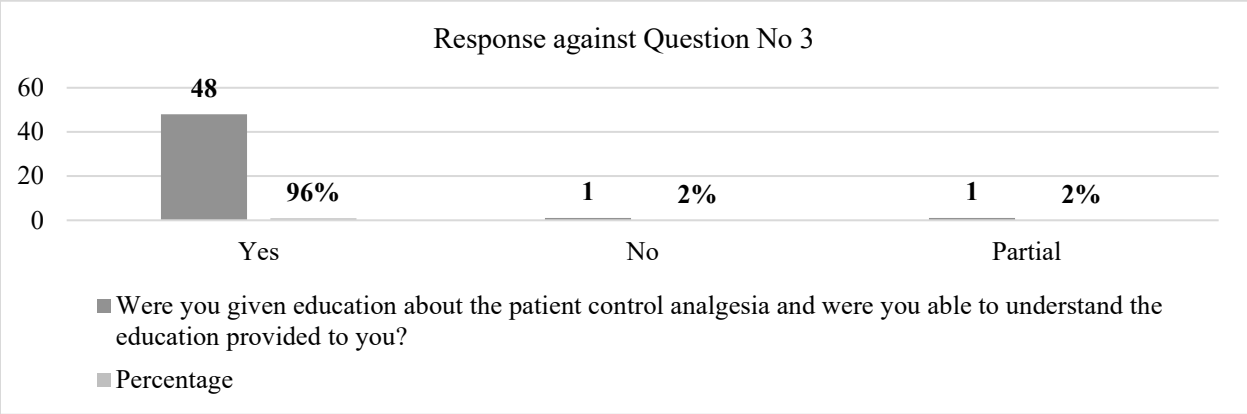


Figure 4.3 illustrates the responses towards a question that "were they given education about the patient control analgesia" and 96% responded to yes that they were explained in detail by the anesthesia doctor about how to use PCA, what are the purpose and possibility of adverse side effects related to this medicine. They were also educated when to contact the nursing staff in case of any concern. On asking that "were they able to understand the education provided to them", again 96% answered Yes, while 2% answered as No and 2% rated their education and understanding on partially met criteria.

Figure 4.4: Assessment of pain intensity experienced by participants before PCA administration N: 50

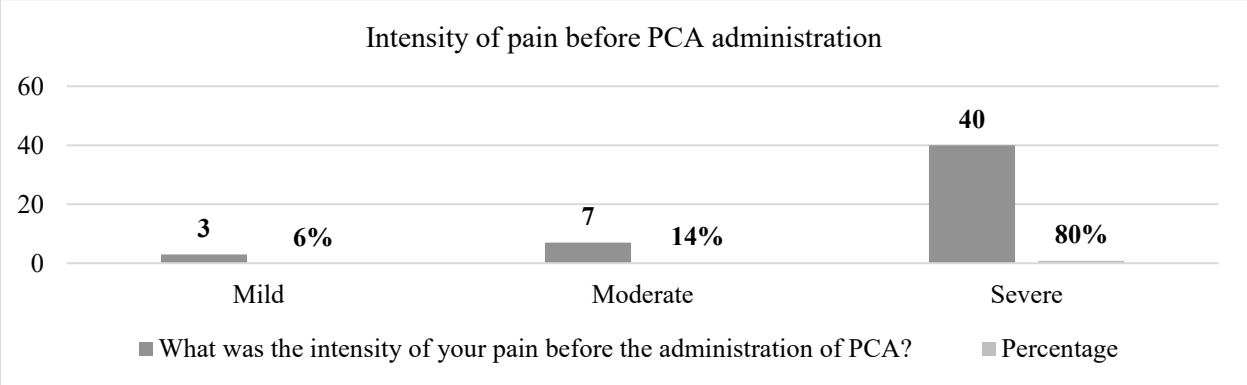


Figure 4.4 elucidates the pain intensity experienced by participant (Patients) before administration of PCA. The majority 80% of the respondents rated it on severe pain whereas 14% share their experience on moderate level and only 6% were found on experiencing mild pain criteria.

