

KNOWLEDGE, ATTITUDE AND PRACTISE ON PREEMPTIVE ADMINISTRATION OF ANALGESIC BEFORE ENDODONTIC TREATMENT AMONG DENTAL STUDENTS

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ABSTRACT:

Introduction: Reduction in postoperative pain after prophylactic administration of NSAIDs has been proved both in oral surgery models and endodontic models. Preemptive administration of NSAIDs before conventional root canal therapy can block the COX pathway and might block the pain sensation before it even begins. The aim of the study was to assess the knowledge, attitude and practice of the preemptive analgesics before any endodontic treatment.

Materials and Methods: This is a cross-sectional survey conducted among the age group of 18-25 years to analyse knowledge, attitude and practice on preemptive administration of analgesic among dental students. A self administered questionnaire was prepared which included 15 questions and was circulated among the students through google docs. The data was collected and statistically analysed using spss software. The survey was conducted among 115 study populations.

Results: The result shows that many students from 4th year, interns and third years agreed that preemptive administration analgesics can reduce the postoperative endodontic treatment pain (green). P value = 0.554 (>0.05). Shows that many students from 4th year and interns preferred piroxicam (purple). P value = 0.554 (>0.05).

Conclusion: Within the limitations of the study, it can be concluded that undergraduate dental students were aware of the knowledge, attitude and practise of the preemptive analgesics before any endodontic treatment. 50.43% students responded that oral route as the preferred method of administration of preemptive analgesic, 23.48% students responded that transdermal as the preferred method of preemptive analgesic, and 17.39% students responded that sublingual as the method of preemptive analgesic and 8.70% responded all of the above.

KEYWORDS: endodontic treatment, preemptive analgesic, ibuprofen, innovative technique.

INTRODUCTION:

"Endo" is the Greek word for "inside" and "odont" is Greek for "tooth." Endodontic treatment treats the inside of the tooth. Endodontics deals with the diagnosis and treatment of pulpal and periradicular diseases. (1) The main indications for root canal therapy are irreversible pulpitis and pulpal necrosis caused by carious process, tooth fracture, or dental trauma. Endodontic treatment is necessary when the pulp becomes inflamed or infected. The inflammation or infection can have a variety of causes: deep decay, repeated dental procedures on the tooth, or a crack or chip in the tooth. (2)

In addition, a blow to a tooth may cause pulp damage even if the tooth has no visible chips or cracks. If pulp inflammation or infection is left untreated, it can cause pain or lead to an abscess. The endodontist removes the inflamed or infected pulp, carefully cleans and shapes the inside of the tooth, then fills and seals the space. Afterwards, you will return to your dentist, who will place a crown or other restoration on the tooth to protect and restore it to full function. (3) The root canal therapy can be performed in either multiple visits or in a single visit. Single visit root canal treatment is attractive to the patient because it saves time, reduces the cost of the procedure and is expected to be less stressful. Although endodontic treatment eliminates pain, postoperative pain following root canal treatment has been reported to be 3–58% (4). Preemptive analgesia is an antinociceptive treatment that prevents establishment of altered processing of afferent input, which amplifies postoperative pain. Postoperative pain is thought to be related to a periapical inflammatory response produced by the endodontic instrumentation (5).

With modern techniques and anesthetics, most patients report that they are comfortable during the procedure. If the periapical inflammatory reaction is a major contributor to post endodontic pain, then it is possible that administration of a nonsteroidal anti-inflammatory drug (NSAID) before root canal therapy therefore, it might decrease post endodontic pain. (6) Preemptive analgesia has been defined as an antinociceptive treatment that prevents altered processing of afferent input amplifying postoperative pain (7). Ibuprofen generally is considered the prototype of contemporary NSAIDs and has a well documented efficacy and safety profile. Clinical studies indicate ketorolac single-dose efficacy greater than that of morphine, pethidine (meperidine) and pentazocine in moderate to severe postoperative pain. (8)

Our team has extensive knowledge and research experience that has translated into high quality publications(9–18),(19–22),(23–27)(28). The aim of the study was to assess the knowledge, attitude and awareness on preemptive administration of analgesic before endodontic treatment.

