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COMMON TRENDS IN PRESCRIBING ANALGESICS FOR PULPITIS

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ABSTRACT

Pulpits is a condition that causes painful inflammation of the pulp. It can occur in one or more teeth, and is caused by bacteria that invade the tooth's pulp, causing it to swell. There are two forms of pulpitis: reversible and irreversible. The relief and management of pain by the operator reflects the quality of treatment given thus providing the patient comfort and an improved quality of life. Hence it is extremely important for dentists to have a thorough knowledge on analgesics and their effects in order to correctly prescribe the drug based on the amount of pain experienced by the patient. This study aimed to find the pattern of analgesics prescribed by undergraduate students for irreversible pulpitis and apical periodontitis. In order to determine the common trends in prescribing analgesics for pulpitis and also in order to create awareness a questionnaire comprising 15 questions was prepared. This survey based study was carried between the month of December- January 2020. This survey was carried out with the help of an online platform.

Around 100 undergraduate students participated in this survey. Based on the responses, data was collected and tabulated in an Excel sheet. This was followed by transferring the Excel tabulated data to SPSS for data analysis. Based on the analysis the results were tabulated.

In this study the commonly prescribed analgesic for pulpitis was found to be zerodol p 50 % followed by acetaminophen 30% and ibuprofen 20%. Majority of the students preferred to prescribe non opioids 70 % whereas the remaining 30% preferred opioids. More than half of the participants prescribed antibiotics like amoxicillin 500 mg 3 times a day for a duration of 5-7 days (58%) .The most common side effect of NSAIDS was found to be gastric erosion (50%) Majority of the students stated that the abbreviated name is an error faced while prescribing analgesics (50%) Within the limitations of the study, Prescribing Non opioids were preferred rather than prescribing opioids in case of pulpitis and the most frequently prescribed drug was found to be zerodol p. However, undergraduate students faced errors while prescribing medicines. Gradual experience and vigilant supervision on prescription patterns of medicines can overcome such errors in future.

Keywords: Analgesics, root canals, pulpitis

INTRODUCTION

General population generally seeks dental treatment due to pain or swelling and pain of odontogenic origin **(Keiser and Hargreaves, 2002)**. Most of the conditions are treated by conventional management such as operative procedures, e.g. nonsurgical root canal treatment, Most conditions can be treated by conventional management such as operative procedures, e.g. extraction , dental filling or nonsurgical root canal treatment which includes pulp extirpation, instrumentation, and intracanal medication. In several cases, analgesics and/or antibiotics are indicated as adjuncts to conventional endodontic procedures **(Siqueirajr and Rocas, 2005)**.

Analgesics are "the drugs that selectively relieves pain by acting in the central nervous system (CNS) or on peripheral pain mechanisms, without altering consciousness". Analgesics are further divided into two groups : Non opioid / aspirin like / NSAIDs analgesics and Opioid / narcotic / morphine like analgesics **(Becker and Phero, 2005)**. Nonopioids include acetaminophen and the nonsteroidal anti-inflammatory drugs (NSAIDs), which interrupt prostaglandin synthesis and also have a maximal dose or ceiling for their analgesic effect. NSAIDs are generally useful in the initial management of pain that has an inflammatory component

including pain associated with musculoskeletal trauma and dentistry. NSAIDs inhibit cyclooxygenase (COX) activity thereby inhibiting synthesis of thromboxanes, prostaglandins and prostacyclin **(Slaus and Bottenberg, 2002)**. Analgesic is administered considering the cause and nature of pain (mild , moderate or severe ; acute or chronic ; ratio of pain ; inflammation) along with risk factors in the given patient, considering past experience of the patient, acceptability to given drug and individual preference. Patients differ in their analgesic response to different NSAIDs **(Fernandes and Ataide, 2010)**.

Analgesics are considered one of the most important drugs groups in dental practice considering the prescription rate, cost-effectiveness, clinical efficacy and safety profile of this drug grou **(Dionne *et al.*, 1983)**. There are different approaches to develop treatment guidelines for dental pain treatment in order to rationalize the use of analgesics **(Rousseau *et al.*, 2002)**. The rationalization of analgesics use is an ongoing challenge, since some analgesics are over-the-counter (OTC) drugs and can be taken without medical prescription.

