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Analgesic prescription practice for pulpal pain — An institution-based retrospective study

Cinthura C[1], Dhanraj Ganapathy[*2], Arvina Rajasekar[3]

[1]Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-600077, Tamil Nadu, India
[2]Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of medical and technical sciences, Saveetha University, Chennai-600077, Tamil Nadu, India
[3]Department of Periodontology, Saveetha Dental College and Hospitals, Saveetha Institute of medical and technical sciences, Saveetha University, Chennai-600077, Tamil Nadu, India

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ABSTRACT

Analgesics are prescribed for various surgical and non-surgical treatments in dentistry; however, they are commonly given for relieving pain. This study is aimed at determining the current analgesic prescription pattern in Chennai to help ascertain that these medications are recommended only when absolutely necessary. The patient records from the Department of Endodontics, Saveetha dental college, Chennai from June 2019-April 2020, and patients who were prescribed analgesics for pulpal pain - pretreatment purpose, pain management, pulp capping, endodontic emergencies and multi-visit RCTs were identified by non- probability sampling method. Data regarding their age, gender, analgesic prescribed and clinic treated were collected and then subjected to statistical analysis. The results of the study show that among the patients for whom analgesics were prescribed for pulpal pain, individuals within the age group of 35-55 years (48.5%) were common and those above 75 years (0.3%) were uncommon. Undergraduate clinics had prescribed the most for patients (85.57%). Male predominance was observed among the patients (52.3%). Majority of the patients have prescribed paracetamol (72.9%), followed by paracetamol and Aceclofenac together (10.9%) whereas tramadol, paracetamol and ketorolac combinations were rarely prescribed (0.1%). Analgesics prescribed and the type of clinic was found to have a strong association (p=0.000). The study draws attention to the fact that there was a lack of uniformity among the dental students, both undergraduate and postgraduate courses regarding use of analgesics in different clinical situations.

*Corresponding Author

Name: Dhanraj Ganapathy
Phone: 9841504523
Email: dhanraj@saveetha.com

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INTRODUCTION

Patients visit dental institutions and private clinics complaining of swelling or pain, and often this pain is usually of odontogenic origin like extensive dental caries with or without pulpal involvement. Although most conditions are treated by conservative management, adjuncts like antibiotics or analgesics are indicated (Keiser and Hargreaves, 2002). Natural products like Aloe Vera also have good medicinal properties (Subasree *et al.*, 2016).

(Gupta *et al.*, 2010; Ashok *et al.*, 2014; Venu-

gopalan *et al.*, 2014) Pain is a complex sensation, and odontogenic pain is considered as a multi factorial experience that involves sensory responses with cognitive and emotional aspects (Sessle, 1986; Ashok and Suvitha, 2016; Ganapathy, 2016). Postoperative pain of mild intensity can rarely occur if the endodontic or conservative treatment had suitable standards (Cunningham and Mullaney, 1992; Kaushik and Kaushik, 2012).

(Selvan and Ganapathy, 2016; Vijayalakshmi and Ganapathy, 2016) Drugs that relieve pain selectively by acting in the central nervous system or pain mechanism while the patient is conscious are called Analgesics. (Ajay *et al.*, 2017; Jyothi *et al.*, 2017) They are divided into two groups, namely Non-opioids or NSAIDs and Opioid analgesics (Becker and Phero, 2005).

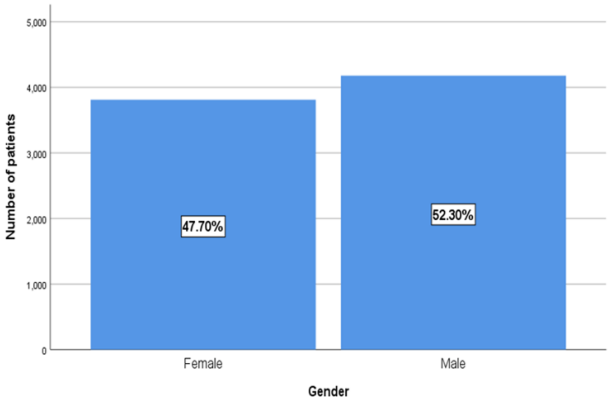

Figure 1: Gender Distribution.

NSAIDs inhibit cyclooxygenase activity which leads to inhibition of prostaglandin and thromboxane synthesis. On the contrary, opioids have been misused and pose a well-recognised public health issue (Weekes, 2016). Recently lasers are being employed to reduce pulpal inflammation and pain (Metin *et al.*, 2018). Culturing to know the definite root cause for the pain is seldom done in routine practice.

