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Analgesics Prescribed In Patients Undergoing Impacted Lower Third Molar Surgery: An Institutional Study

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ABSTRACT

Pain and swelling are two of the main problems experienced by patients who have undergone surgical removal of impacted third molars. The primary obligation of oral health care providers is not only to restore function, but also to relieve pain.

Aim:The aim of the study is to assess the most prescribed analgesics in patients undergoing impacted lower third molar surgery.

Materials and Methods: A total of 1654 records of patients who underwent extraction procedure in 38 and 48 of age groups 10-70 years were collected from the DIAS along with the prescribed analgesics and formulated in the Excel spreadsheet according to the gender and age group of the patients. Descriptive statistics and chi square tests were performed. The p value < 0.05 is considered statistically significant. The analysis is done using SPSS software and the results were obtained.

Results: Out of 1654, about 50.28% of patients were prescribed with a combination of Paracetamol and aceclofenac after extraction procedure either in 38 or 48. 50.38% of the cases were extraction procedures in 38. Majority of the cases were seen in males (30.83%).

Conclusion:It can be comprehended from the study that the most commonly prescribed analgesics to the patients after the extraction of the impacted third molars include a combination drug consisting of Paracetamol and aceclofenac. These are noticed to be effective and balance the patient's analgesic requirements without the potential for adverse effects. These drugs tend to produce significant pain relief and improve the quality of patient's life in the immediate postoperative period. Proper prescribing

practices can help manage tolerance issues, adverse events, as well as common and uncommon side effects.

Keywords: NSAIDs, paracetamol, third molar extractions, innovative technique

INTRODUCTION

The pain and swelling are two of the most common problems experienced by patients who have undergone surgical removal of impacted third molars [1]. These problems result from inflammation due to any surgical trauma[2].The ultimate primary obligation and ultimate responsibility of oral health care providers is not just to restore function [3], but also to relieve pain[4] . Pain is the most common complaint out of all others often occurring with inflammatory processes after a tooth extraction [5]. The removal of the impacted third molar along with the resultant tissues and cellular destruction brings about the release and production of several biochemical mediators involved in the pain process , in particular , histamine , bradykinin and the prostaglandins [6]. There are numerous analgesics available , and the recent introduction of new agents provides even more options from which to choose than the others [7] . Certain complications include stomach irritation , indigestion [8] , tachycardia , nausea, insomnia , metallic taste in the mouth are present, but it all depends on the dose and mode of administration of the drug[9]. The most prevalent methods involve the administration of analgesics like Non-steroidal anti-inflammatory drugs(NSAIDs)[10] .

NSAID has a very short onset and provides a long duration of analgesia, and numerous other studies have promoted its use in minor oral surgery [11]. The use of NSAID is however associated with several serious treatment side effects, with considerable associated morbidity and mortality . Most of these side effects may be prevented by careful consideration of the patient's risk factors and by subsequent implementation of preventive strategies [12].Their therapeutic uses include anti-inflammatory , antipyretic , anti dysmenorrhea , antiplatelet action, pain relief, reduce inflammation and reduce fever ,chronic Inflammation ,osteoarthritis , rheumatoid arthritis, ankylosing spondylitis [13].

Our team has extensive knowledge and research experience that has translated into high quality publications [1,14–32]. The aim of this paper is to highlight the most widely analgesics and their protocols applied to the dental field, especially after surgical removal of impacted lower molar teeth in the age group of 10-70 years of age.

MATERIALS AND METHODS

This is a single centered retrospective study done in a private dental institution, Chennai.The data was collected from the dental hospital management system (DIAS). 1654 records of patients from the age group of 10-70 years who particularly underwent extraction procedure in 38 and 48 procedures were

collected. The list of the analgesics which were prescribed were also added. Ethical clearance for this study was obtained from the Institutional review board.