Figure 4.5: Assessment of pain intensity experienced by participants, in relation to different parameters after PCA administration N: 50

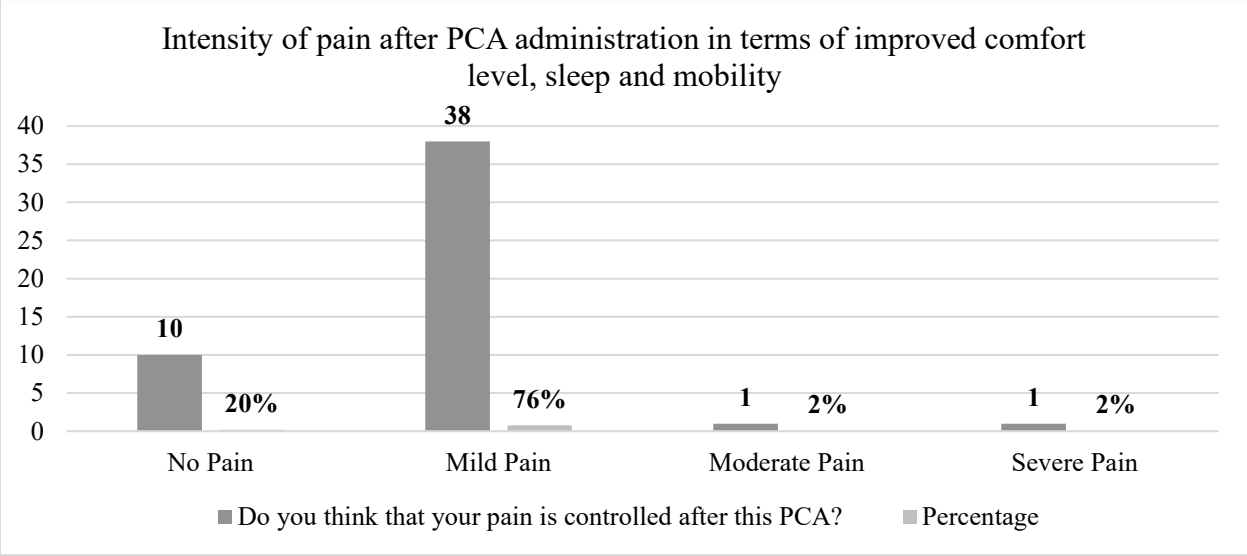


Figure 4.5 reveals the pain intensity experienced by participant (Patients) after administration of PCA. The majority 76% of the respondents rated it on mild pain whereas 20% share their experience as no pain. Only 2% were found on experiencing moderate and 2% on severe pain criteria.

Figure 4.6: Assessment of pain free duration after PCA administration (Bolus) N: 50

