ORIGINAL ARTICLE

Antibiotic Prescription Practice of Dental Practitioners in a Public Sector Institute of Karachi

Sohail Saadat, Sidra Mohiuddin, Ambrina Qureshi

ABSTRACT

There are very few conditions in dentistry in which systemic antibiotics are indicated, as majority of dental diseases are managed by oral hygiene measures and local interventions. In contrast to it, inadequate antibiotic prescription practice of dentists is evident in literature. The objective of the study was to assess the antibiotic prescription practice of dentists employed in a public sector teaching institute of Karachi. It was a cross sectional study.

Subjects and Methods: A cohort of dentists working in a public sector dental institute of Karachi was included in the study. A self-administered semi-structured validated questionnaire was utilized for assessing the antibiotic prescription practice. The data was entered and analyzed using statistical package for social science [SPSS] version 16.0.

Results: The questionnaire was distributed to 110 dentists and 89 filled questionnaires were received back from the respondents, thus giving a response rate of 81%. Amoxicillin was the antibiotic of choice among 43.3%, Amoxicillin Clavulinate in 34% and Metronidazole in 11.3% of surveyed dentists for the treatment of acute dental infections in patients without any known allergy; whereas Erythromycin (22.5%), Cephalaxin (23.6%) and Clindamycin (30.30%) was preferred for patients allergic to penicillin. Majority of respondents prescribe antibiotics for cellulitis (85.39%), pericronitis (75.20%), acute necrotizing ulcerative gingivitis (70.70%), periodontal abscess (65.10%), acute pulpitis (53.90%), chronic periodontitis (41.50%), chronic marginal gingivitis (24.70%) and dry socket (17.90%).

Conclusion: This study demonstrates that majority of respondents prescribe antibiotics routinely, even for conditions where local management would be enough and highlighted that there is a need of developing guidelines by regulatory bodies based on available literature to regulate appropriate use of antibiotics.

Key words: Antibiotics, Prescription practice, Dentists.

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INTRODUCTION

Limited indications are available for the use of systemic antibiotics in dentistry. Most of the oral conditions are mainly inflammatory associated with pain due to infection originating from dental pulp. This requires operative intervention, rather than antibiotics.[1,2] Inappropriate use of antibiotics is said to develop bacterial resistance that is becoming a major issue in the present epoch. Amongst the major resistant bacteria, few of the bacterial species are resistant to almost all the antibiotics currently available, such as Methicillin Resistant Staphylococcus Aureus (MRSA) being the most frequent example of extensive resistance.[3]

The problem of resistance development in recent years is might be due to dentists' practice towards the prescription of broad spectrum regimen instead of selective antibiotics.[4] Even though the orofacial infections can be effectively managed through operative intervention and oral hygiene measures, antibiotic prescription practice for the treatment of several oro-facial infections is prevalent around the globe and Pakistan is no exception.[5-9] A study has highlighted an increase in antibiotic prescriptions by Pakistani dentists during the past few years which may also have contributed in development of bacterial resistance.[10]

According to National Centre for Disease Control and Prevention it is estimated that around one-third of the out-patient antimicrobial prescriptions are

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inappropriate.[11] Unnecessary and excessive use of antibiotics may lead to other adverse effects than the one mentioned earlier, such as gastrointestinal disorder, fatal anaphylactic shock and other severe complications.[1,12,13] This calls for the investigation that identifies the conditions for which unnecessary antibiotics are prescribed by the dentists which can be managed through operative procedures. Therefore, the purpose of this study was to describe the antibiotic prescription practices among dentists employed in a public sector dental institute of Karachi.

METHODOLOGY

This was a cross sectional observational study conducted in a public sector tertiary care dental institute of Karachi. Convenient cluster sampling was done and all dentists employed in institute were included in the study. A self administered validated semi structured questionnaire to assess the antibiotic prescribing patterns among dental practitioners in Klang Valley Region[14] was utilized in this study and first three sections were used. The questionnaire composed of both open and close ended questions. The demographic information regarding gender, principle work role, working experience and being general or specialized dentist was sought first.