The data included a varied population predominantly the males and females of the south Indian population. All of the case sheets were reviewed and were cross verified by another examiner. The internal validity of the diagnosed cases were as per criteria, medical history, chief complaints and clinical findings. The data collected was tabulated under following parameters : Age, gender, analgesics consumed, extraction procedure performed on 38/48. The independent variable includes age, gender and dependent variables were analgesics,extraction procedure in 38 and 48. The data analysis was done using the SPSS software of version 19. Descriptive statistics and chi square tests were performed. The p value < 0.05 is considered statistically significant.

RESULTS

From (figure 1), it can be comprehended that 26.92% of males were prescribed a combination of Paracetamol and aceclofenac when compared to females which was about 22.19%. The combination of Paracetamol and aceclofenac were the most commonly prescribed analgesics after third molar surgery which accounted for about 50.28%. In (figure 2), it was observed that 27.66% of the patients consumed a combination of paracetamol and aceclofenac after the extraction of the third molars particularly in the age category of 20-30 years. In 20-30 years of age group it can be noticed that 30.23% of patients underwent extraction in 38 rather than 48 (26.06%) (figure 3). 30.83% of the male patients underwent extraction in 38 when compared to 48 (25.70%) (figure 4).

DISCUSSION

Nonsteroidal anti-inflammatory drugs (NSAIDs) play a vital role in reducing pain and edema by suppressing the formation of prostaglandins, by inhibiting the activity of the enzyme Cyclooxygenase (COX-1 and COX-2) [33]. NSAIDs are effective in alleviation of pain, fever and inflammation .They produce analgesic and anti-inflammatory actions by the inhibition of cyclo-oxygenase, thereby reducing the synthesis of arachidonic acid metabolites such as prostaglandins and thromboxanes [34].These are readily absorbed from stomach or small intestine ,widely distributed in all tissues and are bound to plasma proteins therefore, analgesics can displace other drugs from these proteins thereby increase their toxicity [35].

However in various research articles it was noted that the NSAIDs which are extremely effective for the management of acute dental pain possess several adverse effects. These adverse effects include gastro-intestinal complaints and somnolence [36]. Cumulative consumption of NSAIDs over a lifetime increases the risk of end-stage renal disease, Dyspepsia, Gastric mucosal damage, Increased bleeding, Possible renal impairment, Anaphylactoid reactions [37].

A recent research study has succeeded in demonstrating the analgesic efficacy of single oral doses of tramadol, for impacted third molar extraction, with an acceptable incidence and severity of side effects, over the first 6 hours following extraction. Tramadol drug was found to be more effective postoperatively than preoperatively [38]. Paracetamol containing ibuprofen has been evaluated in several different formulations. One recent modification include the use of gel caps that provide faster absorption and

therefore a quicker onset for meaningful analgesia that occurs about 25-30 minutes after ingestion[39].The selective cox-2 inhibitor has higher effect than the conventional NSAIDs and has low gastro intestinal and high cardiovascular side effects than to the conventional NSAIDs [40]. In recent studies it is described the analgesic effect of combination of dexamethasone and diclofenac K that the potency and dosage of dexamethasone within the first 24 h was adequate to enhance the efficacy of diclofenac K[41]. It appears that steroids are preferably administered preoperatively, as they extend the coverage up to 24 - 48 hours after surgery .

According to studies, it was confirmed that NSAIDs are comparatively more efficient in controlling pain when administered before the onset of the inflammatory process. The NSAIDs used preoperatively were efficient in controlling pain in the surgery of impacted mandibular third molars. However, when single 150-mg aceclofenac dose was administered after surgery,it was found that there was no statistically significant difference from placebo administration in the control of postoperative pain.The criteria which was adopted to determine the study time points were based on literature reports that indicate the greatest pain experienced in the 3–6-h period after surgery to extract the impacted third molars. In the following research, patient collaboration was necessary, which further limited the assessment period [42].

Further clinical studies are required to state specific guidelines, and oral surgeons involved in third molar surgery should evaluate the local and general health conditions of the patients before prescribing any drugs for patients.

