

Are Dentists Prescribing the Antibiotics in Justified Conditions? An Exploratory Study



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OBJECTIVE: Antibiotic prescription is a common practice among dental practitioners. Unjustified antibiotic prescription is leading to antibiotic resistance. The purpose of this survey is to analyze the most commonly prescribed antibiotics, conditions in which antibiotics are being prescribed, either the dental surgeons prescribe the antibiotics in the conditions where they are not recommended and awareness of antibiotic resistance among the dental practitioners of Lahore.

METHODOLOGY: The study aimed to identify the prevalence of unjustified prescription of antibiotics so we can take measures to teach dental students about this wrong and unjustified prescription in undergraduate studies. It was an observational cross-sectional study. Among dental practitioners of Lahore, 380 were selected through a non-probability convenience sampling technique. Standardized; a previously validated questionnaire was used containing 18 questions, about the most commonly prescribed antibiotics, conditions where antibiotics are indicated, and antibiotic resistance. Data was coded in SPSS version 20.

RESULTS: It showed the studied sample of dental practitioners tends towards the over-prescription of antibiotics.

CONCLUSION: Dentists should prescribe antibiotics only according to the latest guidelines, where it is indicated. It should not be a first-line treatment modality.

KEYWORDS: antibiotic resistance awareness, unjustified antibiotic prescription

HOW TO CITE: Liaquat A, Jaffary MF, Usman M, Tayyab TF, Saeed T, Naheed A . Are dentists prescribing the antibiotics in justified conditions? an exploratory study. J Pak Dent Assoc 2020;29(3):120-123.

DOI: <https://doi.org/10.25301/JPDA.293.120>

Received: 15 December 2019, Accepted: 28 April 2020

INTRODUCTION

Most human orofacial infections originate from odontogenic infections and prescribing antibiotics has become a ubiquitous phenomenon.¹⁻⁵ Antibiotic prescription is a common practice among dental practitioners. This is leading to antibiotic resistance in our population and other health issues related to the over-prescription of antibiotics.⁶⁻⁸ The World Health

Organization (WHO) has recognized the inappropriate, indiscriminate, and irrational use of antibiotics leading to antibiotic resistance as a global problem.^{2,5,7,8}

Antibiotics have emerged as a boon to humanity and this advancement has led to a better quality of life along with an overall reduction in morbidity and mortality. These are chemical substances that are capable of destroying and inhibiting the growth of specific microorganisms, such as infectious bacteria and fungi. Dental infections are polymicrobial in nature. The majority of orofacial infections require both systemic and local management.⁹⁻¹² Systemic management is mostly by antibiotics, and hence, these antibiotics are pharmacotherapeutic adjuncts prescribed by dentists.¹⁻¹³⁻¹⁵

Inappropriate, indiscriminate, and irrational use of antibiotics has led to the development of antibiotic resistance. Even more alarming is the rate at which bacteria develop resistance.¹⁶⁻¹⁸ Microorganisms exhibiting resistance to new

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drugs often are isolated soon after the drugs have been introduced. The main reason behind antibiotic resistance is due to over-prescription by the health-care personnel, improper use by patients, and also due to the resistance developed by the bacteria.^{2-4,19-20} There is a significant relationship between the increase of antibiotic resistance and utilization, with higher resistance levels in bacteria isolated from areas of high antibiotic utilization.^{1,3} Dentists prescribe between 7% and 11% of all common antibiotics.⁵ As per the National Center for Disease Control and Prevention, approximately one-third of all outpatient antibiotic prescriptions are unnecessary.⁵ Dentistry's contribution to antibiotic resistance is unknown. With increasing prescription of antibiotics and bacterial resistance, newer drug combinations are being introduced. Hence, keeping in the mind trend of prescribing practices in dentistry, it is required to assess the knowledge and practice among dental practitioners.^{1,3,5} Limited studies have assessed the antibiotic prescription pattern and knowledge regarding the development of resistance among dentists in India. Hence, the study was conducted with the objective to assess dental practitioner's knowledge and practices regarding antibiotic prescription and development of resistance.⁷⁻¹⁰