The second section of the questionnaire was composed of a table to record: first choice of antibiotic for treatment of acute dental infection in adult patients without any known allergy and with allergy to penicillin, for therapeutic purpose including (antibiotic type, dosage, daily frequency and for how many days).

Third section contained questions regarding therapeutic antibiotic prescriptions for various clinical dental conditions including: acute pulpitis, API (acute periapical infection) before draining, API after draining, chronic apical infection, pericronitis, acute necrotizing ulcerative gingivitis (ANUG), chronic marginal gingivitis, chronic periodontitis, dry socket, cellulitis, dental Implant placement and acute periodontal abscess.

Data Entry and analysis was done in Statistical Package for Social Sciences (SPSS) version 16.0 and descriptive statistics were generated.

RESULTS

The questionnaire was distributed to 110 dental surgeons and 89 filled questionnaires were received back from the respondents, thus giving a response rate of 81%. The respondents consisted of 29 males and 60 female dentists. Out of the total respondents, 59 were working in dental clinics and remaining 30 were lecturers. Forty four respondents had more than five year working experience and 18 were specialized dentists.

Figure 1: Antibiotic of choice for acute dental conditions in patients without any known allergy.

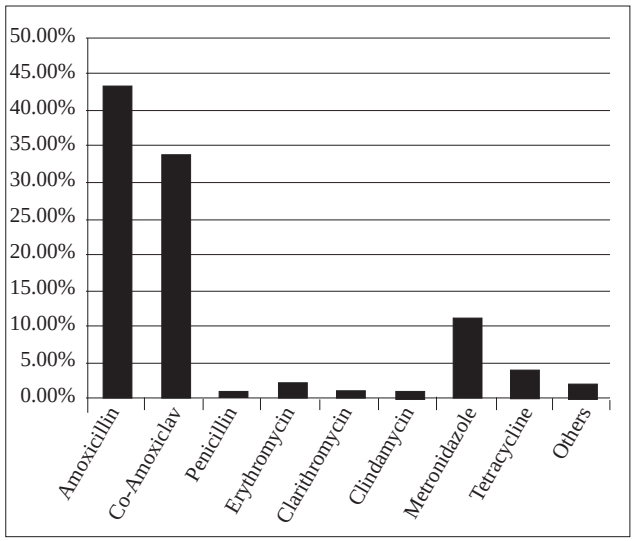


Figure 1 represents the choice of antibiotic used by surveyed dentists in routine for acute dental infections for adult patients without any known allergy. According to this, Amoxicillin is considered as the antibiotic of first choice followed by Amoxicliin Clavulinate and Metronidazole. The dosage of amoxicillin used is 500 mg 3 times daily for 3 days.

Figure 2: Antibiotic of choice for management of acute dental infection for patients with known allergy to penicillin

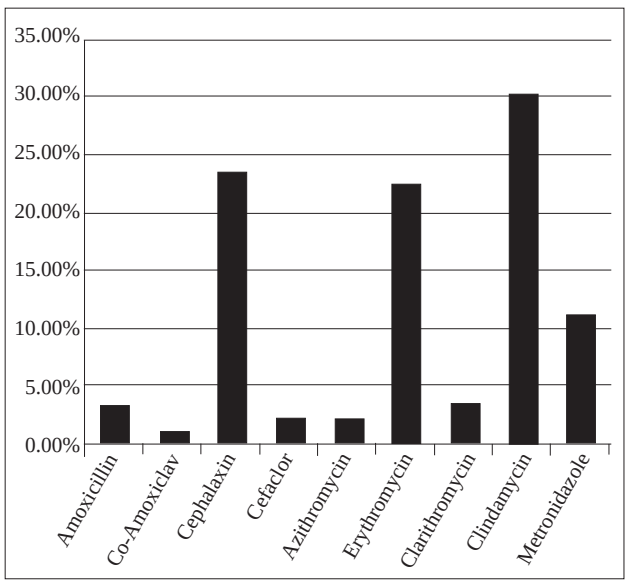


Figure 2 shows Clindamycin is the first choice of antibiotic followed by Cephalaxin and Erythromycin for managing acute dental infection for patients allergic to penicillin. The dosage of Clindamycin was 450mg twice or thrice a day for 5 days.