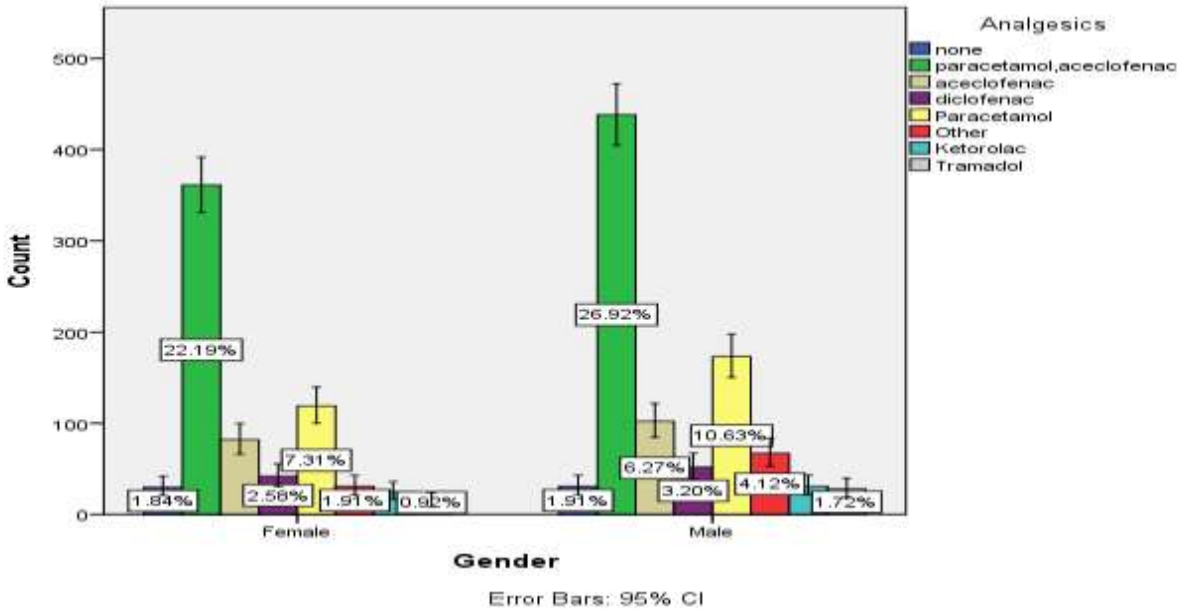

Fig. 1. Bar graph representing the association between the gender of the patients and the analgesic consumed post lower third molar surgery. X axis represents the gender of the patients and Y axis represents the total number of patients who took analgesics after the treatment. Majority of the male patients were prescribed with a combination of Paracetamol and aceclofenac rather than the single analgesics such as Diclofenac, ketorolac, tramadol, paracetamol, or aceclofenac after the extraction procedures. Chi square test was done and the association was found to be statistically significant. Pearson

chi square value:55.337; p value: 0.00(<0.05).Hence it is statistically significant, proving that there was an association with gender and the prescribed medications after the extraction procedure.

