Drug Prescribing Practices in Dental Care Patients at a Dental and Maxillofacial Surgery Clinic in Oman

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ABSTRACT

Objectives: We sought to assess medications prescribed to patients attending the Dental and Maxillofacial Surgery (DMS) clinic at Sultan Qaboos University Hospital (SQUH), Oman. Methods: This was a retrospective cross-sectional study covering a six-month period from January to June 2018 including a sample of patients attending the DMS clinic. Drug utilization data like drug name, type, administration route, dosage frequency, and anatomical and therapeutic class were assessed. Results: The study included 400 patients, of which 190 (47.5%) were males and 210 (52.5%) were females. A total of 88 different drugs were prescribed. Only 140 (35.0%) patients were prescribed drugs for their dental conditions or other comorbidities per visit, and the rest 260 (65.0%) were not prescribed any drugs. The dentists prescribed drugs only in 116 (29.0%) patients. The most common diagnosis was dental caries (n = 177, 44.3%) followed by chronic gingivitis (n = 15, 3.8%). The most common comorbidities in patients were anemia (n = 45, 11.3%) and diabetes (n = 21, 5.3%). The most common drugs prescribed were chlorhexidine mouthwash (n = 43, 37.1%) and paracetamol (n = 36, 31.0%) followed by ibuprofen (n = 10, 8.6%) and amoxicillin/clavulanate (n = 5, 4.3%). Conclusions: Drugs prescribing pattern was within the international norms. Sixty-five percent of the patients were not prescribed any drug by the dentist. Oral antiseptics, analgesics, and antibiotics were the most common drugs prescribed by dentists.

D rug prescribing practices require continuous updates in knowledge that can be achieved by adopting drug utilization research. This will help in the rational use of drugs, thus avoiding the over-, under-, or misuse of drugs.

Drug treatment is part of the care of dental patients. Studies have indicated that one-fourth of routine dental care patients receive prescription drugs.[1] Dentists most commonly prescribe drugs to reduce pain and/or combat infection.

Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed in various dental emergencies and following dental surgical procedures to control pain and reduce edema of the oral tissues. NSAIDs are drugs with high efficacy and safety profile if used appropriately. Inappropriate use of these drugs can lead to adverse effects, including increased risk of bleeding from the gastrointestinal tract.

Dentists prescribe antibiotics for the treatment of odontogenic and non-odontogenic infections and preventing focal and local oral infections.[2] The use of antibiotics is sometimes associated with adverse events, including gastrointestinal disturbances, anaphylactic shock, and development of resistance. In some countries, many dentists prescribe antibiotics unnecessarily, for too long, and/or at excessive doses.[3]

There is a strong need for evidence-based guidelines for drug prescribing in dental practice that take into account the specific characteristics of the community. To the best of our knowledge, no studies have been conducted in Oman about drug prescribing patterns in dental patients. This study aimed to describe the medications prescribed to patients attending the Dental and Maxillofacial Surgery (DMS) clinic at Sultan Qaboos University Hospital (SQUH), a tertiary care medical and educational institution in Oman.

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Table 1: Demographic data of study patients (n = 400).

Variables	Male, n (%)	Female, n (%)	Total, n (%)
Age group, years			
< 12	67 (35.3)	49 (23.3)	116 (29.0)
≥12	123 (64.7)	161 (76.7)	284 (71.0)
Total	190 (100)	210 (100)	400 (100)

METHODS

This was a retrospective cross-sectional study covering a six-month period in 2018 (January–June) of patients who attended the DMS clinic at SQUH. DMS consists of seven clinics: emergency, pediatrics, oral and maxillofacial surgery, special needs, orthodontics, prosthodontics, and restorative. The study focused only on the former four clinics because these clinics are expected to prescribe more drugs than the other clinics.

