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Medication Prescribing Patterns in a Specialized Dental Center in Saudi Arabia: A Retrospective Cross-Sectional Study

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ABSTRACT

Background: Medications are frequently prescribed in dental practice for the management of pain, infection, and postoperative care. Understanding prescribing patterns can help evaluate current clinical practice and support rational medication use.
Aim: To investigate medication prescribing patterns and identify the most frequently prescribed medications in a specialized dental center in Saudi Arabia.
Materials and Methods: A retrospective descriptive cross-sectional study was conducted using paper-based prescriptions issued by dentists over a three-month period. Data collected included patient demographics, dental specialty, diagnosis, prescribed medication, dose, frequency, and treatment duration. Descriptive statistics were performed using IBM SPSS Statistics version 26.
Results: A total of 438 medication prescriptions were reviewed. Age data were available for 276 patients, with a mean age of 28.6 ± 16.9 years. Females accounted for 57.0% of patients. Tooth extraction was the most common diagnosis (62.3%), followed by odontogenic infection and facial swelling (11.0%). Paracetamol was the most frequently prescribed medication (46.6%), followed by Augmentin (23.7%), ibuprofen (13.7%), and metronidazole (7.3%). Most medications were prescribed for short treatment periods ranging from 3 to 5 days.
Conclusion: Analgesics and antibiotics were the most commonly prescribed medications, with paracetamol and Augmentin being the predominant agents. Prescribing patterns reflected the high frequency of extraction-related procedures and infection-related dental conditions.

Keywords: Dental prescribing, analgesics, antibiotics, paracetamol, Augmentin, prescription patterns, Saudi Arabia.

INTRODUCTION

Pain is one of the most common reasons patients seek dental treatment (Jayadev *et al.*, 2014; Yu *et al.*, 2020). It may arise from a variety of odontogenic and non-odontogenic conditions, with pulpal diseases representing one of the most frequent causes of odontogenic pain (Yu *et al.*, 2020). Effective pain control is therefore an important aspect of dental care. In addition to local anesthetics and antibiotics when indicated, analgesics are widely used to manage pain during and after dental procedures (Guzmán-Álvarez *et al.*, 2012

The aim of this study was to investigate medication prescribing patterns and determine the most frequently prescribed medications in a specialized dental center in Saudi Arabia.

MATERIALS AND METHODS

Study Design and Setting

This retrospective descriptive cross sectional study was conducted at local pharmacy a specialized dental center in Saudi Arabia to evaluate medication prescribing patterns among dentists. The study was based on a review of paper-based prescriptions issued by dental practitioners over a three-month period.

Data Collection
All available paper-based prescriptions issued during the study period were reviewed. Data extracted from the prescriptions included patient demographics (age and gender), dental specialty, diagnosis, prescribed medication, dose, frequency of administration, and duration of treatment.

Prior to analysis, the collected data were reviewed and cleaned to ensure consistency. Variations in spelling and terminology were standardized, and similar diagnoses were grouped into common diagnostic categories. Medications with different brand names or formulations but containing the same active ingredient were merged under a single medication category whenever appropriate.

Study Variables
The variables included in the analysis were age, gender, dental specialty, diagnosis, prescribed medication, dose, frequency, and duration of treatment.

Dental specialty and diagnosis were analyzed at the clinical record level, whereas medication prescribing patterns were analyzed at the prescription level. Since multiple medications could be prescribed for a single diagnosis, the total number of medication prescriptions exceeded the number of clinical records.

Statistical Analysis
Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 26. Descriptive statistics were used to summarize the study findings. Continuous variables were presented as mean, standard deviation (SD), median, and range, while categorical variables were presented as frequencies and percentages.

RESULTS
A total of 438 medication prescriptions issued over a three-month period were reviewed. Age information was available for 276 patients, with a mean age of 28.6 ± 16.9 years and a median age of 27 years. Patient ages ranged from 2 to 79 years, and females represented a slightly higher proportion of the study population than males (Table 1).

Specialty and diagnosis information were available for 273 clinical records. The majority of cases were managed by the Oral and Maxillofacial Surgery (OMFS) department, followed by Endodontics and Pediatric Dentistry. The remaining cases were distributed among Prosthodontics, Restorative Dentistry, Orthodontics, Oral Medicine, and other specialties (Table 2).

Tooth extraction was the most frequently recorded diagnosis, accounting for more than half of all clinical records. Odontogenic infection and facial swelling, reversible pulpitis, and acute apical abscess were the next most common diagnoses. Other conditions, including myofascial pain, postoperative surgical cases, irreversible pulpitis or necrotic pulp, periodontitis, and gingivitis, were encountered less frequently (Table 3).