Figure 3: Antibiotic prescription for specific oral conditions

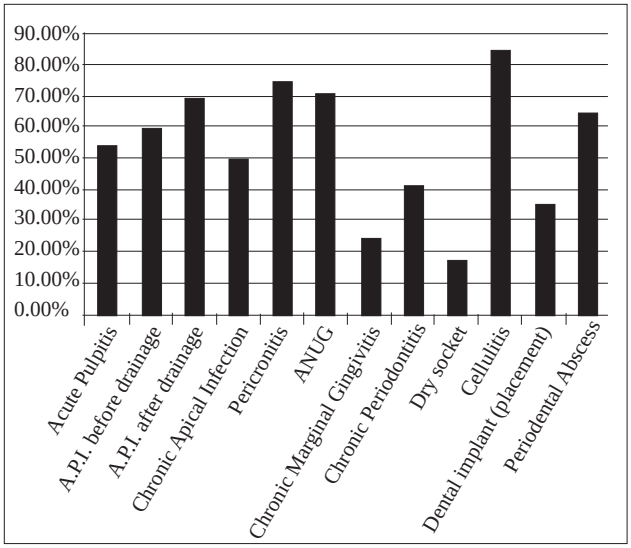


Figure 3 shows majority of respondents prescribe antibiotics for almost all specific oral conditions. Whereas; dentists' choice of antibiotics for these oral conditions for patients without any known allergy and medically fit are shown in Figure 4, where most commonly prescribed antibiotics are amoxicillin, metronidazole and a combination of both.

DISCUSSION

Study participants belonged to a public sector tertiary care dental institute that represents a wide range of dentists of region, with varying clinical and teaching experience. Amoxicillin is found to be the most preferred antibiotic in an acute dental infection for adult patients without any known allergy. Although amoxicillin or amoxicillin clavulinate are suggested for treatment of dental infection in some studies.[15,16]

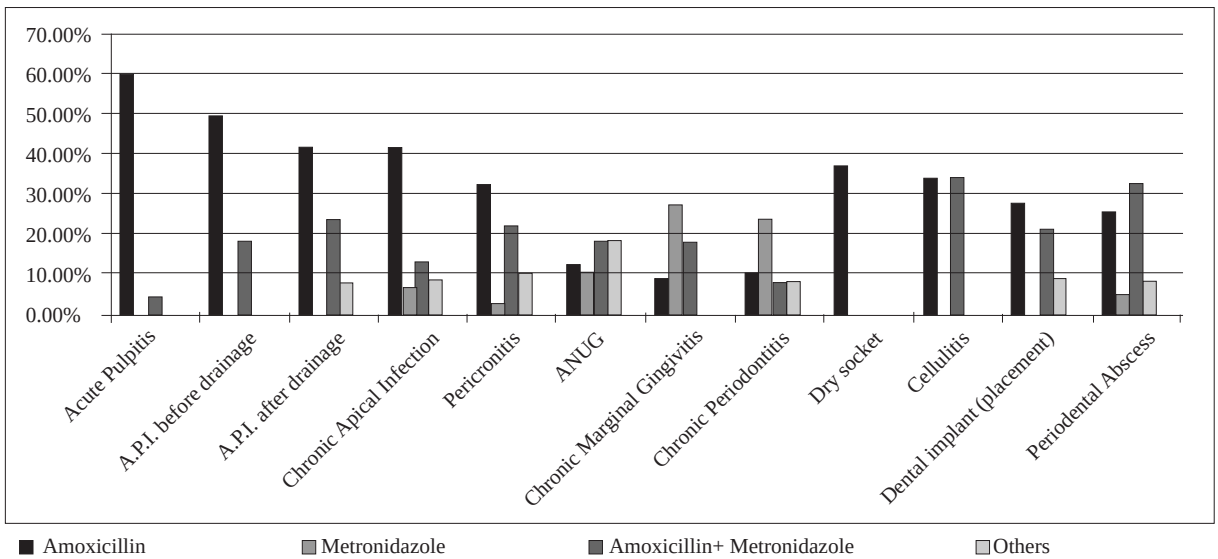
Comparing with other parts of the world, Dental practitioners in England and Australia also prescribe amoxicillin but there was a trend towards lesser dosage over a longer duration.[17,18]