MATERIALS AND METHODS:

A cross sectional study was conducted among undergraduate dental students in a dental institution. This was done in the form of a questionnaire that was circulated online. The dental students were of the age group 18 to 25 years. The study protocol was approved by the institutional review board and the questionnaire was validated. The sample size of this study was 115. The questionnaire consisted of 15 questions that mainly focused on knowledge, awareness and practice on preemptive administration of analgesic before endodontic treatment among 115 dental undergraduates.

The questionnaire was distributed among the students through an online survey website called google forms. The data was collected, compiled and was arranged in a systematic manner and was analysed according to SPSS software. The Pearson Chi Square test was also done. The confidence interval was found to be 95% and statistical significance of $p < 0.05$. The independent variable of the study was gender. The results were then represented in the form of pie charts and bar charts.

Inclusion criteria:

The participants should be dental students.

Exclusion criteria:

Students who were not available to take the survey.

Students who were not willing to participate.

Dentists who had completed the period of study.

Study Setting:

The study was conducted with the approval of the Institutional Ethics Committee. The study consisted of one assessor and one guide.

Study method:

Self administered questionnaire of 13 close-ended questions was prepared and was validated by the Institutional Review Board (IRB). The questionnaire was distributed among undergraduate dental college students of private dental college institutions through an online survey form "GOOGLE FORMS". Demographic details were also included in the questionnaire.

Sampling Technique:

The study was based on a non probability consecutive sampling method.

Ethical considerations:

Returning the filled questionnaire was considered as implicit consent with no need for signing for a return consent.

Ethical approval of study is obtained from the Institutional Review Board (IRB).

Statistical analysis:

Data was analysed with the SPSS version (22.0). Descriptive statistics as number and percent were calculated to summarize qualitative data. Chi square test was used to analyze and compare the education level of students and their knowledge, attitude and practise on armamentarium for endodontic surgery among undergraduate dental students. The confidence level was 95% and the statistical significance $p < 0.05$ was considered statistically significant. Finally the results were represented by using bar charts and frequency tables.

RESULTS:

In the present study 15.65% of the study population belongs to 18-19, 24.35% of the study population belongs to 19-20. 33.91% of the study population belongs to 21-22. 26.09% of the study population belongs to 23-24. 66.96% of the population are female. 33.04% of the study population are male. 22.61% of the population belongs to 1st year. 20.87% of the population belongs to 2nd year. 30.43% of the population belongs to 3rd year. 26.09% of the population belongs to 4th year and intern.. 50.43% students responded that oral as the different method of administration of preemptive analgesic, 23.48% students responded that transdermal as the different method of preemptive analgesic, and 17.39% students responded that sublingual as the different method of preemptive analgesic and 8.70% responded all of the above. 46.09% students responded that piroxicane that are tested for preemptive administration for endodontic treatment, 20% responded that ibuprofen are tested for preemptive administration for endodontic treatment, 14.78% responded that diclofenac are tested for preemptive administration for endodontic treatment and 19.13% responded that all the above. 73.04% responded yes and 26.96% responded no to the question the preoperative administration of NSAIDS can increase the success of inferior alveolar nerve blockade in patients, thinks that preemptive administration of analgesic can reduce the post operative pain for endodontic treatment. 67.83% responded yes and 32.17% responded no. The percentage distribution of think that preemptive analgesic can be given for pregnant women undergoing endodontic treatment. 61.74% responded yes and 38.26% responded no. 47.83% responded asthma, 13.04% responded COPD, 24.35% responded heart failure patients and 14.38% responded thrombocytopenia, 37.39% of the study participants thinks that it is not necessary to give local anesthesia before endodontic treatment. 62.61% of the study participants thinks that give local anesthesia before endodontic treatment. 41.74% of the study population believe that analgesics can't be given for

patients below 14 years undergoing pulp therapy 58.26% of the study population thinks that analgesics can be given for patients below 14 years undergoing pulp therapy. Similar studies are done to assess the knowledge, attitude and awareness of preemptive administration of analgesics before endodontic.

