KNOWLEDGE, ATTITUDE AND PRACTICES IN ANALGESIC PRESCRIPTION FOR ENDODONTIC PAIN AMONG DENTAL UNDERGRADUATE STUDENTS - A SURVEY

Running title: Knowledge, attitude and practise on Analgesic prescription for endodontic pain among dental students.

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ABSTRACT:

Introduction and Aim: Pain is often the most common complaint of patients visiting a dentist. Prescription of an analgesic plays a critical role in the management of endodontic pain.However there are no precise guidelines for the pharmacological management of endodontic pain. Hence the aim of this study was to determine the prescription pattern of analgesics for management of endodontic pain among the dental undergraduate students.

Materials and method: A prospective cross sectional survey was conducted among 100 undergraduate dental students through a self administered questionnaire containing close ended questions. The responses were collected, tabulated in excel sheets and analysed using SPSS software version 22.0. Descriptive statistics and Chi square tests were used to evaluate the association. The level of significance was set at $p<0.05$.

Results and discussion: From the results of the present study, most participants knew about analgesic prescriptions for endodontic pain. Chi square test was done, p value=0.00(p< 0.05) and was statistically significant. However there was no significant difference in the practice of analgesic prescription among different levels of education among the undergraduates (p>0.05).

Conclusion: The present study concluded that undergraduate dental students have adequate knowledge and a fairly uniform practise in the analgesic prescription for endodontic pain.

Keywords: Analgesics; Endodontic pain; Knowledge; Prescription; Survey; Innovative technique.

INTRODUCTION:

Pain is often the most common complaint of patients visiting a dentist. Prescription of an analgesic plays a critical role in the management of endodontic pain.It plays an essential role in maintaining well-being, managing chronic conditions, curing and averting ailment (1). Dental conditions causing pain and/or swelling can be treated by conventional management such as operative procedures, non surgical root canal treatment, extraction, dental filling etc. In some cases, antibiotics or analgesics are indicated as adjuncts to conventional endodontic treatment procedures (1,2). Prescribing a medicine has become a crucial issue in dental colleges and hospitals as well. It is one of the most important skills required by any doctor in the colleges, hospitals or clinical practice (3). Prescribing is the act of indicating one or more drugs to be administered by the patient, its dosage, and the duration of the treatment. It is an individualized and dynamic clinical process but the basic problem which contributes to the

irrational prescribing is that the medical students aren't adequately instructed. Prescription errors are very common, especially with fresh doctors. The most prescribed drugs in dentistry are the local anesthetics, antibiotics, and NSAIDs. Analgesics are "the drugs that selectively relieve pain by acting within the central systemanervosum (CNS), without significantly altering consciousness". Analgesics are divided into two: opioid and non-opioid. NSAIDs are particularly useful in the initial management of pain that has an inflammatory component including pain associated with musculoskeletal trauma and dentistry (4). NSAIDs inhibit cyclooxygenase (COX) activity thereby inhibiting synthesis of prostaglandins &thromboxanes. The WHO recommends defining the patient's problem or diagnosis, specifying the therapeutic objective, and then, considering the different alternatives, choosing a treatment with proven efficacy and safety; prescribing is a customized process (5). However there are no precise guidelines for the pharmacological management of endodontic pain which makes the prescription process ambiguous and erratic. Our team has extensive knowledge and research experience that has translated into high quality publications (6–15),(16–19),(20–24)(25). Hence the aim of this study was to determine the prescription pattern of analgesics for management of endodontic pain among the dental undergraduate students.

MATERIALS AND METHOD:
Study Design:
A cross-sectional survey was conducted among undergraduates to evaluate their knowledge, attitude and practice of analgesic prescription for endodontic pain. The sample size of the study was 100. The participants did the survey voluntarily and no incentives were given to them. Ethical approval and informed consent from the participants were obtained.

Survey Instrument:
The survey instrument which was a questionnaire was prepared after an extensive review of the existing literature. The questionnaire was reviewed and amendments were made to improve clarity of the questions to eliminate ambiguous responses. The questionnaire consisted of a total of 12 questions. The questionnaire was shared with the dental undergraduates via an online platform (Google form). A simple random sampling was used to select the study participants.

Data Analysis:
Only completed surveys were taken for analysis and the uncompleted surveys were eliminated. All the responses obtained were tabulated in excel sheets and reliability of the data was checked. The data was then transferred to SPSS and analysed. Descriptive analysis and Chi square test was done to analyze the education level of students and their knowledge on analgesic prescriptions. The level of significance was set at $p<0.05$.