All 438 prescriptions were included in the medication analysis. Paracetamol was the most frequently prescribed medication, followed by Augmentin, Ibuprofen, and Metronidazole. Together, these medications accounted for the majority of prescriptions issued during the study period. Other medications, including Amoxicillin, Chlorhexidine, Diclofenac preparations, Baclofen, Meloxicam, Azithromycin, and Vitamin B complex, were prescribed less frequently (Table 4).

Analysis of prescribing characteristics demonstrated that most medications were prescribed for short treatment periods, typically ranging from 3 to 5 days. Paracetamol was commonly prescribed for pain management, whereas Augmentin and Metronidazole were frequently prescribed for the management of odontogenic infections and postoperative care. Overall, the prescribing pattern was dominated by analgesics and antibiotics, reflecting the high proportion of extraction-related procedures and infection-related diagnoses observed in the study population (Table 5).

Table 1. Demographic Characteristics of the Study Population

Variable	Value
Total medication prescriptions reviewed	438
Patients with age recorded, n	276
Mean age ± SD (years)	28.6 ± 16.9
Median age (years)	27
Age range (years)	2–79
Female, n (%)	155 (57.0)

Variable	Value
Male, n (%)	117 (43.0)
Total patients with gender recorded, n (%)	272 (100)

Table 2. Distribution of Cases by Dental Specialty (n = 273)

Department	n (%)
Oral and Maxillofacial Surgery (OMFS)	167 (61.2)
Endodontics	50 (18.3)
Pediatric Dentistry	44 (16.1)
Prosthodontics	4 (1.5)
Restorative Dentistry	3 (1.1)
Orthodontics	2 (0.7)
Oral Medicine	2 (0.7)
Other	1 (0.4)
Total	273 (100)

Table 3. Distribution of Diagnoses (n = 273)

Diagnosis	n (%)
Tooth Extraction	170 (62.3)
Odontogenic Infection and Facial Swelling	30 (11.0)
Reversible Pulpitis	23 (8.4)
Acute Apical Abscess	22 (8.1)
Myofascial Pain	9 (3.3)
Postoperative Surgery	7 (2.6)
Irreversible Pulpitis / Necrotic Pulp	6 (2.2)
Periodontitis	4 (1.5)
Gingivitis	2 (0.7)
Total	273 (100)

Table 4. Most Frequently Prescribed Medications (n = 438)

Medication	n (%)
Paracetamol	204 (46.6)
Augmentin	104 (23.7)
Ibuprofen	60 (13.7)
Metronidazole	32 (7.3)
Amoxicillin	15 (3.4)
Chlorhexidine	7 (1.6)
Diclofenac (oral)	5 (1.1)
Topical Diclofenac (Voltarine cream)	2 (0.5)
Baclofen	4 (0.9)
Meloxicam	2 (0.5)
Azithromycin	2 (0.5)
Vitamin B Complex	1 (0.2)
Total	438 (100)

Table 5. Prescription Characteristics of the Most Frequently Prescribed Medications

Medication	Most Common Dose	Most Common Frequency	Most Common Duration
Paracetamol	500 mg	TID	3 days
Augmentin	625 mg	TID	5 days
Ibuprofen	400 mg	TID	3 days
Metronidazole	500 mg	TID	5 days
Amoxicillin	500 mg	TID	5 days
Chlorhexidine	0.2% mouthwash	BID	5 days
Diclofenac	50 mg	BID	3 days
Baclofen	10 mg	OD	14 days

DISCUSSION

Non-opioid analgesics, particularly nonsteroidal anti-inflammatory drugs (NSAIDs), are commonly prescribed for the management of mild to moderate inflammatory pain (Mahdi and Ibrahim, 2023). Due to their analgesic and anti-

inflammatory properties, NSAIDs are frequently used by dental practitioners to relieve pain associated with dental infections, surgical procedures, and other dental conditions (Thornhill *et al.*, 2019; Mahdi and Ibrahim, 2023).

Antibiotics are commonly prescribed in dental practice for the treatment of odontogenic and non-odontogenic infections and for the prevention of local and focal oral infections (Ramu and Padmanabhan, 2012). Their use may be associated with adverse effects, including gastrointestinal disturbances, allergic reactions, anaphylaxis, and the development of antimicrobial resistance (Köhler *et al.*, 2013). Inappropriate prescribing practices, such as unnecessary use, prolonged treatment duration, and excessive dosing, have been reported in several countries (Köhler *et al.*, 2013).