DISCUSSION:

In a clinical trial each patient was anesthetized with 2ml of xylocaine 2% with adrenaline 1:200,000, AstraZeneca, India followed by rubber dam isolation and access cavity preparation. Each patient was provided with a postoperative pain questionnaire having VAS and side effect chart. Patients were encouraged to make immediate postoperative pain measurement (0 h) in order to ensure patient understanding of the pain questionnaire. Patients were instructed to complete the questionnaire at 0, 6, 12, 18, and 24 h after completion of root canal treatment. Pain intensity was recorded using VAS.(29)

The results showed no significant differences were seen among the three groups with respect to preoperative pain scores, age, gender. All patients reported postoperative pain at the 0, 6, 12, 18, and 24 h time intervals. The mean and standard deviations (SDs) of VAS scores for tapentadol, etodolac, and ketorolac at different time intervals were taken. At 0 and 24 h, the VAS scores of the tapentadol and ketorolac groups were significantly lower than the etodolac group. At 6, 12, and 18 h; the ketorolac group showed significantly lower VAS scores than the tapentadol group; and VAS scores in the tapentadol and ketorolac groups were significantly lower than the etodolac group.(30)

Postoperative endodontic pain control continues to be a significant challenge. Amongst all dental procedures, endodontic treatment produces more frequent and severe postoperative pain. Endodontic treatment itself can trigger production of prostaglandins due to the trauma of severing the pulp and the irritation of the periodontal ligament (PDL) subsequent to establishing patency, cleaning, and shaping. This inflammatory process in the periradicular areas of the tooth after treatment can produce postoperative pain. Moreover, postoperative pain is more likely to occur within the first 24 h following endodontic treatment. Reduction of postoperative endodontic pain after pretreatment analgesia with NSAIDs has been well proved in both oral surgery(31) and endodontic models Pretreatment analgesia with NSAIDs before endodontic treatment can block the Cox pathway and might block the pain sensation before it even originates.

Conclusion:

Within the limitations of the study, it can be concluded that dental students were aware of the preemptive analgesics before any endodontic treatment. 50.43% students responded that oral as the preferred method of administration of preemptive analgesic, 23.48% students responded that transdermal as the preferred method of preemptive analgesic, and 17.39% students responded that sublingual as the preferred method of preemptive analgesic and 8.70% preferred all the methods equally.

CONFLICT OF INTEREST: There was no conflict of interest in the present study.

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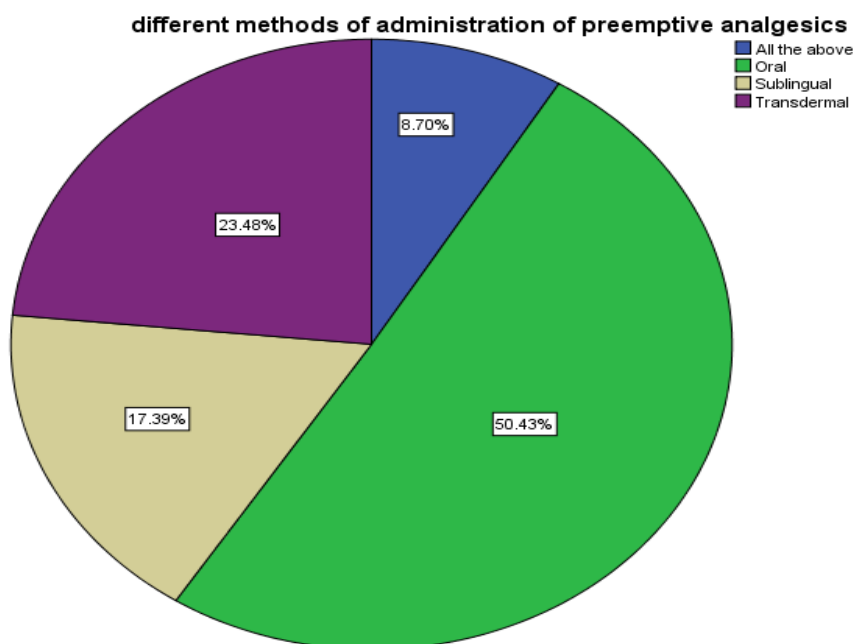