Questions	Responses in Percentage (%)
Year of study 2nd year 3rd year 4th year Intern	 1 56 13 4
Gender Male Female	 52 48

Factors influencing the choice of prescribed analgesics? Age of patients Delay in treatment Patient's medical condition Severity of pain Uncertainty of diagnosis	 33 5 24 36 2
Combination of drugs is more effective in managing pain than single drugs Agree Disagree Strongly disagree	 69 5 26
NSAIDs are very effective in managing pulpal pain Strongly Agree Agree Disagree Strongly disagree	 50 7 43
Do you think opioids like Tramadol significantly reduce endodontic dental pain in patients with the history of gastritis? Yes No Maybe	 2 10 88
Does disinfection of guttapercha have an effect on the prognosis of t Strongly Agree Agree Disagree Strongly disagree	 60 2 37 1
Does your choice of analgesic prescription vary according to the endodontic diagnosis? Yes No Maybe	 56 40 4

What is the most common NSAID (Non-Steroidal Anti-Inflammatory Drug) you prescribe? Paracetamol Ibuprofen Ketorolac Aceclofenac	 67 24 8 1
How many times a day do you advise your patients to take non-narcotic pain medication for post operative pain control? Once Twice Thrice S-O-S	 22 68 10
How many times a day do you advise your patients to take narcotic pain medication for postoperative pain control? Once Twice Thrice S-O-S	 26 35 36 3
What do you usually recommend after Surgical Root Canal Therapy (Apicectomy, Retrograde Filling) for your patient? NSAID Opioid Combination of both	 33 57 10

RESULTS :