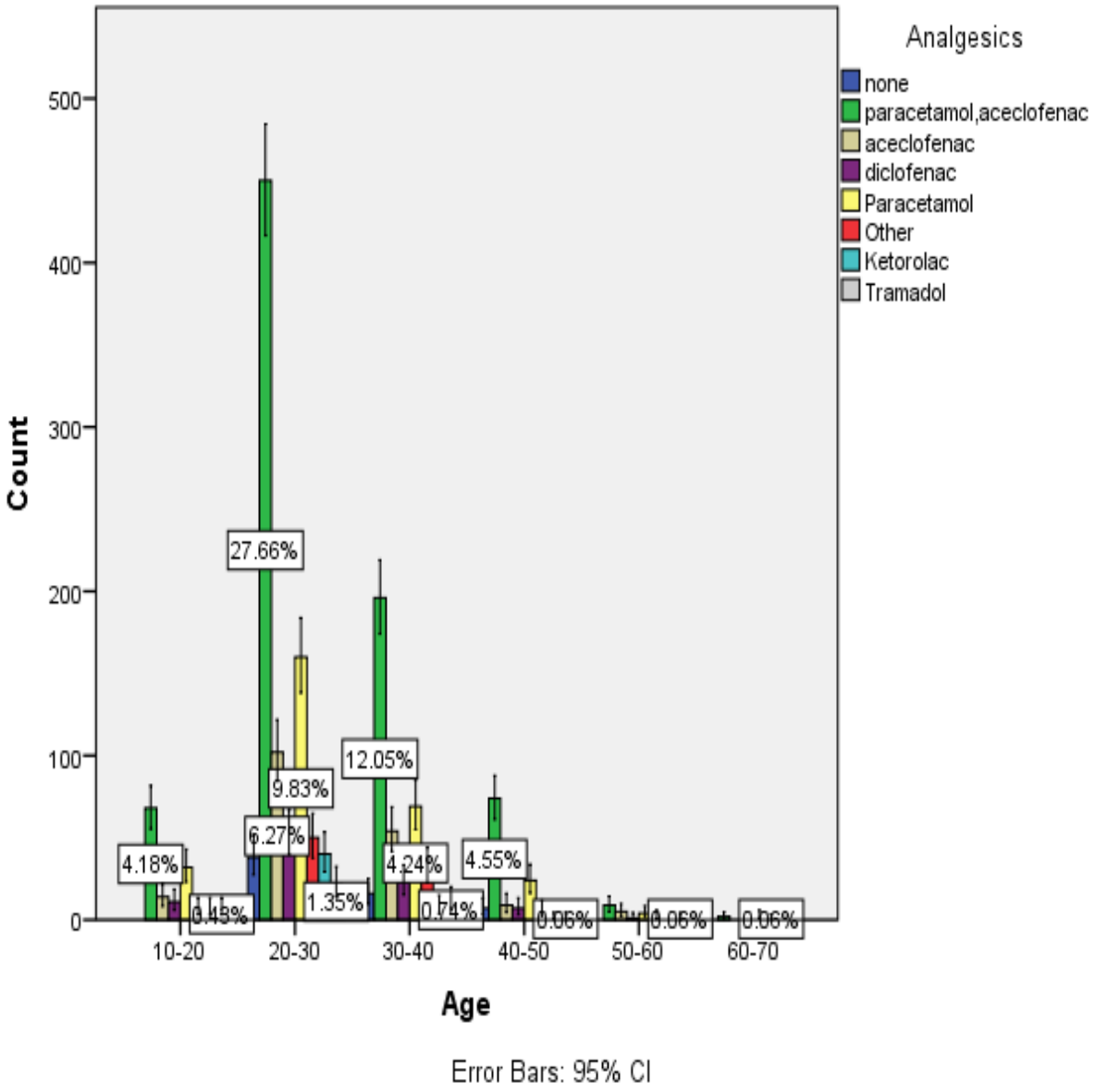

Fig. 2. Bar graph representing the association between the age of the patients and the analgesic consumed post lower third molar surgery. X axis represents the age of the patients ranging from 10-70years and Y axis represents the total number of patients who consumed the analgesics after the procedure. Higher numbers of consumption of a combination of Paracetamol and aceclofenac were noticed for the age group of 20-30 years. Chi square test was done and the association was found to be statistically significant. Pearson chi square value:54.609; p value:0.00(<0.05). Hence it is statistically significant, proving that there was an association of age with respect to the analgesics consumed after the procedure.