FIG 1: Pie chart shows percentage distribution of the students on awareness about the different methods of administration of preemptive analgesics. 50.43% students responded that oral as the different method of administration of preemptive analgesic (green), 23.48% students responded that transdermal as the different method of preemptive analgesic (purple), and 17.39% students responded that sublingual as the different method of preemptive analgesic (beige) and 8.70% responded all of the above (blue).

different analgesics that are tested for preemptive administration for endodontic treatment

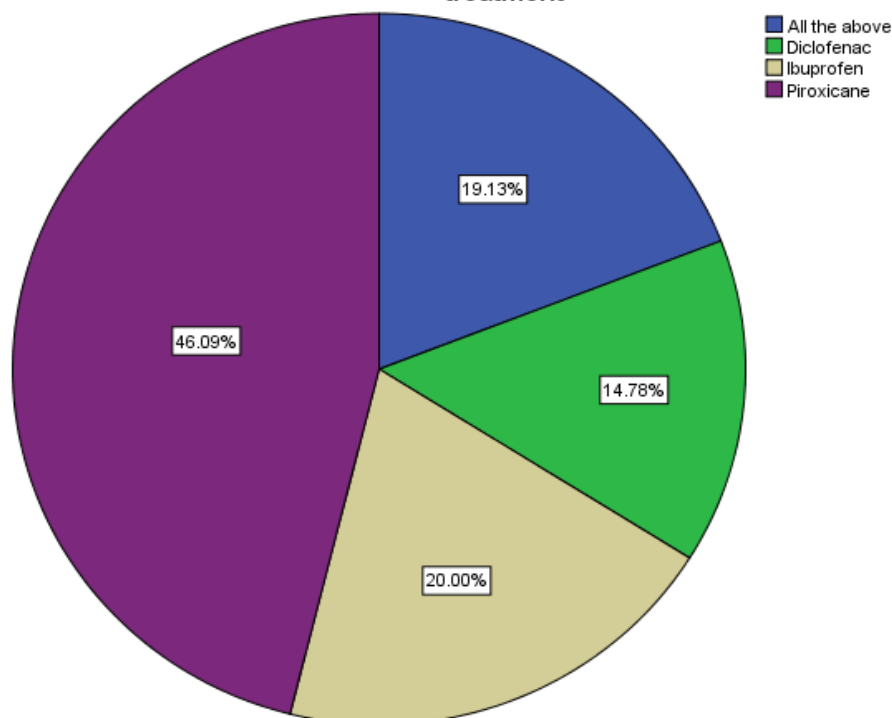


FIG 2: The pie chart shows the percentage distribution of different analgesics that are tested for preemptive administration for endodontic treatment . 46.09% students responded that piroxicane that are tested for preemptive administration for endodontic treatment (purple) , 20% responded that ibuprofen are tested for preemptive administration for endodontic treatment (beige) , 14.78% responded that diclofenac are tested for preemptive administration for endodontic treatment (green) and 19.13% responded that all the above (blue).

thinks that the pre-operative administration of NSAIDS can increase the success of inferior alveolar nerve blockade in patients .

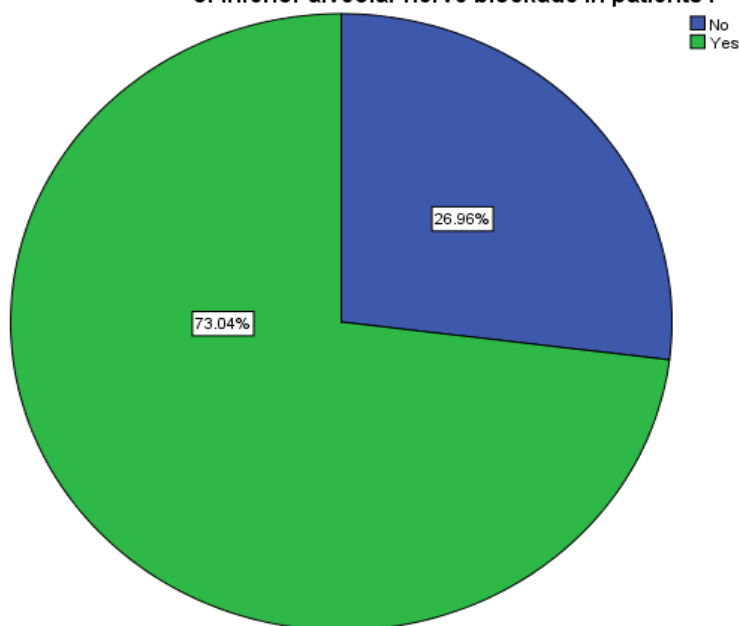


FIG 3: The pie chart shows the percentage distribution of the preoperative administration of NSAIDS can increase the success of inferior alveolar nerve blockade in patients . 73.04% responded yes (green) and 26.96% responded no (blue)