There were 100 participants whose year of study ranged from 1st year, 2nd year, 3rd year, 4th year and intern. The data was collected and plotted in a graph and discussed below.
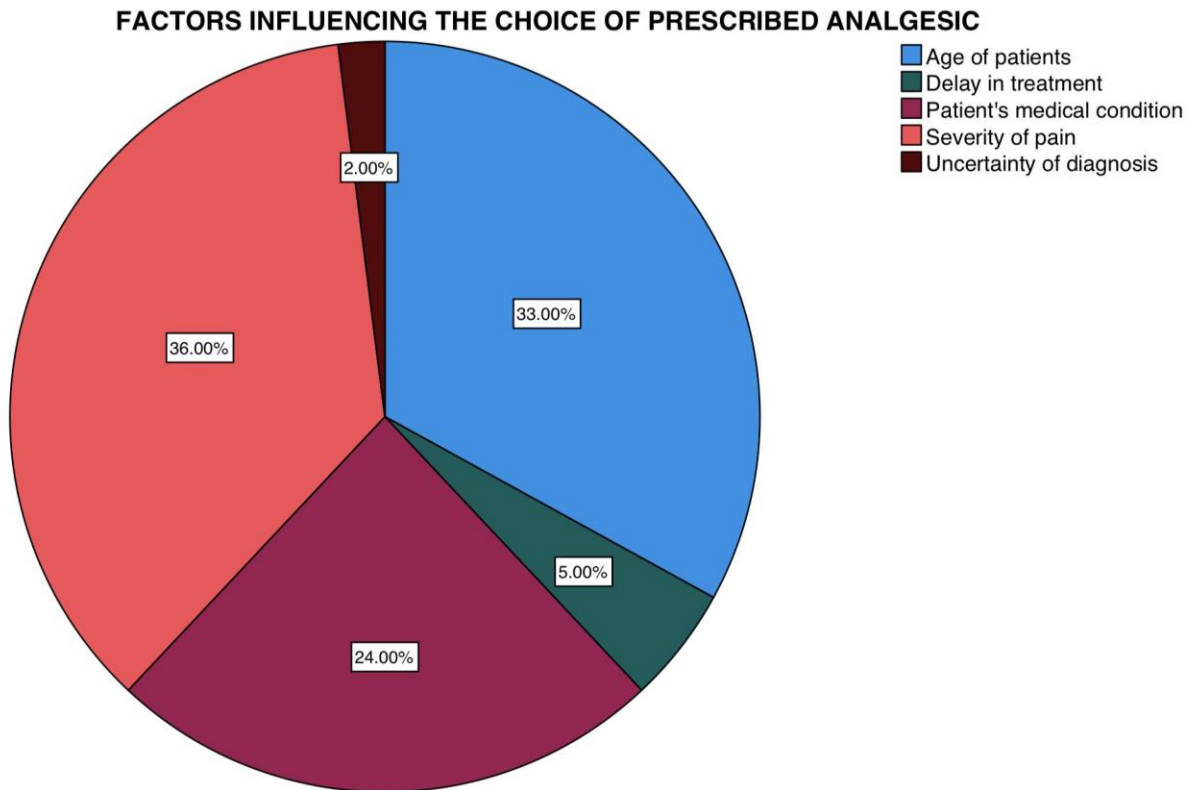
Figure 1 : Pie chart depicts the knowledge level of participants when they were questioned about factors influencing the choice of prescribed analgesic. 33% said it depend on the age of patients (blue) , 5% delay in treatment (green) , 24% patient's medical condition (magenta) , 36% severity of pain (orange) and 2% uncertainty of diagnosis (brown) .
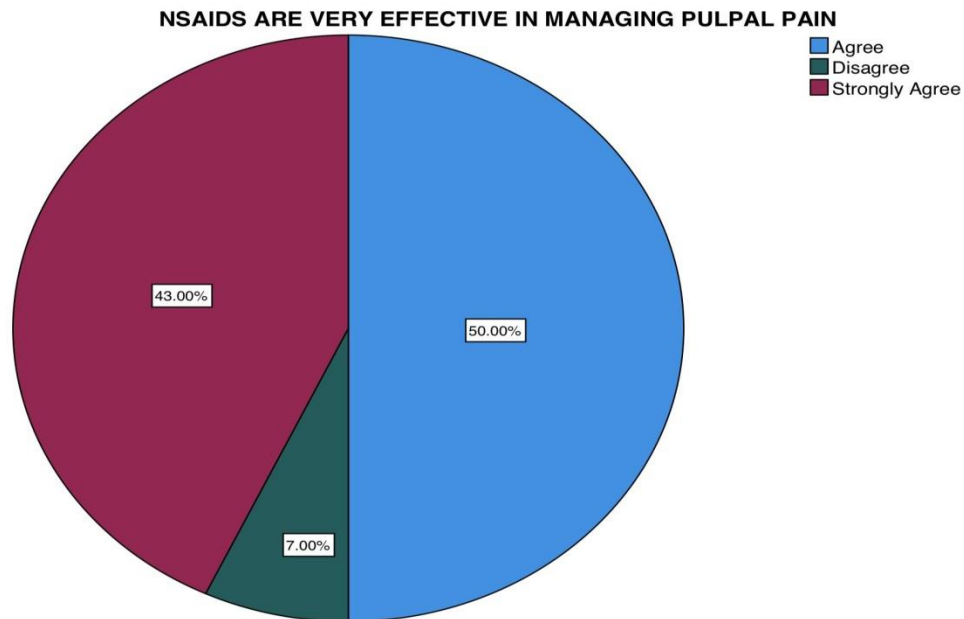
Figure 2 : Pie chart depicts the knowledge level of participants when questioned about the effectiveness of NSAIDs in managing pulpal pain .50% agreed (blue) to the question , 7% disagreed (green) and 43% strongly agreed (red) .
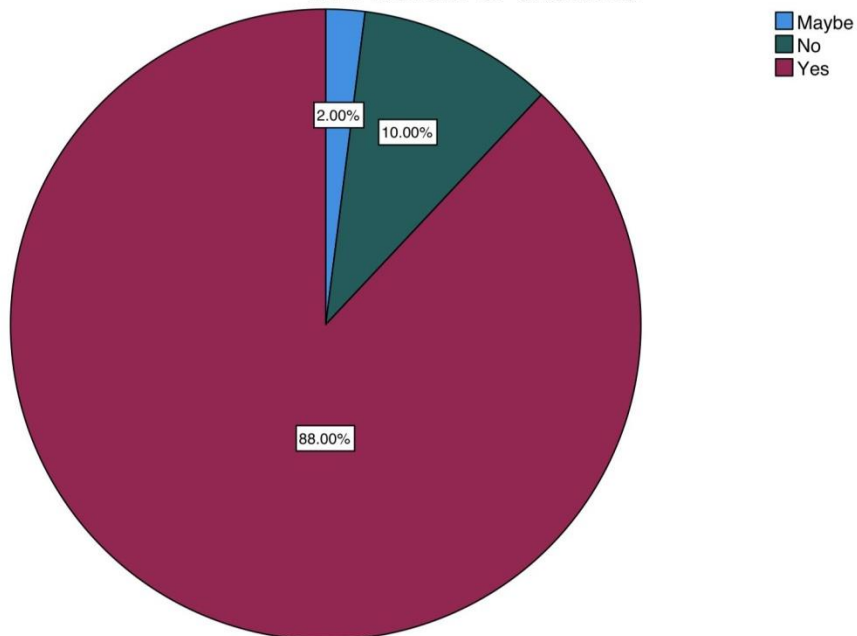