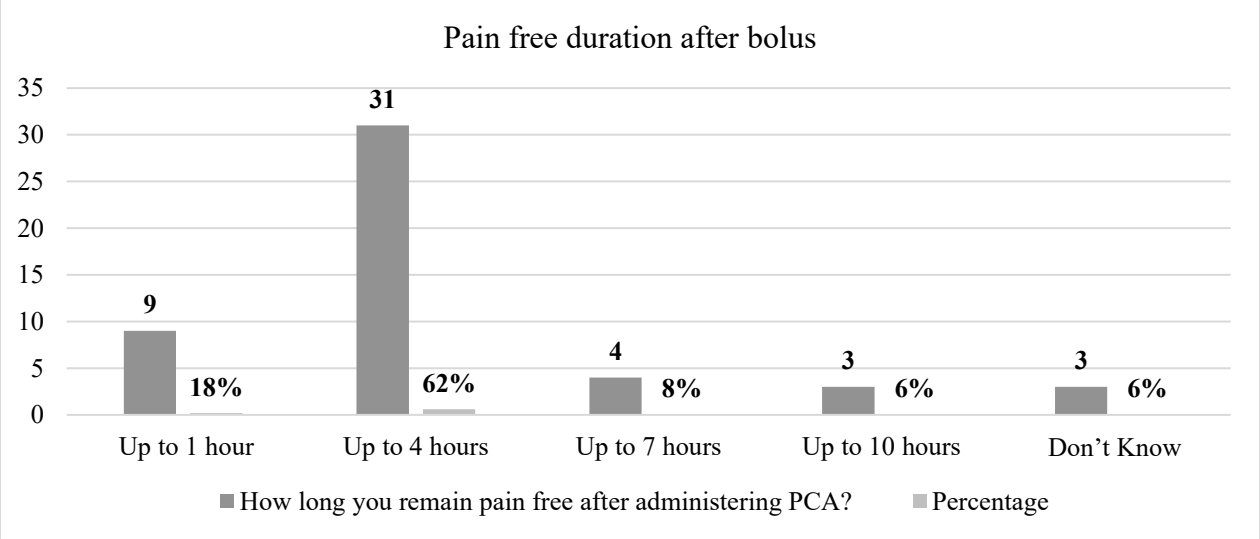


Figure 4.6 interprets the pain free duration after bolus administration of PCA. The majority 62% respondents rated their pain control up to 4 hours whereas 18% share their experience of pain control up to 1 hour. Few 8% respondents put their pain control duration as up to 7 hours and rest of 6% and

again 6% were found on experience of up to 10 hours and not sure criteria respectively.

Figure 3.7 displays the data on asking the last question of "If your pain was not controlled with PCA over the last 24 hours, what other interventions were done" and a large proportion 74% of sample answered that they feel comfortable with changing their positioning/ posture according to their need, because certain positions made them feel comfortable, while 24% reported that they did not use any non-pharmacological intervention to manage their pain and 2% answered to feel comfortable while watching TV.

Discussion:

Macintyre and Jarvis (1996) confirmed the influence of age on PCA requirements as initial morphine dose should be guided by patient age and subsequent doses must still be titrated according to effect. 50 patients undergoing abdominal surgery received PCA, programmed to deliver incremental morphine doses with a lockout interval of 5 min (with no continuous infusion). Morphine consumption decreased with age for both males and females over 24 h. The typical morphine dose was 21-30 mg at 30.5–50 yr. of age versus 11-20 mg at 60–70 yr.

However Auburn et al (2002) showed that IV morphine titration loading regimens are similar in elderly and younger patients as Intravenous morphine titration can be safely administered to elderly patients. Because titration is adapted to individual pain, the same protocol can be applied to young and elderly patients.

Berwick et al (1994) indicates that improved patient education leads to a more satisfied patient who is less likely to have unanswered concerns about the use of PCA and who might be less likely to experience side effects associated with this therapy. Patient education status showed individual variability in terms of their understanding level. Most patients pressed the button as soon as they felt pain and in preparation for movement. However, more than a third of patients used PCA when the pain was so bad that they could not cope, whereas a quarter of patients felt they could manage without PCA. Notably, almost half the patients pressed the button when told to by others, which negates the concept of 'patient-controlled' analgesia.

Glasson et al (2002) specifies that ethanol, tobacco, smoking, alcohol use, and preoperative opioid use may have significant influence on opioid analgesic use during administration of patient-controlled analgesia. In relation to social habits, only 2% from our population reported used of Niswar for 20 years, but he remained pain free and reported a good response and pain management despite of using Niswar. Rest of the participants reported no history of social habits.

Periasamy et al (2014) confirms that Age, weight, height, body mass index, sex, type of surgery, surgery site, preoperative pain and pain medication could influence the needed analgesics to maximize the pain relief while minimizing the serious adverse effects. Concerning to the type of surgery, surgical procedures having laproscopic approach was found less need to control their pain as compared to the extensive procedures e.g Exploratory Laprotomy and Gynecological surgeries, who showed higher consumption (21–30mg) of PCA that followed by Injection Morphine Sulphate diluted in 0.9% Sodium Chloride 50mg/50ml as compared to and for laproscopic procedures that were given Injection Morphine Sulphate diluted in 0.9% Sodium Chloride 30mg/30ml depending about their nature and extensiveness of surgery and expected days of wound healing, especially in the last 24 hours after surgery.

The common side effects of PCA are the same side effects seen with opioid administration by any route or method of delivery; specifically, nausea and vomiting, pruritus, sedation, and, less commonly, respiratory depression and confusion as Swegle and Logemann (2006) admits that Opioid analgesics are useful agents for treating pain of various etiologies; however, adverse effects are potential limitations to their use

Questions concerning the side-effects, and the use of PCA revealed a different picture. The incidence of side-effects was a major feature of the patients'

experience. Few of patients 4% complained of feeling sleepy with a previous report that PCA patients were more drowsy than those receiving intravenous analgesia. Nausea prevented some patients from using PCA and many were unaware that morphine could produce adverse effects.