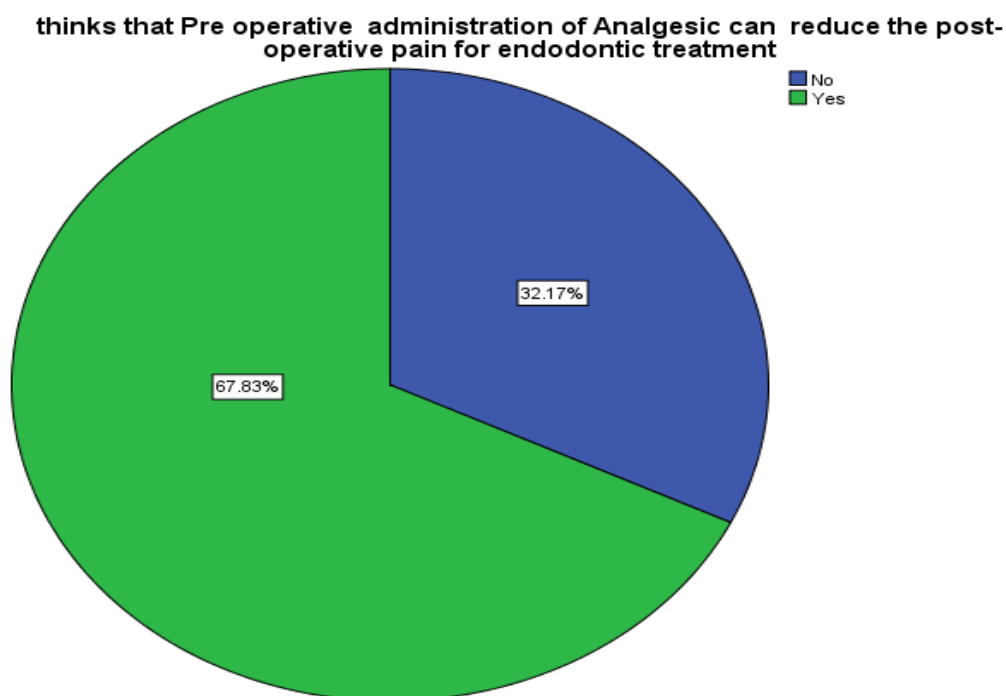


FIG 4: Pie chart shows the percentage distribution of the think that preoperative administration of analgesic can reduce the post operative pain for endodontic treatment.67.83% responded yes(green) and 32.17% responded no. (blue).

