

Assessment of Knowledge of Use of Antibiotics among Dentists Practicing in Semiurban Area: A Cross sectional Survey Study

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Abstract

Original Research Article

Background: To assess the knowledge, attitude and practice of rational use of antibiotics among dental practitioners practicing in semi urban area (Nalgonda district) and make necessary interventions. **Aim:** This study aims to assess the level of knowledge and awareness of antibiotic use/misuse, and prophylactic use among private dental practitioners of Nalgonda district, Telangana state. **Methodology:** Questionnaire was administered to the general practitioners of Nalgonda district to assess their knowledge, attitude and practice about rational use of antibiotics. Data was analysed and subjected to Chi-square test. **Results:** Penicillin group (amoxicillin) was the most common prescribed antibiotic for almost all dental infections. The alternative to penicillin was erythromycin. There was also unnecessary use of antibiotic regime for most of the conditions related to pulpal and periradicular origin. The dosage of prescription pertaining to the number of days was also varied significantly from 3-10days. **Conclusions:** This study showed that most of the practitioners possessed average knowledge about antibiotics. Their attitude was also not satisfactory towards rational use of antibiotics and same was true for the practice as well. Educational intervention is utmost essential to improve their perception regarding rational use of antibiotics.

Keywords: Private dental practitioners, antibiotics, prescription.

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INTRODUCTION

Antibiotics act as adjuncts in the management of oral/dental infections. They are not a substitute for definitive treatment, but their proper use can shorten the period of infection and minimize the spread of infection to adjacent anatomical spaces or systemic involvement [1]. As a result, antibiotics are said to account for the vast majority of medicines prescribed by dentists [2]. Dentists are said to prescribe between 7% and 11% of all common antibiotics (beta-lactams, macrolides, tetracyclines, clindamycin, and metronidazole) [2]. Thus, the prescribing of antibiotics by dental practitioners forms an important part of dental practice [2].

In the absence of signs and symptoms of infections, practitioners should refrain from prescribing antibiotics. The value of antibiotics in the management of orofacial infections cannot be denied. However, it should be kept in mind that it is to be used as an adjunct and not as a substitute for a definite treatment [3]. It has

been observed that most of the pressure for antibiotic prescription comes from patient pressure, the fear of medical litigation, or just simply poor clinical decision-making [4]. In the recent years, the inappropriate and excessive use of antibiotics has led to the emergence of antibiotic resistance. Development of antimicrobial resistance in bacteria is now considered, as a threat to public health globally [5]. Hence, for the prevention and containment of resistance, accurate surveillance of antimicrobial use and antimicrobial resistance is required. The role of dentists in this matter is considered substantial [6, 7]. It is vital to improve the standards of care, dentists need to keep themselves updated with the current patterns of antibiotic prescription and their use. Therefore to understand the level of existing knowledge in practicing dentist is as well very important. Hence this study was planned to assess the level of knowledge with regards to use/misuse of antibiotic prescription among practicing group of dentist belonging to Nalgonda district.

METHODOLOGY

A cross-sectional survey was designed to determine the antibiotic prescribing practice among the private dental practitioners in Nalgonda distr, India. The dental practitioners practicing in private dental clinics in Nalgonda city were approached for the study. The practitioners holding a Bachelor of Dental Surgery or Master of Dental Surgery degrees who regularly engage in routine dental practice were included in this. The aim of the study was to assess the knowledge of use of antibiotics among dental practitioners of Nalgonda district and to increase the level of awareness of antibiotics resistance. Dental under-graduates and dentists who are not practicing were excluded from the study.

Questionnaires were distributed to 100 dentists along with a letter describing the survey, and requesting participation and consent as well as granting anonymity. All those who willingly consent to participate in the study were asked to complete the questionnaire.

Following questions were included in the questionnaire:

- Do you follow the guidelines for antibiotic prescription
- Have you treated the patients who is sensitive to antibiotics
- Have you ever prescribed antibiotics for medically compromised patients? Is there any effects with the antibiotics you have prescribed and the medication which they are already using?
- Does your prescription vary if there are any anaerobic infections?
- Self medication with antibiotics with patients to get relief from dental pain may be responsible for development of resistance?
- Are you aware of newer antibiotics? Will you keep in check with the newer antibiotics releasing in the market?
- Are you aware of current antibiotic prophylaxis and do you follow them?
- Do you believe that antibiotic resistance is a growing concern?
- Are you taking measures to avoid antibiotic resistance
- Do you regularly attend CDE programmes regarding rationale use of antibiotics?

The questionnaire was answered in terms of YES/NO. The data obtained from the questionnaire was subjected to statistical analysis using Chi-square test.