The overall evaluation of PCA was favorable. Patients stated that they felt positive about it, that their pain relief was good and that they could use PCA when they wished. The main advantage of PCA, identified by half of the patients, was the control it gave them over their pain. These data are similar to those found in studies, which have investigated superficially patients' attitudes to PCA. They reflect also the views of staff who care for patients using PCA.

The answers to questions that asked how patients used PCA. The popularity of PCA has been attributed to the control it gives the patient over their pain relief, but this has shown inconsistencies in the patients' concept of control. When asked to choose the main advantage of PCA, half the patients cited control over pain. The professional view, that PCA is popular because it gives control, influences the way that the technique is presented to patients. Therefore, patients who identify control as important may merely be reiterating what they have been told. Patients who reported complete control over their pain relief had a more positive attitude to PCA, but they still had side effects, were worried about the technique and felt prevented from using PCA whenever they needed analgesic. It is implausible that these patients had complete control of pain relief, since they had to balance analgesia against side effects and the fear of administering a drug that was possibly harmful.

In conclusion, the patients appear satisfied and some may even report a feeling of control. In contrast, more detailed appraisal shows that patients experience side-effects and fears which limit their ability to control pain. Control is predominantly a feature of the professional's view of PCA rather than a reflection of the patients' experience.

CONCLUSION

The findings of this study revealed that despite the persistent pain experienced by the patients, there were no side effects like drowsiness, nausea, dizziness, and itching on severe level. The majority of the participants were found to be satisfied with the post-operative management regime, they received. Moreover, the type of prescribed analgesia, the type of pain relief, the patient's ability to request for more pain relief, and access to information about their pain treatment options from the Nurses served as predictors of satisfaction of the patients with the overall process of the post-operative pain management. Based on the findings of this study, nurses and other healthcare providers should be educated maximally on the pain management and assessment of postoperative pain. Further studies can be considered to replicate findings on other surgical cases, with an emphasis on the implementation of effective postoperative pain management.

In short, PCA can be a very effective and safe method of pain relief and may allow easier individualization of therapy compared with conventional methods of opioid analgesia. Effective pain relief requires flexibility in dose regimens, the ability to deliver the dose to the patient truly, on demand, regular monitoring of adequacy of analgesia of any drug-related side effects, and the use of these parameters to individualize treatment.

Recommendations:

Personnel are encouraged to report PCA errors within their institution as well as to the Food and Drug Administration, the Institute for Safe Medication Practices,

- Competency assessments need to be ensure every 2 year for all professionals who prescribe, dispense, and administer PCA including attending Registered Nurse.
- Criteria should be established for selecting patients who would be eligible to use PCA.
- PCA candidates should have an appropriate level of consciousness and a cognitive ability to self-manage pain.
- The staff should check for patient allergies before selecting an opiate to be used for PCA

- Independent double-check the patient's identification, the drug selected and its concentration, the PCA pump settings, and the line attachment before PCA is used and in each shift as well.
- Oxygen and naloxone should be readily available in case of any adverse side effects.
- Patients should be taught about the proper use of PCA during each shift.
- Family members and visitors should be warned about the danger of PCA and only to be used by the patient.
- A standard measurement scale need to ensure for assessing the patient's level of pain.
- Monitoring requirements should be developed for patients who are receiving PCA. At a minimum, the patient's level of pain, alertness, vital signs, and rate and quality of respirations need to ensure every four hours.
- The staff must be alert for signs of over sedation.
- To accurately assess the level of sedation, personnel should evaluate all patients showing a minimal response to verbal or tactile stimulation.
- Patients should be monitored more frequently during the first 24 hours and at night, when hypoventilation and hypoxia tend to occur.
- The staff should become familiar with risk factors that can increase respiratory depression (e.g., obesity or low body weight, concomitant medications that potentiate opiates, and pre-existing conditions such as asthma and sleep apnea).

Limitations: This study was only focused on only patients who had undergone abdominal surgeries. The number of approved sample was 50 but due to time constraints, we were able to include 44 patients in the scheduled time of July 2nd, 2022 that was later on agreed to include the sample of 50 as previously decided.

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