Therefore, prescriptions are based on presumption from previously determined clinical, epidemiological data (Roda *et al.*, 2007). Appropriateness of various analgesic compounds for the management of endodontic pain has been investigated, but insufficient literature is available regarding the dose and the type of analgesic needed for different clinical scenarios to help in reducing pulpal pain (Dionne *et al.*, 1983; Rousseau *et al.*, 2002).

The necessity for larger sample study and methodologically sound trials to act as evidence was discussed in a Cochrane review (Fedorowicz *et al.*, 2013). (Ganapathy *et al.*, 2017) Painful conditions can impact or affect the success rate of various restorative and prosthetic treatments. (Ranganathan *et al.*, 2017) Management of pain is a crucial factor before undertaking prosthetic treatments (Basha *et al.*, 2018; Kannan and Venugopalan, 2018; Duraisamy *et al.*, 2019).

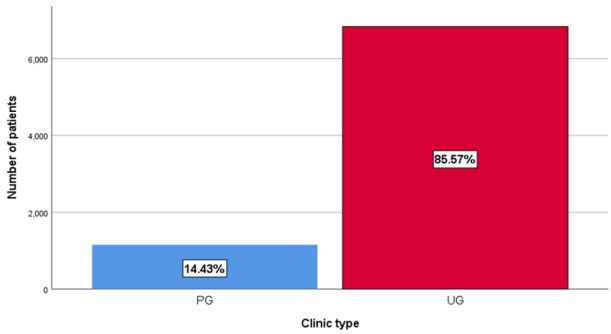

Figure 2: Distribution of clinic type (UG/PG).

MATERIALS AND METHODS

A retrospective study was carried out by accessing the data of the Department of Endodontics of Saveetha Dental College and Hospital, Chennai, India using the colleges' patient management software from June 2019 to March 2020. Institutional ethical committee clearance was obtained for data retrieval and usage as needed for the study (SDC/SIHEC/2020/DIASDATA/0619-0320).

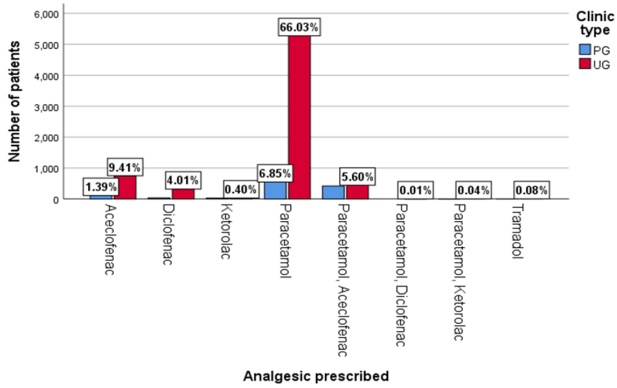

Figure 3: Bar graph depicting the association between type of clinic and the analgesics prescribed.

Patients who were prescribed analgesics for pulpal pain — pretreatment purpose, pulp capping, pain management, endodontic emergencies and multi-visit RCTs were identified. Incomplete records and double entries were excluded from the study. For each patient, details about the type of analgesic prescribed, age, gender and clinic type (UG/PG) were collected.

Statistical analysis

Following the collection of data by non- probability

Table 1: Age distribution of patients who had analgesics prescribed for pulpal pain.

Age groups	Frequency	Percentage
35-55	3874	48.5
55-75	1674	21.0
above 75	20	.3
less than 35	2421	30.3
Total	**7989**	**100.0**

Table 2: Distribution of Analgesics among patients with the complaint of pulpal pain.

Analgesics prescribed	Frequency	Percentage
Aceclofenac	863	10.8
Diclofenac	359	4.5
Ketorolac	63	.8
Paracetamol	5822	72.9
Paracetamol, Aceclofenac	870	10.9
Paracetamol, Ketorolac	4	.1
Tramadol	8	.1
Total	**7989**	**100.0**

sampling. Data were subjected to statistical analysis. Microsoft Excel 2016 data spreadsheet was used to collect data and later exported to the Statistical package for social science for Windows (SPSS version 20.0, IL, Chicago, USA). The distribution percentages were obtained, following which associations were assessed using Chi-Square tests.