Antibiotics remain among the most frequently prescribed medications in healthcare. The antibiotic era began with the discovery of penicillin by Fleming in the mid-twentieth century, which revolutionized the treatment of bacterial infections (Morcillo, Cortijo and Villagrasa, 1996). In dentistry, bacterial infections are commonly encountered, making antibiotics an essential component of patient care. However, excessive antibiotic use has been linked to increasing rates of antimicrobial resistance, particularly in countries with high antibiotic consumption (Goossens *et al.*, 2005).

The choice of antibiotic in dental practice depends on several factors, including the type of infection, the causative microorganisms, and host-related factors (Holmes and Pellecchia, 2016; Ogle, 2017). Antibiotics are prescribed for both therapeutic and prophylactic purposes (Ramu and Padmanabhan, 2012). Previous studies have shown that amoxicillin and amoxicillin/clavulanic acid are among the antibiotics most frequently prescribed by dental practitioners worldwide (Al-Rashdi *et al.*, 2020; Mainjot *et al.*, 2009; Perić *et al.*, 2015; Bjelovucic *et al.*, 2019; Alzahrani *et al.*, 2020; Germack *et al.*, 2017). One study reported that amoxicillin was the preferred antibiotic for 73.8% of orofacial infections, although adherence to prescribing guidelines varied considerably (Al-Johani *et al.*, 2017).

The findings of the present study are generally consistent with those reported by Al-Rashdi *et al.* (2020), who evaluated prescribing practices among 400 dental patients attending a Dental and Maxillofacial Surgery clinic in Oman. In both studies, analgesics and antibiotics were among the most commonly prescribed medications. Paracetamol was the most frequently prescribed analgesic, accounting for 46.6% of all prescriptions in the present study compared with 31.0% in the Omani study. Similarly, ibuprofen accounted for 13.7% of prescriptions in the current study and 8.6% in the study by Al-Rashdi *et al.* (2020). Regarding antibiotics, Augmentin was the most frequently prescribed antibiotic in the present study (23.7%), followed by metronidazole (7.3%) and amoxicillin (3.4%). Likewise, amoxicillin/clavulanic acid was the most commonly prescribed antibiotic in the Omani study.

A similar prescribing pattern was reported by Al-Lawati *et al.* (2026), who analyzed 401 antibiotic prescriptions issued by dentists in Muscat, Oman. Their study found that pulpitis was the most common diagnosis associated with antibiotic prescribing (28.4%), followed by periapical abscesses (20.7%) and pericoronitis (5.7%). In the present study, infection-related conditions also represented a substantial proportion of diagnoses, including odontogenic infection and facial swelling (11.0%), acute apical abscesses (8.1%), reversible pulpitis (8.4%), and irreversible pulpitis/necrotic pulp (2.2%). Together, these conditions accounted for almost one-third of all diagnoses.

Comparable findings were reported by Almutairi *et al.* (2024), who analyzed 38,175 antibiotic prescriptions in Saudi Arabia, including 2,997 prescriptions issued by dentists. The authors found that Augmentin accounted for 60% of all dental antibiotic prescriptions, followed by metronidazole and amoxicillin (35%). Similarly, Augmentin was the most frequently prescribed antibiotic in the present study (23.7%), followed by metronidazole (7.3%) and amoxicillin (3.4%).

The present findings are also consistent with those reported by Altalhi *et al.* (2025), who surveyed 80 dentists in Taif, Saudi Arabia, regarding analgesic prescribing following endodontic treatment. The authors reported that 96.3% of dentists routinely prescribed analgesics, with NSAIDs being the preferred class of medication and ibuprofen being the most commonly prescribed NSAID (74.0%). Similarly, analgesics represented the largest group of medications prescribed in the present study, with paracetamol accounting for 46.6% of all prescriptions and ibuprofen accounting for 13.7%.

CONCLUSION

Among the 273 diagnoses reviewed, tooth extraction was the most common diagnosis (62.3%), followed by odontogenic infection and facial swelling (11.0%) and acute apical abscess (8.1%). Consistent with these findings, analgesics were the most frequently prescribed medications, with paracetamol accounting for 46.6% of all prescriptions and ibuprofen for 13.7%, highlighting the importance of pain management in dental practice. Antibiotic prescribing was mainly associated with infection-related conditions, with Augmentin being the most commonly prescribed antibiotic (23.7%), followed by metronidazole (7.3%) and amoxicillin (3.4%).

The results suggest that medication prescribing in the studied dental center was primarily driven by postoperative pain control and the management of odontogenic infections. The predominance of amoxicillin-based antibiotics is consistent with current dental prescribing trends and supports their continued role in the treatment of dental infections. Regular

evaluation of prescribing practices and adherence to evidence-based guidelines remain important to ensure appropriate medication use and support antimicrobial stewardship efforts in dental care.

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