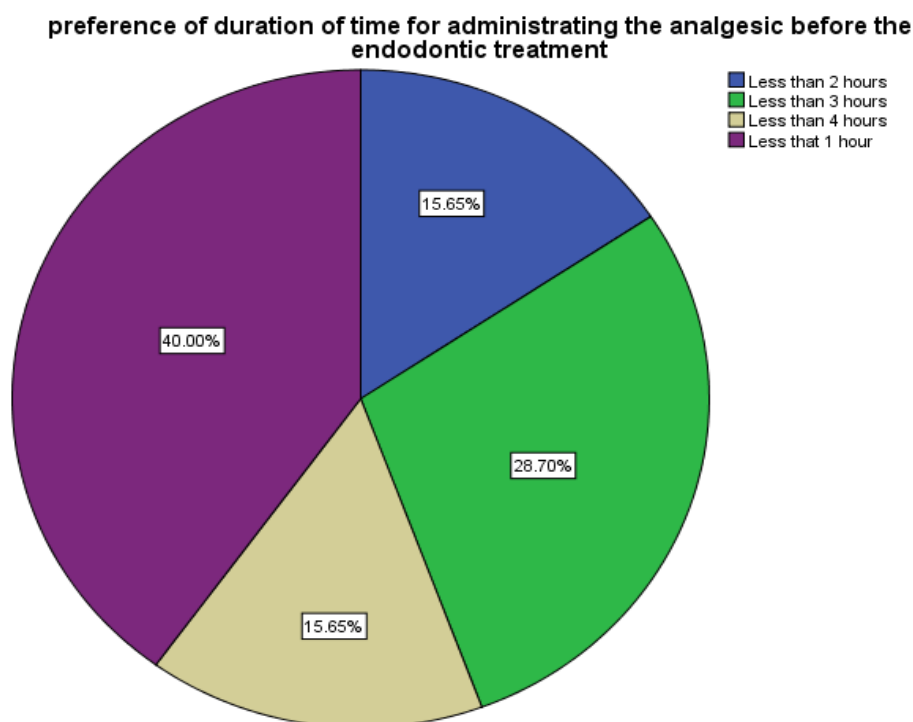


FIG 5: the pie chart shows the distribution of study participants' preference of duration of time for administration of analgesic before endodontic treatment. 15.55% of the study participants prefers less than 2 hours is more preferable.(blue) 28.70% of the study participants prefers less than 3 hours is more preferable.(green)15.65% of the study participants prefer less than 4 hours is more preferable(beige).40% of the study participants prefers less than 1 hours is more preferable(purple).

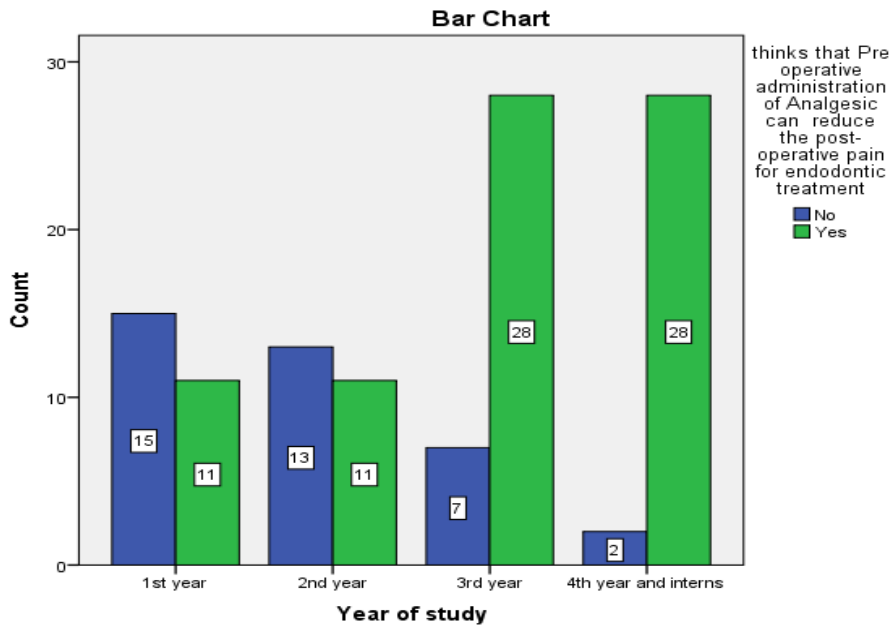
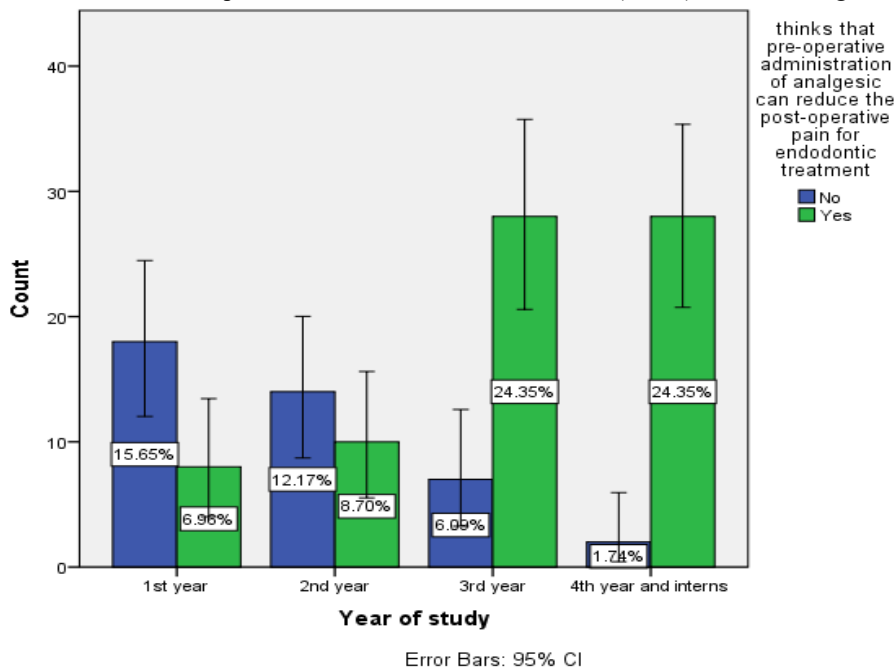