RESULTS AND DISCUSSION

The final data set consisted of 7989 patients who had analgesics prescribed to them for various reasons associated with pulpal pain.

Table 1 represents the age groups associated with the highest prevalence of analgesics prescribed for pulpal pain to be within the range of 35-55 years (48.5%) and the least among the age group above 75 years (0.3%). Figure 1 presents a distribution of gender among patients who were prescribed analgesics for pulpal pain showing male predominance (52.3%). Figure 2 presents a graph representing the distribution of clinic type in which the patients were prescribed analgesics for pulpal pain showing UG clinics as the predominant type (85.57%).

Table 2 depicts the distribution of Analgesics among patients with the complaint of pulpal pain showing commonly prescribed as Paracetamol (72.9%), followed by Paracetamol and Aceclofenac (10.9%), Aceclofenac (10.8%) whereas tramadol, paracetamol and ketorolac combinations were the least prescribed (0.1%). Figure 3 represents the association between the type of clinic and analgesics prescribed to the patient showing a significant trend (p=0.000). Blue depicts the Postgraduate (PG) clinics, and red depicts the Undergraduate (UG) clinics.

The data for this study was based on residents of Chennai seeking treatment at Saveetha dental college, Chennai. There is a dearth in the literature about studies assessing the association between analgesics prescribed and experience of the dentist in the given region. There was no sorting process, and all of the data available was included to avoid sampling bias. This study gives importance to the prevalence of use of analgesics for pulpal pain and its association with the clinic type or experience of the dentists.

In the present study (Table 1), patients between 35-55 years (48.5 %) were a higher number in visiting the dental clinics with complaints of pulpal pain and the least were patients above 75 years (0.3%). This was coherent with a study conducted by Gómez and García's, which concluded that patients above 40 years of age were those diagnosed with pulpal pathologies (Porcegué and Sánchez, 2006). This suggested that they had higher chances to visit dental clinics more often. The reduced incidence above the age of 75 years may be due to ageing that causes rapid loss of teeth and therefore reduced their need to visit a dentist.

Male predominance (52.3%) was observed among patients with pulpal pain (Figure 1). This result was consistent with a study conducted by Parejo Madén et al., showing higher rates of root canal treatments

among the males (Maden *et al.*, 2009). In a study by Appukuttan et al., he reported that more females suffered from a dental phobia in an India population (Appukuttan *et al.*, 2015), which could be a reason for their lesser visits.

In the present study (Table 2), paracetamol was the commonly prescribed drug, and analgesics like ketorolac, diclofenac and aceclofenac were least prescribed than paracetamol. This was contradictory to the study by Maslamani M et al. in Kuwait, which showed higher use for diclofenac and ibuprofen (Maslamani and Sedeqi, 2018). Another study by Sarkar C et al. also showed higher use of ibuprofen (Sarkar *et al.*, 2004). The difference in preference may be due to a change in geographical location and availability of the drug. Paracetamol is ineffective in its anti-inflammatory properties. It can also be toxic for patients with depleted glycogen stores and liver dysfunction, which may be the reason for its reduced use in the contradictory studies (Mittal *et al.*, 2012). Opioids aren't prescribed in the study, and this can be because they lead to tolerance and dependence in the long term (Goodman *et al.*, 1996).

Undergraduates prescribed more analgesics than postgraduates (Figures 2 and 3), and they mostly prescribed paracetamol (66.03%). In a study by Jayadev M, it was established that experienced dentists often prescribe analgesics only when the patient also had an elevated temperature, or only after a proper evaluation when compared to newer dentists (Jayadev *et al.*, 2014). Another study in Nigeria, the respondents were those with less than five years of experience, and they often prescribed paracetamol, and only a few knew about the adverse effects of this drug (Azodo and Umoh, 2013). In another study by Ravi Kumar Konagala et al. (Konagala *et al.*, 2019), lesser experienced dentists prescribed more pretreatment medications. The aforementioned reasons are a few that explain the higher number of analgesic prescriptions given to the patients treated in the undergraduate clinics compared to the postgraduates.

CONCLUSION

Within the limitations of this study, it is observed that paracetamol has been the most prescribed drug despite its side effects. The male population was prescribed more analgesics than females, especially patients within the age range of 35 to 55 years. The undergraduate students prescribed analgesics frequently to their patients, and there exists a statistically significant association between the type of clinic and the analgesics prescribed. Extensive research has to be done to study the use of analgesics in clinical practice to build a guide which can be followed universally.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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