Figure 3: Pie chart depicts the knowledge level of participants when they were questioned if opioids like Tramadol significantly reduced endodontic dental pain in patients with history of gastritis to which 2% answered Maybe (blue) , 10% No (green) and the majority, 88% answered Yes (magenta) .

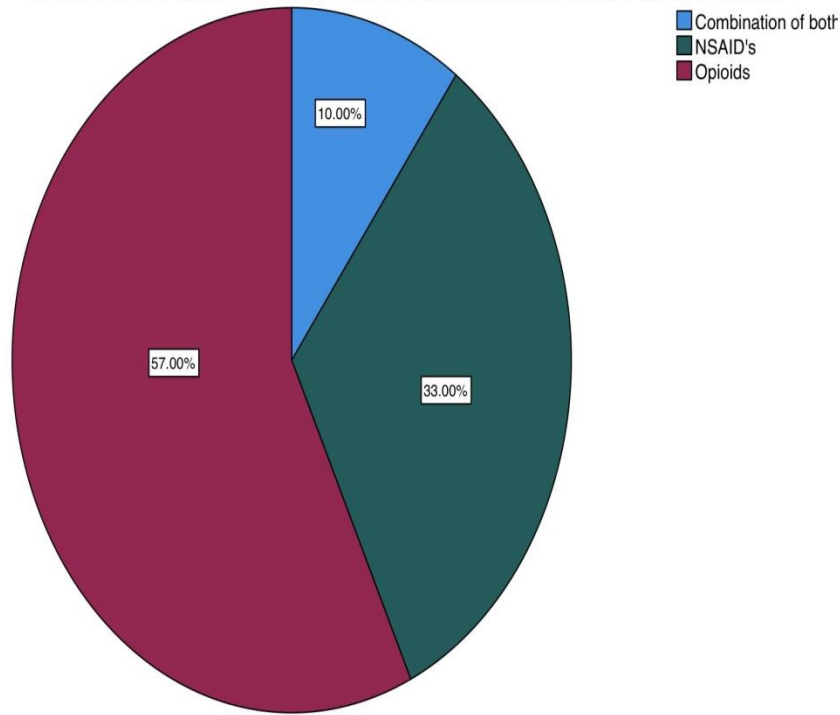**WHAT DO YOU USUALLY RECOMMED AFTER SURGICAL ROOT CANAL THERAPY**

Figure 4: Pie chart depicts the practice level of participants when they were questioned about the drugs which they prescribe after surgical root canal therapy. 33% answered NSAIDs (green), 57% answered opioids (magenta) and the remaining 10% answered combinations of both (blue) .
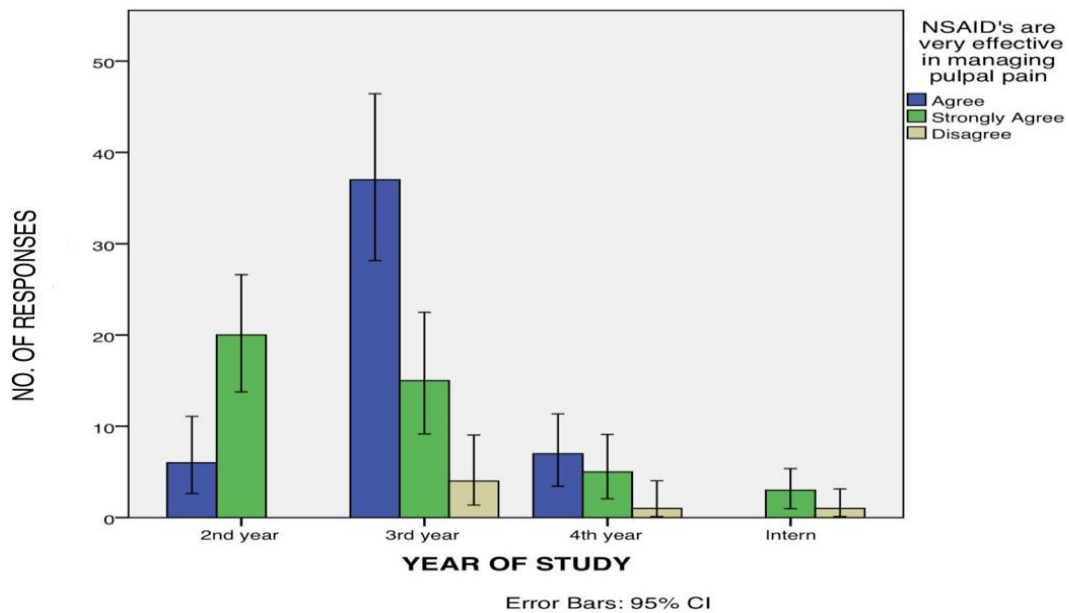
Figure 5: Bar graph depicts the association of responses based on the year of study with the knowledge about whether NSAIDs are very effective in managing pulpal pain. Blue stands for the participants who agreed, green stands for the participants who disagreed and magenta stands for the participants who strongly agreed. X axis represents the year of study and Y axis represents the number of responses. Most undergraduate dental students agreed that the commonly prescribed NSAIDs are very effective in managing pulpal pain. Chi square test was done, p value=0.00($p < 0.05$) and was statistically significant.
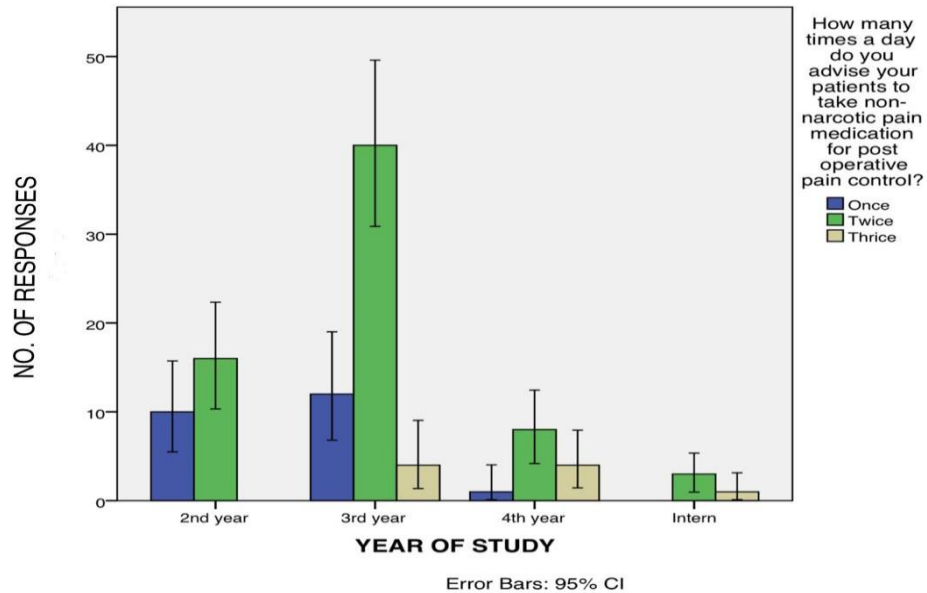

