

Antibiotic Drug Action and Prescription Practices among Dentist in Chittorgarh, Rajasthan

Dushyant Pal Singh^{1*}, Chetan Sharma², Nitin Rastogi³

¹Assistant Professor, Department of Dentistry, Govt. Medical College, Chittorgarh.

²Associate Professor, Department of Prosthodontics, RRDCH, Udaipur.

³Ex Associate Professor, Department of Prosthodontics, Institute of Dental Sciences, Bareilly.

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Corresponding author: Dr. Dushyant Pal Singh

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Abstract

Introduction: In most cases, prophylaxis is used for prevention of endocarditis. Therapeutic antibiotics are prescribed, in most cases, to treat diseases of the hard and soft tissues in the oral cavity after local debridement has failed. [2] Antibiotics are prescribed for oral conditions related to endodontic, oral surgical, and periodontal manifestations.

Aim and Objectives: To assess the knowledge regarding antibiotic prescription use among dental practitioners in Chittorgarh, Rajasthan.

Methodology: A total sample size of 25 was calculated based on the pilot study conducted. Convenient sampling technique was used. Practicing dentist in Chittorgarh registered with Indian dental association and dentists in academic institution were considered as study samples.

Results: The response rate was 92% (n = 23/ 25) More than half of the participants were male (54.8%). Around 40% of practitioners had experience of 1 -5 year while only 3% were having 15 years or above. The sample included a total of 23 dentists with 70% BDS and 30% MDS. Most of the dentist commonly used broad spectrum antibiotics (78.2%).

Conclusion: The knowledge on the safe antibiotics to be used during pregnancy was not satisfactory. Practitioners reported good number of patients doing self-medication. Microorganisms specific antibiotic knowledge was lacking. Empirical use of antibiotics can lead to drug resistance, which majority of the practitioners were aware.

Keywords: Antibiotics, Microbial resistance, Microorganisms.

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Introduction

Antibiotics are prescribed in dental practice for prophylactic and therapeutic reasons. Prophylactic antibiotics are prescribed to prevent diseases caused by members of the oral flora introduced to distant sites in a host at risk or introduced to a local compromised site in a host at risk.[1] In most cases, prophylaxis is used for prevention of endocarditis. Therapeutic antibiotics are prescribed, in most cases, to treat diseases of the hard and soft tissues in

the oral cavity after local debridement has failed.[2]Antibiotics are prescribed for oral conditions related to endodontic, oral surgical, and periodontal manifestations.

There is often a dilemma among the dental practitioners concerning the use of antibiotics in conjunction with dental procedures. Dentistry's contribution to the development of antimicrobial resistance is not well known.[2] In dentistry most often antibiotic prescription envelops

prophylactic use for life-threatening diseases and prevention of postoperative infections. Some dispute may exist in the area of antibiotic prophylaxis for healthy patients, but it is an important management of dental emergencies is primarily based on root canal treatment or extraction of teeth.[1] Irreversible pulpitis, characterized by acute and intense pain, is considered to be one of the most frequent dental emergencies for patients.[2] Important features of irreversible pulpitis consist of spontaneous attacks of pain ranging from a few seconds to several hours, the pain elicited by hot or cold applications. Also, in acute and chronic apical periodontitis and localized swelling cases, pulpal circulation is compromised.[3] Thus, antibiotics have no effective usefulness.[4]

The impression is that antibiotics continue to be prescribed by dentists as much or more as in the past, despite the scarcity of clinical trials demonstrating the need for antibiotics. Dentists want to make their patients well and to prevent unpleasant complications. These desires, coupled with the belief that many oral problems are infectious, stimulate the prescribing of antibiotics. The understanding of rational for use of Antibiotics in pregnant females is important for safety of fetus. Right choice of antibiotic during anaerobic or aerobic infections is another major cause of concern in general practice. There is evidence that antibiotics are prescribed inappropriately in general dental practice with the increasing worldwide problem of antimicrobial resistance and the threat to public health, there is a need to rationalise the prescribing of antibiotics.[5] Study was carried out to assess the knowledge regarding antibiotic prescription use among dental practitioners in Chittorgarh, Rajasthan.

Material and Methods

A cross sectional study was conducted to assess knowledge regarding antibiotic

prescription use among dental practitioners in Chittorgarh, Rajasthan. A total sample size of 25 was calculated based on the pilot study conducted. Convenient sampling technique was used. Practicing dentist in Chittorgarh registered with Indian dental association and dentists in academic institution were considered as study samples.

Inclusion criteria:

1. Dentists practicing in Chittorgarh.
2. Dentist willing to participate in the study

Exclusion criteria:

Incomplete questionnaires. Those participants who didn't full fill the questionnaires.

A closed ended questionnaire with 21 item including the demographic details of the study subjects was designed. The self-designed questionnaire was checked for face, content and construct validity. There was single investigator.