Antimicrobial resistance has been identified as one of the greatest threats to future human health with an increasing number of resistant microbial strains reported each year across both human and animal populations in developed and developing countries.^{21,22} Policymakers, health organizations, and research institutes have called for tighter control over their distribution and use in society^{5,6} with an emphasis on front-line antibiotic prescribers and dispensers⁷ While efforts have been sustained over many years to promote the 'rational use of drugs', for example through the WHO's International Network on the Rational Use of Drugs program (INRUD), the scale of antibiotic use appears to be escalating.¹⁵⁻¹⁷

An increase in antibiotic resistance (ABR) worldwide, specifically in developing countries, necessitates the need to pay attention to antibiotics prescription and knowledge and awareness of Antibiotic Resistance among dental practitioners.¹⁻² In May 2015, the World Health Assembly reached an agreement to tackle the menace of Antibiotic Resistance globally, and the first objective was to increase Antibiotic Resistance awareness and understanding.³ Antibiotics are medicines formulated for treatment or prevention of bacterial infections, administered to patients based on the prescription of certified health care professionals. In developing countries, antibiotics can be readily purchased without any control; such countries usually experience more cases of antibiotic resistance, in contrast to what occurs in western nations where tight regulations of antibiotic use are in place.⁴⁻⁷

METHODOLOGY

An observation study that followed a cross-sectional study design was conducted. Among dental practitioners of Lahore, 380 were selected through a non-probability convenience sampling technique. The sample size was determined using this formula.³

$$\text{Sample Size} = \frac{Z_{1-\alpha} / 2^2 SD^2}{d^2}$$

standardized, previously validated questionnaire was used containing 18 questions, about the most commonly prescribed antibiotic, conditions where antibiotics are indicated and antibiotic resistance. The questionnaire was used in English as such. Data was coded in SPSS version 20.

RESULTS

Majority dentists are prescribing antibiotics in conditions where they are not needed. Amoxicillin is commonly prescribed Antibiotic. Most dentists prefer prescribing antibiotics for 3 days. Awareness about antibiotic resistance is adequate. A considerable group of the dentist is not aware of guidelines regarding antibiotics prescription.

Table-1 shows that dentists are prescribing antibiotics in conditions where they are not indicated at all. In general,

Table 1: Conditions in which antibiotics are prescribed (N=380)

Conditions	Dentists prescribe the antibiotics	
	Yes	No
Localized intra-oral swelling	79.74%	20.26%
Pericoronitis	73.95%	26.05%
Simple extraction	62.63%	37.37%
Apical periodontitis	67.89%	32.11%
Dry socket	28.16%	71.84%
Reversible pulpitis	62.89%	37.11%
Irreversible pulpitis	62.63%	37.37%

more than 60% of dentists are prescribing antibiotics in conditions where they have no role.

According to the figure-1, the most commonly prescribed antibiotic is co-amoxiclav, which is a second-line drug. Whereas first-line drugs, amoxicillin is only 20.25% prescribed. The results indicate inappropriate practice among dental practitioners.

Most dentists are aware of the causes of antibiotic resistance and they claim that they take a proper history

Figure 1: Most commonly prescribed antibiotics (N=380)