A sample of 400 patients who visited the DMS clinic during the study period were selected randomly for inclusion in the study. Patients' demographic data and drug utilization data (drug name/type, route of administration, dosage, frequency, and anatomical and therapeutic class (ATC)) were collected from the SQUH electronic medical record system.

The study was approved by the Medical Research Ethics Committee at the College of Medicine and Health Sciences, Oman.

RESULTS

A total of 88 drugs were prescribed for 400 patients, out of which 190 (47.5%) were males and 210 (52.5%) were females. The majority of patients were in ≥ 12 years (284, 71.0%) age group followed by the < 12 years (n = 116, 29.0%) [Table 1]. Twelve-years old was used as a cut-off between pediatric and adult patients.

The most common diagnoses were: dental caries (n = 177, 44.3%), screening for dental disorders (n = 21, 5.3%), chronic gingivitis (n = 15, 3.8%), and pulpitis (n = 13, 3.3%) [Table 2]. The most common comorbidities in the 400 patients were anemia (n = 45, 11.3%) and diabetes (n = 21, 5.3%) followed by chronic gingivitis (n = 16, 4.0%), and hereditary factor VIII deficiency (n = 12, 3.0%) [Table 3].

Among the 400 randomly selected patients, 260 (65.0%) did not receive any drug and only 140

Table 2: Common dental diagnoses among study patients (n = 400).

Diagnosis	Frequency, n	Percentage, %
Dental caries	177	44.3
Screening for dental disorders	21	5.3
Chronic gingivitis	15	3.8
Pulpitis	13	3.3
Post-surgical follow up	13	3.3
Partial loss of teeth	8	2.0
Impacted teeth	8	2.0
Temporomandibular joint disorder	8	2.0
Dental examination and cleaning	7	1.8
Others	130	32.5

(35.0%) were prescribed drugs. Out of 140 patients who received drugs, only 116 (82.9%) received drugs by a dentist's prescription. The rest of the patients (n = 24, 17.1%) received drugs by other doctors' prescriptions for their comorbidities.

A total of 88 different drugs were prescribed for the patients. The most frequent drugs per prescription were chlorhexidine (n = 43, 37.1%) and paracetamol (n = 36, 31.0%) followed by ibuprofen (n = 10, 8.6%), and amoxicillin/clavulanate (n = 5, 4.3%) [Table 4].

As per the ATC classification, the most common anatomical classes were: alimentary tract and metabolism (n = 48, 41.4%), nervous system (n = 37, 31.9%), and musculoskeletal system (n = 14, 12.1%) [Table 5]. The most common therapeutic classes were: anti-infectives and antiseptics for local oral treatment

Table 3: Common comorbidities among the study patients (n = 400).

Comorbidity	Frequency, n	Percentage, %
Anemia	45	11.3
Diabetes	21	5.3
Chronic gingivitis	16	4.0
Hereditary factor VIII deficiency	12	3.0
Asthma	7	1.8
Malignant neoplasm of breast	7	1.8
Chronic ischemic heart disease	5	1.3
Acute lymphoblastic leukemia	5	1.3
Chronic periodontitis	4	1.0
Others	121	30.3

Table 4: Drugs prescribed to the study patients (n = 116).

Drug name	Frequency, n	Percentage, %
Chlorhexidine	43	37.1
Paracetamol	36	31.0
Ibuprofen	10	8.6
Amoxicillin/ clavulanate	5	4.3
Diclofenac	2	1.7
Mefenamic acid	2	1.7
Others	18	15.5

Table 5: Common ATC drugs prescribed to the study patients (n = 116).

Common prescription	Frequency, n	Percentage, %
Anatomical class		
Alimentary tract and metabolism	48	41.4
Nervous system	37	31.9
Musculoskeletal system	14	12.1
Anti-infectives for systemic use	6	5.2
Others	11	9.5
Therapeutic Class		
Anti-infectives and antiseptics for local oral treatment	43	37.1
Analgesics	36	31.0
Reducing hormones that reduce inflammation and pain (NSAID)	10	8.6
Antibiotics	6	5.2
Anti-inflammatory and anti-rheumatic products	4	3.4
Others	17	14.7

ATC: anatomical and therapeutic class; NSAID: non-steroidal anti-inflammatory drug.