Pulpits is a condition that causes painful inflammation of the pulp. It can occur in one or more teeth, and is caused by bacteria that invade the tooth's pulp, causing it to swell. There are two forms of pulpitis: reversible and irreversible **(Attar *et al.*, 2008)**. Endodontic infections are polymicrobial in nature and obligate anaerobic bacteria are considered as the dominant microflora in primary infections. The endodontic treatment is eradication of the infection and prevention of microorganisms from infecting or re-infecting the root and/or periradicular tissues **(Whitten *et al.*, 1996)**. The relief and management of pain by the operator reflects the quality of treatment given thus providing the patient comfort and an improved quality of life. Hence it is extremely important for dentists to have a thorough knowledge on analgesics and their effects in order to correctly prescribe the drug based on the amount of pain experienced by the patient **(Narayanan and Vaishnavi, 2010)**. Most of the studies on medication pattern involve qualified dentists. Previously our team has a rich experience in working on various research projects across multiple disciplines. **(Muthukrishnan and Warnakulasuriya, 2018), (Govindaraju, Neelakantan and Gutmann, 2017), (Chen *et al.*, 2019), (Priyanka *et al.*, 2017), (Sitharthan *et al.*, 2019), (Priyadharsini *et al.*, 2018), (Azeem and Sureshbabu, 2018), (Wu *et al.*, 2019), (Abitha and Santhanam, 2019), (Manohar**

and Abilasha, 2019), (Venu, Dhana Raju and Subramani, 2019), (Wang *et al.*, 2019), (Girija, Jayaseelan and Arumugam, 2018), (Sheriff, Ahmed Hilal Sheriff and Santhanam, 2018), (Dhinesh *et al.*, 2017). Now the growing trend in this area motivated us to pursue this project.

Limited data is available on dental undergraduates. Students need to acquire correct prescribing skills. Hence clinical instructors of dental schools take technical skills as the primary component of a 'good' dentist **(Siqueira and Rôças, 2014)**. Dental students are not allowed to prescribe medicines on their own, but only under supervision of clinical teachers.

MATERIALS AND METHODS

In order to determine the common trends in prescribing analgesics for pulpitis and also in order to create awareness a questionnaire comprising 15 questions was prepared. This survey based study was carried between the month of December- January 2020. This survey was carried out with the help of an online platform. Around 100 undergraduate students participated in this survey. Sample randomised sampling method was used to categorise sampling population. The survey was conducted through an online portal. 100 participants who had the ability to give informed consent were included in this survey. In order to avoid multiple attempts of a single participant demographic details such as name, gender, Email ID was made mandatory to mention by the participants before taking up the survey.

Based on the responses, data was collected and tabulated in an Excel sheet. This was followed by transferring the Excel tabulated data to SPSS for data analysis. Based on the analysis the results were tabulated.

RESULTS AND DISCUSSION

In this study the commonly prescribed analgesic for pulpitis was found to be zerodol p 50 % followed by acetaminophen 30% and ibuprofen 20% **(Figure 1)**. This is in accordance with the study of **Umar *et al* 2013**. He stated that zerodol P is the drug of choice followed by acetaminophen **(Kumar *et al.*, 2013))**. Zerodol P is a combination of aceclofenac and acetaminophen which acts by blocking the action of chemical messengers responsible for pain fever and inflammation. However, this finding of our study does not go in hand with the study **SJ KIA *et al* 2013**. According to him acetaminophen is the most frequently used in case of pulpitis **(Kia *et al.*, 2013)**. Factors like different intensity of pain and swelling may be the reason behind this finding. Difference in geographic location could also

contribute towards the selection of analgesics.

Majority of the students preferred non opioids 70 % whereas the remaining 30% preferred opioids **(Figure 2)**. This is in accordance with previous studies **Weeks LM *et al* 2016,** stated that non opioids were preferred than opioids **(Weekes, 2016)**. This is due to the public health issues like opioid misuse and abuse and also due to pharmaceutical opioid poisoning.