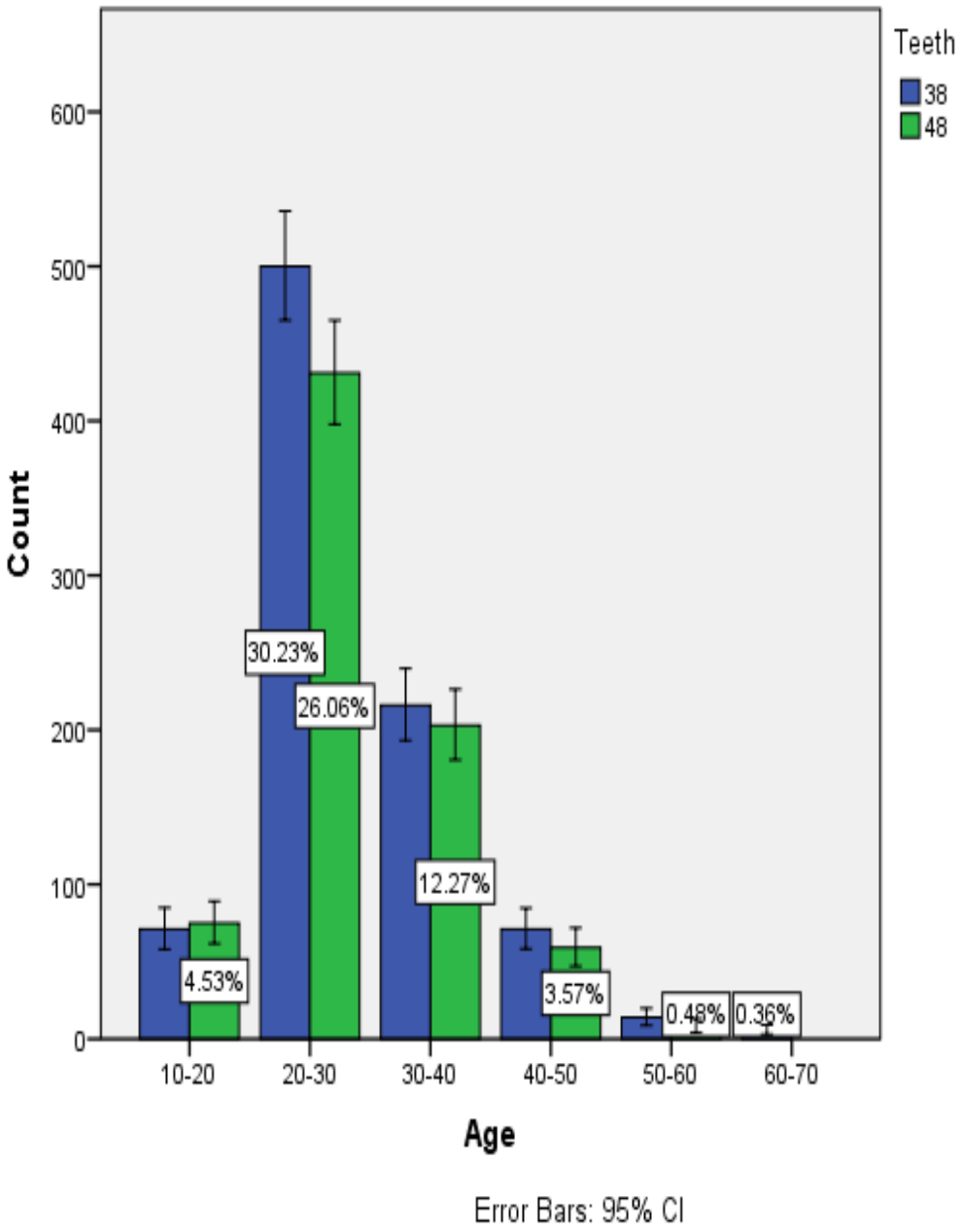

Fig. 3. Bar graph representing the association between age of the patients and the impacted mandibular third molars. The X axis represents the patients who underwent the procedure which ranged from 10-70 years and the Y axis represents the total number of patients who underwent extraction of third molars. It was noted that the majority of the patients underwent the procedure in the age group of 20-30 years. A higher number of extractions were done for 38 when compared to 48 in the same age group. Chi square test was done and the association was found to be statistically not significant. Pearson chi square value:1.471; p value:0.106 (<0.05). Hence it is statistically not significant, proving that there was no association between age of the patients with respect to the extraction done in 38 or 48.