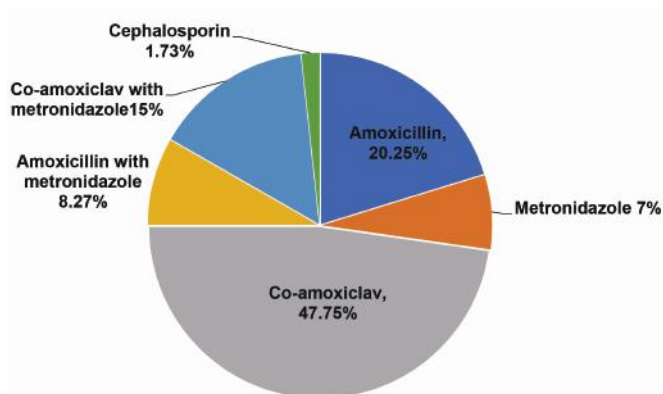
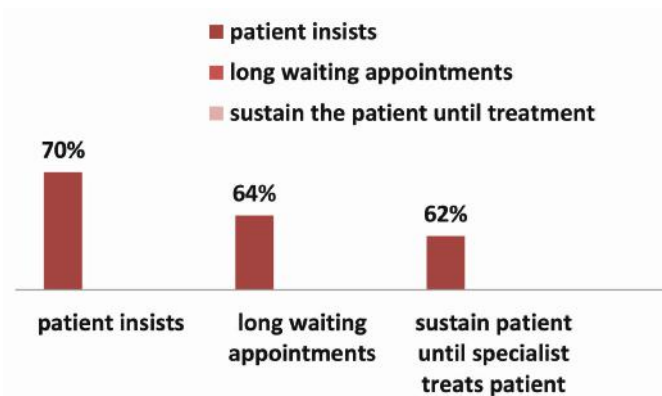


Table 2: Antibiotics resistance and its factors (N=360)

No.	Questions	YES	NO
1	Are you aware of the term "Antibiotic resistance"	74.47%	25.53%
2	Do you know Self-medication cause drug resistance	58.16%	41.84%
3	Do you take history about antibiotics used by the patient in past 1 week before prescribing antibiotics	54.47%	45.53%
4	Do you advise your patients to adhere to dose regimen	64.47%	35.53%

Figure 2: Reasons for antibiotics prescription



about the last course of antibiotics and also advise patients to adhere to antibiotic dose regimen.

Dentists claim that the most common reason for antibiotic prescription patient's insistence and more than 60% of dentists claim that they prescribe antibiotics due to long waiting appointments and to sustain the patient until specialist treats the patient.

DISCUSSION

In our study most commonly prescribe antibiotic was Co-amoxiclav (47.75%). In a study conducted by

Sapna Konde et al. in India in the sample of 100 BDS and 100 MDS, amoxicillin was the most commonly prescribed antibiotic, 86% of BDS and 70% of MDS prescribe Amoxicillin.⁵ Co-amoxiclav is a second line Antibiotic according to the current guidelines⁷⁻⁹, a large number of dentists are prescribing it in Lahore.

Salako et al. conducted a study in Kuwait in a sample of 200 dental practitioners which shows 78.57% of dentists are prescribing antibiotics in conditions like a dry socket, pericoronitis, simple extraction, and localized intraoral swelling.¹⁶ In our study 58.25% dentists are prescribing antibiotics where they aren't indicated.

In our study, 58.25% dentists are prescribing antibiotics where they are not indicated. According to our study, 74.47% of dentists are aware of antibiotic resistance. A study conducted in France and Scotland by D.Nathwani in a sample of 300 dentists, 95% of junior doctors and 63% of senior doctors are considerate about Antibiotic Resistance.¹⁹⁻²⁰ There should be Antibiotic awareness programs. There should be our own antibiotic prescription guidelines in Pakistan. There should be strict rules about purchasing the Antibiotics in pharmacy. Antibiotics shouldn't be over the counter sold the drug. Compliance towards the guidelines should be monitor via policy. Our relative limitations were time constraints and Initial cross-sectional non-probability convenience sampling technique was used.

CONCLUSION

Results are indicative that the studied sample of dental practitioners tends the over-prescription of antibiotics. Dentists should prescribe Antibiotics only according to the latest Guidelines, where it is indicated. It shouldn't be first-line treatment modality.²¹

CONFLICT OF INTEREST

None declared

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