

ORIGINAL ARTICLE

Misuse of Antibiotics in Dental Practices

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ABSTRACT

Objective: Since Mid 1990s dentistry based Antimicrobial prescription has emerged as the potential drive of Global phenomenon of Antibiotic resistance. However, an inappropriate prescription would not provide sufficient benefit yet it runs the risk of causing side effects. Thus prescribing Antibiotic drugs are dictated by defined criteria which all the dentists are urged to follow and practice to minimize the occurrence of resistance in individuals. The aim of this study was to assessment of the frequency of Prescribing Antibiotics by Dental Practitioners and its misuse leading to antibiotics resistance.

Methodology: In this descriptive study, questionnaire based form was distributed among 250 dental practitioners and data was analyzed by using statistical Package for social learning (SPSS).

Results: Amoxicillin is considered as most frequently prescribed drug (72.2%) followed by metronidazole and about 89.1% dentists are aware of the misuse of antibiotics and its emerging resistance in individuals.

Conclusion: According to our survey most preferred Antibiotic used by Dental practitioners is Amoxicillin for orodental infections followed by Metronidazole. Surprisingly, most of the dentists agreed for training of Health Professionals to curtail the errors and prevention of emerging resistance.

Keywords: Misuse, Antibiotics, Dental Practitioners ,Resistance ,Infections.

INTRODUCTION

Antibiotics play a critical role in the management of orofacial infections, dental treatments, preventive measurement and treatment of Periodontal diseases whereas some infections are managed by operative intervention and oral hygiene measures but somehow frequent use of antibiotics even for shorter period of time has developed AMR (Antimicrobial resistance) in a wide range.¹ Although antibiotics are not a definitive substitute but it can shorten or minimize the associated risks. However, injudicious practice has created emerging resistance in Pakistan. In dental community there is a trend towards over prescribing and only the few of them follow the proper guidelines. There is no trend towards empirical therapy or certain guidelines to be followed Nationally or internationally, So understanding among dental professionals for appropriate use of antibiotics as a life saving component is very much necessary.² This article highlights to improve the antibiotic prescription by dentists in their daily dental practices and to prevent the emerging Antibiotic resistance in Pakistan.

MATERIAL AND METHOD

We used a Descriptive study design with a questionnaire as a research instrument. The dental practitioners of different dental colleges in Lahore were asked to fill a Questionnaire having 14 questions about prescribing frequency, knowledge about antimicrobial resistance, frequently prescribed drug and its duration and general awareness of antibiotic use. A random sample of 250 dentists participated in this survey. The results were analyzed using statistical software SPSS. The Aim and objective were clearly defined and informed consent was requested if they chose to participate or not or voluntarily agree.

RESULTS

Participants who responded the questionnaire were 250 dental surgeons registered under Pakistan Medical Commission (PMC) who are licensed to practice on Public platforms and privately in their clinics. The total who responded are in the range of minimum 25 years of age and maximum 70 years and all of them were aware of the alarming situation of Antibiotic misuse and its developing resistance among people.

According to the study 43.16% of dentists think that Antibiotic prescription is absolutely necessary to manage oral

infections out of which 41.8% disagree and 14.5% are still confused.

1. Do you feel Antibiotic prescription is absolutely necessary to manage oral infections?
33 responses

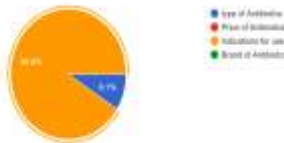


Commented [3]: The results showed that among all participants 43.16% of dentists think antibiotic prescription is absolutely necessary to manage oral infections, however 41.8% disagree and 14.5% are still confused.

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63.6% fear the spread of an infection just because they haven't prescribed Antibiotics whereas only 23.6% feel its not necessary to prescribe antibiotics just in a fear for spread of an infection after treatment. The most common drug prescribed by the dentists is Amoxicillin 72.2% followed by metronidazole with 7.4 % and cefadroxil being the 3rd most common drug to be prescribed. Duration which mostly dentists follow for the prescription of antibiotics is 4 – 7 days (70.9 %) whereas 29.1 % prescribe for 1- 3 days and only 0.5 % for 7 – 10 days. About 90.9% dental surgeons consider that selecting Antibiotics depends on indications of use whereas 9.1 % mostly consider that they select the antibiotics on basis of its type.

2. What do you consider when selecting Antibiotics?
39 responses



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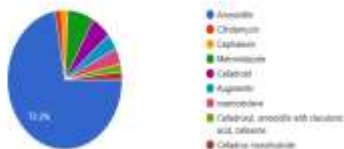
Commented [5]: Did not feel necessary to prescribe prophylactic antibiotics before or after the treatment.

Commented [6]: Please use past tense considered the use of antibiotics on the basis of indications while remaining 9.1 % considered antibiotic on the basis of its type.