More than half of the participants prescribed antibiotics like amoxicillin 500 mg 3 times a day for a duration of 5- 7 days (58%) or metronidazole 20% along with analgesics Whereas the remaining students did not prescribe antibiotics **(Figure 3)**. This is in accordance with previous studies. **Germack *et al* 2017** reveal that amoxicillin (83%) was the most commonly prescribed antibiotic along with analgesics followed by metronidazole (17%) **(Germack *et al.*, 2017)**. It is universally accepted that antibiotics are indicated in case of infection or signs of systemic involvement. Necrotic pulp with acute apical periodontitis, swelling and moderate/severe preoperative symptoms are some common conditions identified for antibiotic therapy **(Mainjot *et al.*, 2009)**.

The most common side effect of NSAIDS was found to be gastric erosion (50%) followed by prolonged bleeding time (20%) followed by hepatotoxicity (20%) and nausea (10%). This is in accordance with the study of **Sarkar *et al* 2014**. He stated that frequent side effects attributed to NSAIDs are gastrointestinal in nature, which includes dyspepsia, gastric erosions, and mucosal ulcerations. Besides, NSAIDs exert an antiplatelet effect prolonging bleeding time. Hence NSAIDs should be avoided in patients taking anticoagulants, such as warfarin, or those suffering bleeding disorders **(Sarkar, Das and Baral, 2004)**. Our institution is passionate about high quality evidence based research and has excelled in various fields **((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mebin George Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)**. We hope this study adds to this rich legacy.

Majority of the students stated that the abbreviated name is an error faced while prescribing analgesics (50%) followed by incorrect strength (30%) and incorrect dose (20%). This finding goes in hand with the

study of **Buck *et al* 2000**. According to his study he stated that the abbreviated name is the most common error faced by dental students. which could be avoided with gradual practice and experience **(Buck *et al.*, 2000)**.Our institution is passionate about high quality evidence based research and has excelled in various fields **(Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; M. G. Mathew *et al.*, 2020)**. We hope this study adds to this rich legacy.

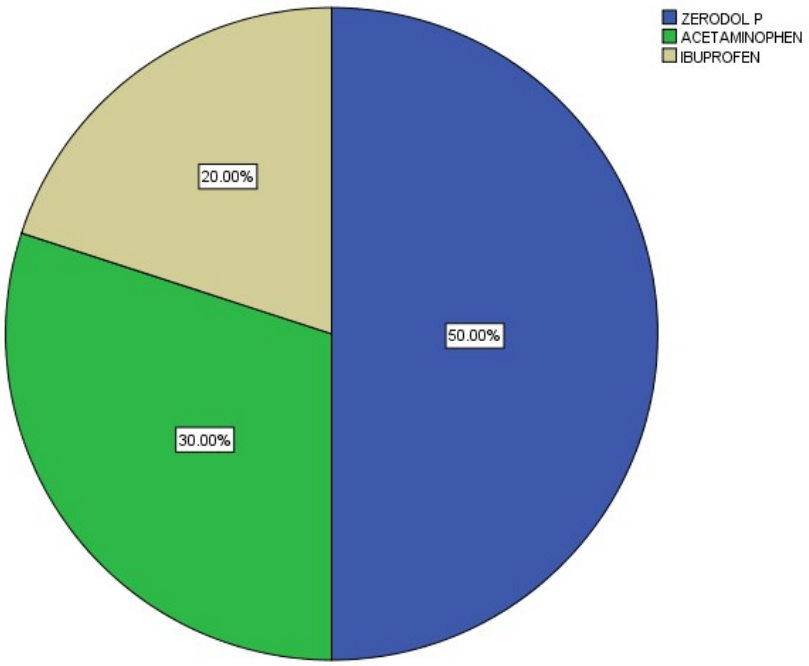

Figure 1: The pie chart shows the percentage responses by participants for the most commonly prescribed analgesic in case of pulpitis. Blue colour represents Zerodol p (50%) .Green represents acetaminophen (30%). Beige represents ibuprofen (20%).