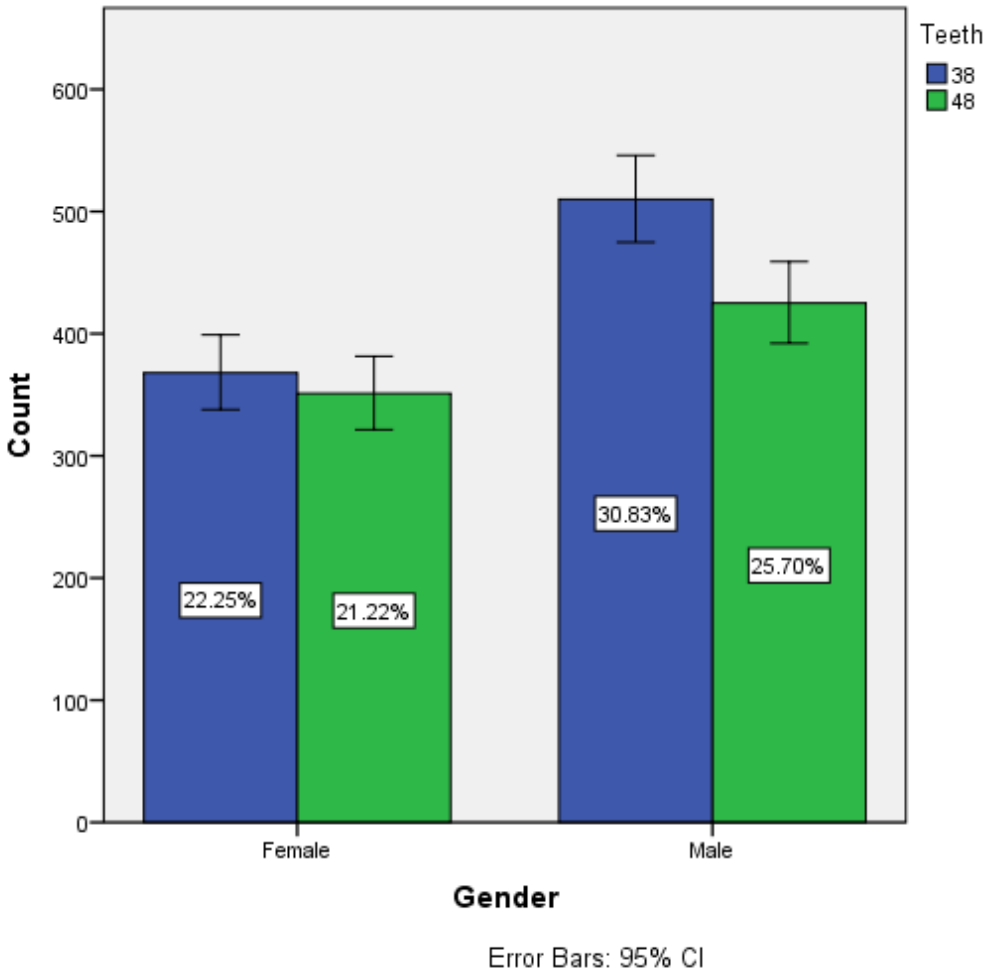

Fig. 4. Bar graph representing the association between gender of the patients and the impacted mandibular third molars. X axis represents the gender of the patients and the Y axis represents the total number of patients who underwent extraction of third molars. Blue represents '38',Green represents '48'. It was observed that a large number of male patients underwent extraction procedures on 38 rather than 48 when compared to females. Chi square test was done and the association was found to be statistically not significant. Pearson chi square value:0.230; p value:0.973(<0.05). Hence it is statistically not significant, proving that there was no association between gender of the patients with respect to the extraction procedure done on 38 or 48.

CONCLUSION

It can be comprehended from the study that the most commonly prescribed analgesics to the patients after the extraction of the impacted third molars include a combination drug consisting of Paracetamol and aceclofenac. These are noticed to be effective and balance the patient's analgesic requirements without the potential for adverse effects. These drugs tend to produce significant pain relief and improve the quality of patient's life in the immediate postoperative period. Proper prescribing practices can help manage tolerance issues, adverse events, as well as common and uncommon side effects.

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CONFLICT OF INTEREST:

No potential conflict of interest relevant to this article was reported.

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