Results

The response rate was 92% (n = 23/ 25) More than half of the participants were male (54.8%). Around 40% of practitioners had experience of 1 -5 year while only 3% were having 15 years or above. The sample included a total of 23 dentists with 70% BDS and 30% MDS. Most of the dentist commonly used broad spectrum antibiotics (78.2%) amoxicillin, and metronidazole were the most commonly prescribed antibiotics. 40.5% of the practitioners preferred erythromycin when patients were allergic to amoxicillin. Doxycycline and metronidazole were the antibiotics of choice for periodontal infections. Amoxicillin and metronidazole are the preferred antibiotics for apical periodontitis.

More than half of the dentist prescribed amoxicillin antibiotics as a safer drug during pregnancy. Amoxicillin is the most commonly used antibiotic prescribed by the dentist as prophylactics measures. 92.7% of dentist were aware of antibiotic resistance. 60% of the dentist didn't advise culture sensitivity test before prescribing the antibiotics. More than half of the patient complete the course of antibiotics during treatment. (53.4%) Half of the patients follows the instructions with regard to consumption of antibiotics. 66.7% of the patient didn't come on scheduled follow up. half of the patient reported no adverse effect of antibiotics.

Discussion

The questionnaire investigated the dentists' knowledge of therapeutic and prophylactic antimicrobial usage in clinical dentistry. The knowledge of the respondents in some aspects was better than in others, but a general lack of uniformity and compliance with the expert literature predominated. Suggested that 29% of antimicrobial usage has no rational basis. Antibiotics are commonly used in dental practice for treatment and prevention of infection. We depend on its efficacy as clinicians and as consumers. According to Epstein et al Conscientious use of antibiotics is imperative for all practitioners, especially when considering the rapid development of antibacterial resistance and the alarming consequences of this trend. Most of the dentist commonly used broad spectrum antibiotics (78.2%). There is considerable agreement that the beta-lactam derivatives are the antibiotics of choice for these processes, provided there are no allergies or intolerances. However, there is less consensus regarding which drug belonging this family should be prescribed Amoxicillin + metronidazole were commonly prescribed antibiotics for apical periodontitis by the dentist. Berini L and Gay C consider the natural and semisynthetic penicillins (amoxicillin) to be the options of first choice, others

Maestre-Vera JR prefer the association amoxicillin-clavulanate, due to the growing number of bacterial resistance, as well as its broad spectrum, pharmacokinetic profile, tolerance and dosing characteristics. As has been commented above, Kirkwood KL have proposed clindamycin as the drug of choice, in view of its good absorption, low incidence of bacterial resistances, and the high antibiotic concentrations reached in bone. More than half of the dentist prescribed amoxicillin antibiotics as a safer drug during pregnancy. Most antibiotics that are commonly prescribed by dentists are category B drugs (amoxillin), with the exception of tetracycline and its derivatives (e.g., doxycycline), which are in category D because of their effects on developing teeth and bone. Ciprofloxacin, a broad-spectrum fluoroquinolone antibiotic used to treat periodontal disease associated with *Actinobacillus Actinomycetemcomitans*, is in category C. Its use in pregnancy has been restricted because of arthropathy and adverse effects on cartilage development observed in immature animals. There are not enough data to definitively determine its safety in humans.[6] Metronidazole is in category B. Some authors caution against its use in the first trimester because of potential harm to the fetus; however, recent studies showed no definitive teratogenic effects. [7-9] The risk-benefit ratio for the patient should be determined and the obstetrician consulted before prescribing this drug. The estolate form of erythromycin should be avoided because of deleterious effects on the mother's liver. Chlorhexidine gluconate is a category B antimicrobial mouth rinse. Self-medication is an alarming concept. This review focused on the self-medication of allopathic drugs, their use, its safety and Reason for using it. It would be safe, if the people who are using it, have sufficient knowledge about its dose, time of intake, side-effect on over dose, but due to lack of information it can Cause serious effects such as antibiotic resistance, skin problem, hypersensitivity and allergy. Hence, developing country like India where we

have poor economic status, education status as well as poor health care facilities. People have less knowledge regarding risks associated with their self-medication. We are on the edge of sword whether to promote self-medication or not. Hence it is recommended that holistic approach should be taken to prevent this problem, which includes proper awareness and education regarding the self-medication and strictness regarding pharmaceutical advertising. Dispensing modes in the needs to be improved through proper education, strict regulatory and managerial strategies to make health care easily accessible and cost-effective.[1]

Conclusion

Study emphasizes the rationale of use of antibiotics in the dental practice, there are many areas in which the practitioners needs to be educated and have to be made aware of various guidelines. This is the need of the hour for various dental associations and bodies to come up with specific and rational guidelines for use of antibiotics in dental practice in India. Majority of the dentist used broad spectrum antibiotics based on the diagnosis of the condition, rather than microorganism specific antibiotics. The knowledge on the safe antibiotics to be used during pregnancy was not satisfactory. Practitioners reported good number of patients doing self-medication. Microorganisms specific antibiotic knowledge was lacking. Empirical use of antibiotics can lead to drug resistance, which majority of the practitioners were aware.

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