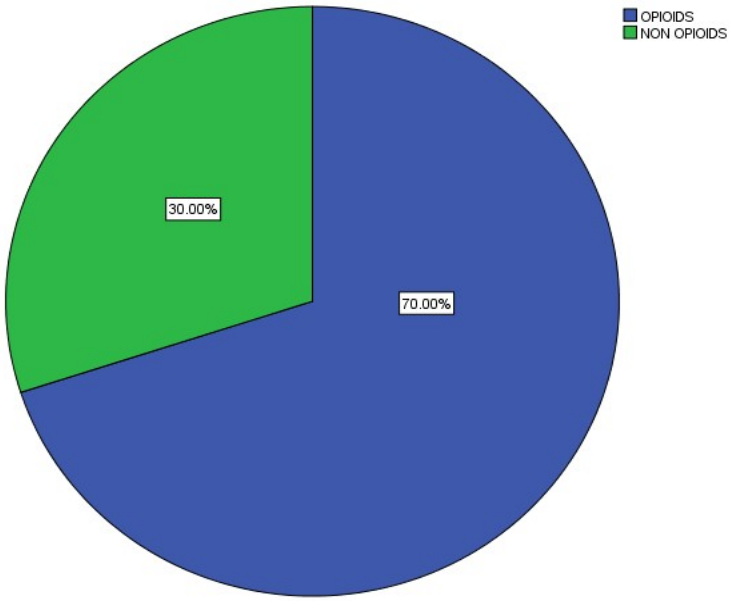

Figure 2: The pie chart shows the percentage responses by participants for prescribing opioids or non opioids in case of pulpitis.Blue colour represent Non opioids (70%) and green represents opioids (30%).

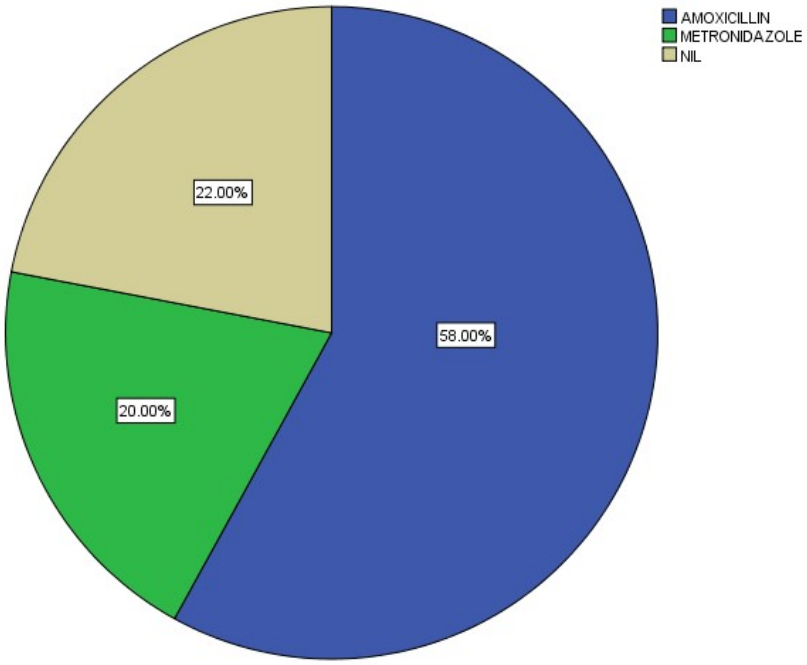

Figure 3: The pie chart shows the percentage responses by participants for antibiotics prescribed along with analgesics . Blue colour represents amoxicillin (58%) . Beige represents metronidazole (22%) . Green represents nil