(n = 43, 37.1%), analgesics (n = 36, 31.0%), and reducing hormones that treat inflammation and pain (NSAIDs) (n = 10, 8.6%) [Table 5].

Furthermore, for drugs that were prescribed by doctors other than the dentist for comorbidities, the study found that the most common anatomical classes were blood and blood-forming organs (n = 8, 33.3%) followed by anti-neoplastic and immunomodulating agents (n = 3, 12.5%) [Table 6]. Whereas, the most common therapeutic classes were anti-hemorrhagic (n = 6, 25.0%) and anti-anemic (n = 3, 12.5%) [Table 6].

Table 6: Common ATC of drugs prescribed by medical doctors for the study patients (n = 24).

Common prescription	Frequency, n	Percentage, %
Anatomical class		
Blood and blood-forming organs	8	33.3
Anti-neoplastic and immunomodulating agents	3	12.5
Others	13	54.2
Therapeutic class		
Anti-hemorrhagic	6	25.0
Anti-anemic	3	12.5
Others	15	62.5

ATC: anatomical and therapeutic class.

DISCUSSION

This study revealed that 260 (65.0%) of the patients were not prescribed any drugs by their dentist. This is in line, or even better, with some international dental practices. A study by Carter et al,[4] showed that about 53% of patients attending general dental practice in England were not prescribed any drugs in 2005.

The most frequently prescribed drugs in this study were chlorhexidine mouthwash, paracetamol, ibuprofen, and amoxicillin/clavulanate, respectively. These results are similar to those obtained from studies from other parts of the world, which showed that analgesics and antibiotics were the most commonly prescribed drugs by the dental team.[5]

Amoxicillin/clavulanate was the most frequently prescribed antibiotic in our study, which is similar to a study of antibiotic prescribing in dental practice in Belgium[6] and a study conducted in Croatia that showed 60.0% of doctors prescribed amoxicillin/clavulanic acid.[7] Furthermore, a study of therapeutic antibiotic prescribing in National Health Service general dental practice in England revealed that the most frequently prescribed antibiotic was amoxicillin.[8] In Scotland, it was recorded that 17 types of antibiotics were prescribed by general dental practitioners, in which amoxicillin accounted for 1743 prescriptions and amoxycillin, metronidazole, and penicillin V accounting for almost 90% of the prescriptions.[9]

Unlike a study conducted in Merseyside, UK, in which over 80% of patients came to the dental clinic with a localized dental infection or dental abscess,[10] our study showed that most patients

(44.3%) who attended to the clinic were diagnosed with dental caries. In contrast, periodontal and gum diseases were the commonest diagnoses for patients attended a dental clinic in Nigeria (68.1%).[11] This difference in the pattern of diseases presenting to the dental clinic is reflected in the percentage and type of specific drugs prescribed to these patients in different studies.

The most common anatomical class of prescribed drugs in our study was alimentary tract and metabolism. A study conducted in the UK showed that cardiovascular system drugs were the commonest class of drugs seen in dental patients.[4] Among the 400 patients, those who needed analgesics were commonly prescribed paracetamol. Unlike our result, a study in Kuwait showed that the most common analgesic prescribed was diclofenac.[12]

Currently, there are no standard treatment guidelines in Oman related to the use of antibiotics in dental patients. This study and other similar local studies would pave the way for standardized treatment guidelines.

CONCLUSION

The drug prescribing pattern in the DMS clinic at SQUH was within the international norms. Sixty-five percent of the patients were not prescribed any drug by the dental team. Oral antiseptics, analgesics, and antibiotics were the most common drugs prescribed by dentists.

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