The choices of antibiotic for management of acute dentoalveolar infection in patients with known allergy to penicillin in present study are clindamcin, cephalaxin and erythromycin. A study suggested that erythromycins' extensive use in different parts of the world may be linked to its recommendation in earlier literatures and its economy. However, there were 3.4% dentists in present study who prescribed amoxicillin for patients with known allergy to penicillin, and this practice is not indicated to prevent anaphylaxis and hypersensitivity reactions.[19]

Antibiotic therapy is required in some clinical conditions where oral infection is associated with raised body temperature and signs of systemic spread like lymphatic involvement and limited mouth opening.[20] A serious condition in which antibiotic therapy should be given is facial cellulitis which may or may not be associated with dysphagia. Periodontal abscess, acute necrotizing ulcerative gingivitis, and pericoronitis are few of the localized oral lesions requiring antibiotic use as an adjunct therapy along with the local management.[21]

The management of acute pulpitis includes local interventions like pulp capping, endodontic treatment or extraction. Use of antibiotics for management of acute pulpitis is not supported by any evidence in literature.[1,22,23] Around 60% of the surveyed dental surgeons prescribe antibiotics for acute periapical infection (API) before drainage and 70% after drainage was done. Although there is no added benefit of systemic antibiotic use in management of API until there is systemic involvement like fever, cellulitis or lymphadenopathy. Most of the uncomplicated swellings are best managed by drainage of an infection.[24,25]

Figure 4: Choice of antibiotics for specific oral conditions



A considerable amount of respondents routinely prescribe antibiotics for chronic periodontitis, chronic marginal gingivitis and dry socket although these oral conditions can efficiently be managed by local interventions as systemic antibiotics have no additional benefit on these conditions.[1] There is a controversy regarding antibiotic use in implant dentistry however, in this present study 36% of respondents preferred prescribing antibiotics for dental implant placement.[26]

Amoxicillin and metronidazole are very commonly preferred by many of the surveyed dentists. However, use of these two drugs in combination results in depression of the normal host flora due to broad-spectrum exposure. Therefore, this combination should be avoided whenever possible because it increases the opportunity for resistant bacteria to merge. For routine infections the disadvantages of this therapy overshadow the advantages.[27,28]

Whatever few studies have been conducted in Pakistan on antibiotic prescriptions, irrational and over prescribing of antibiotics is evident in these studies both in public and private sector.[10,29-31] This practice is found similar to studies from other developing countries owing to multiple factors such as patients demand, delaying treatment, mal-diagnosis, and lack of updated and appropriate knowledge of dentists.[8-10,32] One most important reason suggested may be the absence of antibiotic prescribing guidelines in the region by regulatory bodies. Availability of guidelines helps in regulating and monitoring standard care, minimizing irrational use of antibiotics, hence preventing development of resistance. Moreover, there is no legal requirement to undergo “continuing dental education” for updating the knowledge of registered dentists.

CONCLUSION

Results of this study demonstrate that majority of the surveyed dentists prescribe antibiotics for many oral conditions where local management would be sufficient and antibiotics are not needed. It is also highlighted that there is a need of developing guidelines regarding antibiotic prescription by the regulatory bodies based on available literature to prevent resistance development and regulating appropriate use of antibiotics.

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