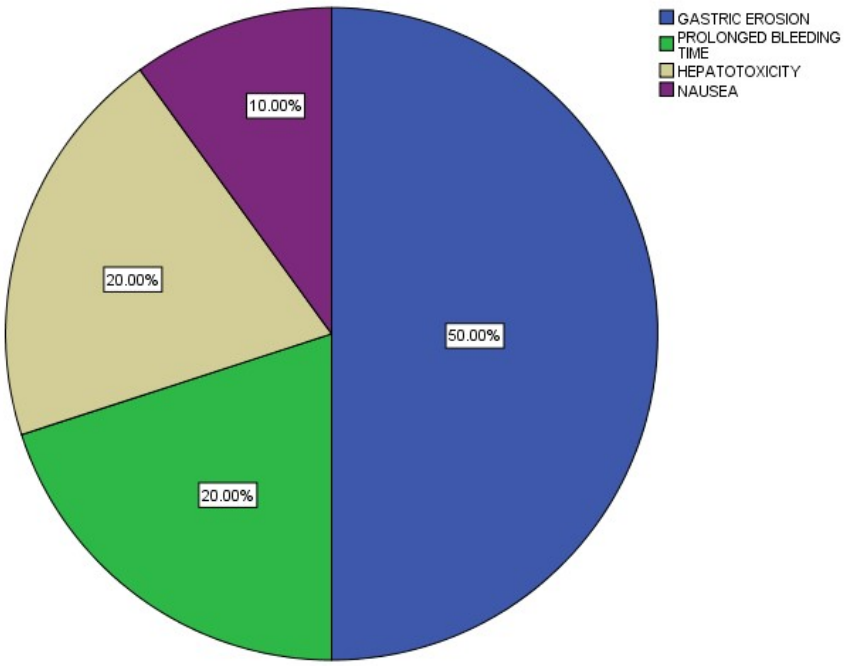

Figure 4: The pie chart shows the percentage responses by participants for the most common side effects of NSAIDS. Blue colour represents gastric erosion (50%) . Green represents prolonged bleeding time (20%). Beige represents hepatotoxicity (20%). Purple represents nausea.

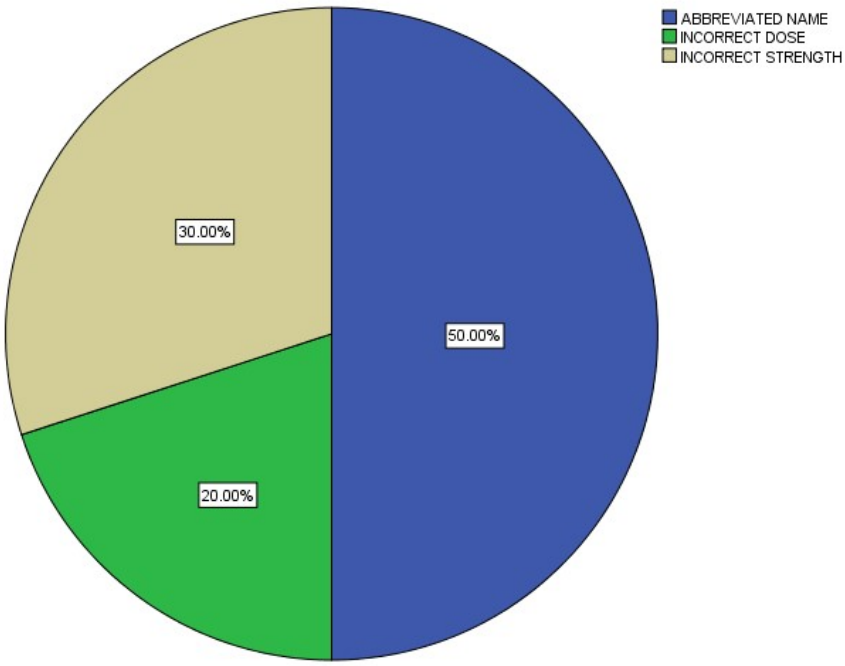

Figure 5: The pie chart shows the percentage responses by participants for the most common error faced while prescribing analgesics . Blue colour represents abbreviated name (50%). Green represents incorrect dose (20%) and beige represents incorrect strength (30%).

CONCLUSION

Within the limitations of the study, Prescribing Non opioids were preferred rather than prescribing opioids in case of pulpitis and the most frequently prescribed drug was found to be zerodol p. However, undergraduate students faced errors while prescribing medicines. Gradual experience and vigilant supervision on prescription patterns of medicines can overcome such errors in future.

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CONFLICT OF INTEREST

None declared.

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