Figure 6: Bar graph showing the association of responses based on the year of study with the question on the number of times a day they advise their patients to take non-narcotic pain medication for postoperative pain control. X axis represents the year of study and Y axis represents the number of responses. Blue stands for the participants who advise the medication once a day, green stands for the participants who advise the medication twice a day and magenta stands for the participants who advise the medication thrice a day. Most students in all groups preferred advising their patients to take their non-narcotic pain medication twice a day. Chi square test was done, p value=0.744 ($p > 0.05$) and was statistically not significant.
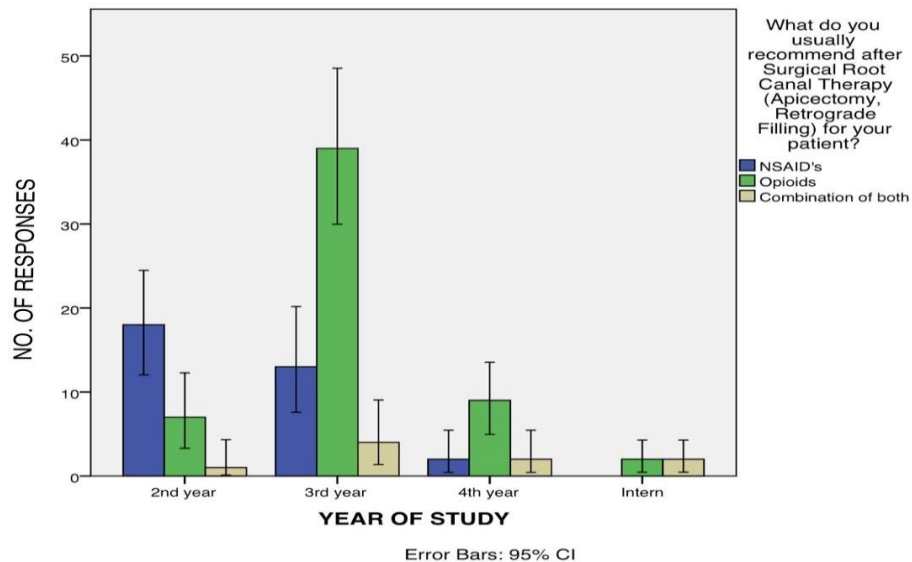
Figure 7: Bar graph showing the association of responses based on year of study with the knowledge on recommending a drug after surgical root canal treatment. Blue stands for the combination of both NSAIDs and opioids, green stands for NSAIDs and magenta stands for the opioids. X axis represents the year of study and Y axis represents the number of responses. While the 1st and 2nd year students preferred opioids, the rest of the groups preferred NSAIDs. Chi square test was done, p value=0.156 (p> 0.05) and was statistically insignificant.

DISCUSSION:

From the given figure 1, pie chart depicts that the knowledge level of participants when they are questioned about factors influencing the choice of prescribed analgesic is depend on the age of patients 33%, delay in treatment 5%, patients medical condition 24%, severity of pain 36% and uncertainty of diagnosis 2%. Figure 2 depicts the knowledge level of participants when they are questioned about NSAIDs being very effective in managing pulpal pain which is 50%, disagreed 7% and strongly agreed 43%. Figure 3 depicts the knowledge level of participants when they are questioned about a thought that opioids like Tramadol significantly reduce endodontic dental pain in patients with a history of gastritis which is Maybe 2%, No 10% and Yes 88%. Figure 4 depicts the practise level of participants when they are questioned about the drugs which they prescribe after surgical root canal therapy. 33% answered NSAIDs, 57% answered opioids and the remaining 10% answered a combination of both (26). From the given figure 5, the bar graph depicts the association of responses based on years of study with the knowledge about the NSAIDs which are very effective in managing pulpal pain. Chi square test was done, p value :0.00(p < 0.05) and was statistically significant.This shows undergraduate dental students have more knowledge about the commonly prescribed NSAIDs which are very effective in managing pulpal pain (27). From the given figure 6, bar graph showing the association of responses based on the year of study with the knowledge about advising their patients to take non-narcotic pain medication for postoperative pain control. Chi square test was done, p value :0.744(p> 0.05) and was statistically insignificant. This shows undergraduate dental students have more knowledge about advising their patients to take non-narcotic pain medication for postoperative pain control. From the given figure ,7 bar graphs showing the association of responses based on year of study with the knowledge on recommending a drug after surgical root canal treatment. Chi square test was done, p value :0.156 (p> 0.05) and was statistically insignificant. This shows undergraduate dental students have adequate knowledge on recommending a drug after surgical root canal treatment(28).

Prescribing a medicine is a complex task that requires clinical knowledge combined with practical skills. At a certain point of level undergraduates advance into their internship and post graduation where they require immense pharmacological information and knowledge that imparts a feeling of confidence in them (29). This study helps us to investigate the manner in which the pharmacological concepts learnt in the second year of the educational study

translates to survey clinical application by students, interns and post graduates (30). The current study showed that 56% of the students stated that analgesic prescriptions vary according to endodontic diagnosis. This was in contrast with the study conducted by Eldalo et al.(31)

Results of the present study demonstrated good-practise regarding prescription writing among the undergraduate dental students. This can be due to the dental teaching curriculum which involves teaching of rational prescription writing. Limitations of this study are that the population is small and the geographic isolation of the study population could make the results biased. Limitations seen in this study can be included in future research to obtain more data that can help in standardising these regimens.

CONCLUSION:

The present study concluded that undergraduate dental students have adequate knowledge and a fairly uniform practise in the analgesic prescription for endodontic pain. Also knowledge of prescription of medicines in 3rd and 4th year were higher in comparison with 1st and 2nd years.

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