Commented [2]: Also provided to the participants

8. Which is the most common drug prescribed by you to the patient?

33 responses



Participants were asked if the dosage of a drug depends upon age, height and weight of the patient so 90.7 % dentists were familiar of this fact and said yes whereas 5.6% dentists said may be it depends or not. Coming to the basic knowledge about misuse of Antibiotics leading to the alarming resistance in individuals, 89.1% dentists agreed about this fact and were aware of the situation whereas 7.3% said may be but 90.9% of them agreed that self-medication is one of the major reasons causing drug resistance. It was also asked that if they ever considered culture sensitivity after empirical therapy in which 72.2 % dentists were not aware of it whereas 20.2% said they sometimes do consider it.

11. Do you feel that Antibiotics usage can lead to resistance?

33 responses



9. In your opinion does dosage of a drug depends upon the Age, Height and weight of the patient?

33 responses



Respondents were asked about the awareness to curtail the errors in use of antibiotics and how we can minimize this alarming situation in our country we gave different options so 50.9 % agreed on focusing more on training of health care professionals whereas 49.1 said that pharmacies should avoid giving the antibiotics without valid prescription .

14. In your opinion which is the best way to curtail errors in use of Antibiotics

33 responses



DISCUSSION

Antibiotics are invaluable adjuncts in management of orofacial infection.³ Antibiotic resistance is of immense concern and threat for individuals, Antimicrobial drugs are not only a substitute for definitive treatment but their use can shorten infectious period and can minimize associated risks.⁴ Now with the passage of time health care workers and patients using it on their own has resulted in emerging microbial resistance to various antibiotics. WHO has considered its emergence as a serious global Health consternation.⁵ Many studies have been conducted so far nationally and internationally. According to a survey report by Jinnah University Karachi the prevalence of antibiotic misuse was checked and study revealed 41% were not aware of misuse of antibiotics and its harmful effects and 27.5 % think antibiotics will be effective in future for same infection.⁶ Some studies show its more common at the level of private practitioners and they charge higher fees and hence because of this reason demand for prescribing antibiotics is higher and considered must, leading to major causes of drug resistance.⁷

Bacterial infections are familiar in clinical dental practices therefore antibiotics use is frequent and usually dentists are not sure about the specific microorganisms responsible for certain infections, According to epidemiological data dentists should suspect the germs that could be involved in infectious processes so that specific treatment plan can be suggested. For this reason broad spectrum antibiotics are largely prescribed causing sensitivity of bacteria to many antibiotics decreased and type resistant strains increase in significant manner.⁸ As many Nsaids can cause reduction of Antibiotic bioavailability. Some major etiological factors of Gingivitis and Periodontitis are polymicrobial type of infection but some nonclinical factors also affect the choice of Antibiotics like availability in pharmacies ,cost of Antibiotics.

Amoxicillin is penicillin antibiotic that acts against gram positive bacilli and is most commonly considered first line of treatment and most frequently prescribed drug its dosage is 500mg every 8 hours or 1000 mg every 12 hours, dental practitioners should also aware that drug could result in some levels of hepatotoxicity besides it.

One of the related study which was done in Jinnah university Karachi in 2015 and basic purpose of this study was based on different questionnaire in which 250 dentists participated and 90.9% were fully aware of the regularly misuse of antibiotics creating resistance. Certain studies also show that patients don't follow the complete course of antibiotics just because of lack of counselling or awareness among community this may be a reason of self-medication.⁹

One study conducted in India also examined microbial specimens and reported a total of 64% aerobic and 87% anaerobic strains were isolated and predominant were Streptococci viridians 64% and anaerobic gram negative bacilli 40% which resulted as highly sensitive to Amoxicillin (97%) and less sensitive to erythromycin (62%). Antibiotics resistance in developing countries are more threat because of less hygiene conditions and poor clinical infrastructure.¹⁰ Similarly the infection research group of Glasgow dental hospital and school studied among 155 viridians group streptococci for this minimum inhibitory concentrations to Amoxicillin and revealed that 27% of S. Oralis were resistant to penicillin and such pathogens were less sensitive towards other Antimicrobials.

In our study 250 dental surgeons participated online in a questionnaire survey and results were evident. Many factors highlighted in our study sample as potential contribution including poor knowledge of regimens, limited exposure to update use of antibiotics and prescribing behavior such as Amoxicillin frequently prescribed drug is evident from the study followed by metronidazole and its relation with duration, height, weight and other factors were observed. So addressing the issue is of utmost importance and likewise in previous publications the majority of dentists were aware of contribution of dental based antibiotic resistance at national level and vast majority acknowledged

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it. Obviously human activities have accelerated the pace at which microorganisms develop and disseminate resistance so its necessary that dentists must recognize the emergence and spread of such potential threat and Primary health care must promote rationale dental care.

CONCLUSION

This is evident now that inappropriate use of Antibiotic drugs by dentists may be contributing to the development of resistance so before starting Antibiotic therapy dentists need to consider various factors to determine benefit to risk ratio such as patient medical oral health status, clinical diagnosis and follow-up. When prescribing dentists should use the shortest effective course of narrow spectrum antibiotics and should monitor the patients closely throughout the duration of prescription and first line of therapeutics or combination therapies accordingly. workshops and training sessions should be conducted on annual basis as many dental professionals agreed to participate in such sessions. Comprehensive Antimicrobial Prescribing Guidance should be established for dental professionals so that emergence of Antibiotic resistance can be minimized.

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