FIG 6: The bar chart shows the correlation between years of study with awareness that preemptive administration analgesics can reduce the postoperative endodontic treatment pain. x- axis represents the year of study and y-axis represent the number of the students participated in the survey . It shows that there are more participants among interns compared to the other year dental students.it also shows that many students from 4th year, interns and third years agreed that preemptive administration analgesics can reduce the postoperative endodontic treatment pain(green).

Pearson's Chi square value : 0.351, P value = 0.554 (>0.05) hence not significant.



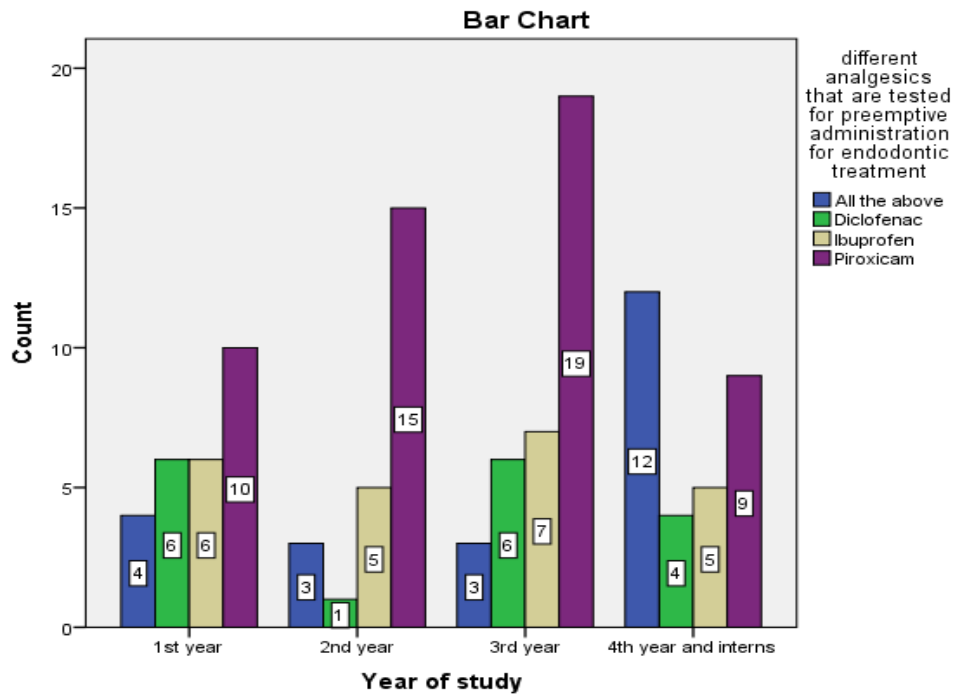


FIG 7: The bar chart shows the correlation between years of study with preference of analgesics that are tested for preemptive administration for endodontic treatment.

X-axis represents the year of study and Y-axis represents the number of the students participated in the survey. It shows that there are more participants among interns compared to the other year dental students. It also shows that many students from 4th year and interns preferred piroxicam (purple).

Pearson's Chi square value : 0.351, P value = 0.554 (>0.05) hence the association is not significant.