RESULTS

The study comprised of 100 dentist (n=100) who were actively practicing dentistry in Nalgonda town. Out of the data subjected to statistical analysis

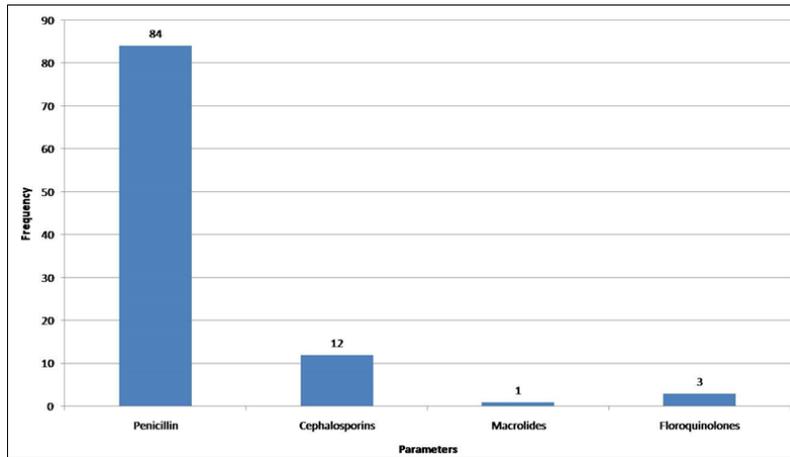
revealed that the 84% of the dentist belonging to the study group were comfortable prescribing antibiotics belonging to the pencillin group. 12% prescribed cephalosporins, 1% macrolides, and 5% fluoroquinolones group of drugs (Graph-1). 95% of the dentists prescribed oral route of administration of antibiotic and 5% preferred the IV route of administration.

It was noticed that 52% of the dentists prescribed the antibiotic drug for 3 days and 45% prescribed for 5 days. Further when asked on the alternative choice of drug to Pencillin, 46% chose Erythromycin, 27% chose Azithromycin, 13% chose Clindamycin and 14% of the population preferred using the other group of drugs (Graph-2). 76% of the dentists prescribed the antibiotics based on the effectiveness of the drug related to the severity of the infection. 13% preferred prescribing popular group of antibiotics, 4% dentists recommended those antibiotics which the patients could afford and 7% prescribed those antibiotics which were readily available (Graph-3).

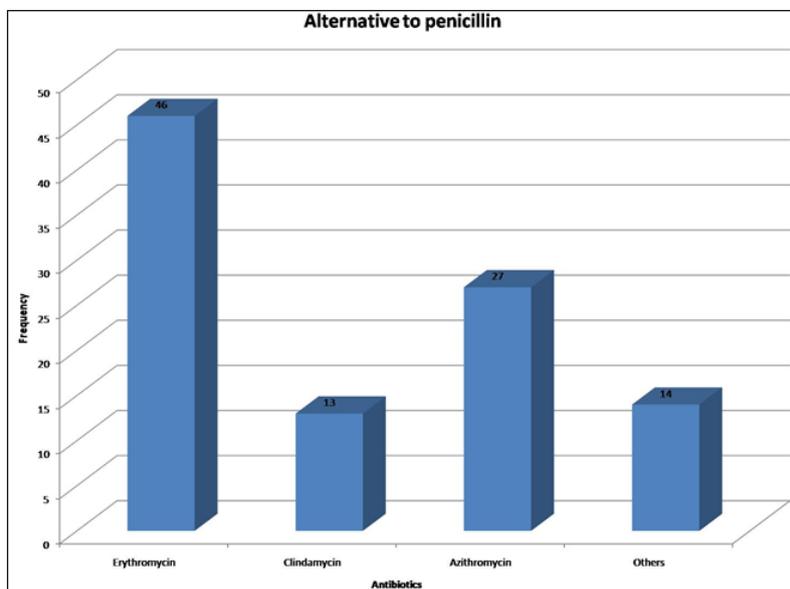
When question was asked on opinion regarding multidrug therapy in order to assess the level of knowledge regarding the use /overuse of antibiotic, it was noticed that 34% of the dentists strongly agreed with the adverse affects of multi drug therapy, 41% moderately agreed, 10% strongly disagreed and 15% were unaware about the adverse affects of multidrug therapy.

When dentists were asked whether there is a need to prescribe antibiotics while treating patients who are systemically compromised with previous history of infective endocarditis, cardiac transplant after valve damage, cyanotic heart diseases, mitral valve with / without regurgitation and rheumatic heart diseases, 54% of dentists did prescribe antibiotics to the patients with previous history of infective endocarditis. 25%, 12%, 7% and 2% of the study group of dentists performed procedures under antibiotic coverage for the patients suffering from cyanotic heart diseases, cardiac transplant after valve damage, mitral valve with regurgitation and rheumatic heart diseases respectively. Infections related to pulpal and periradicular origin – 51% used antibiotic to treat local dento alveolar abscess, 21% dentists used to treat local dento alveolar abscess with fistula, 12% to treat reversible pulpitis, 11% to treat irreversible pulpitis, 3% to treat facial cellulitis (Graph-4).

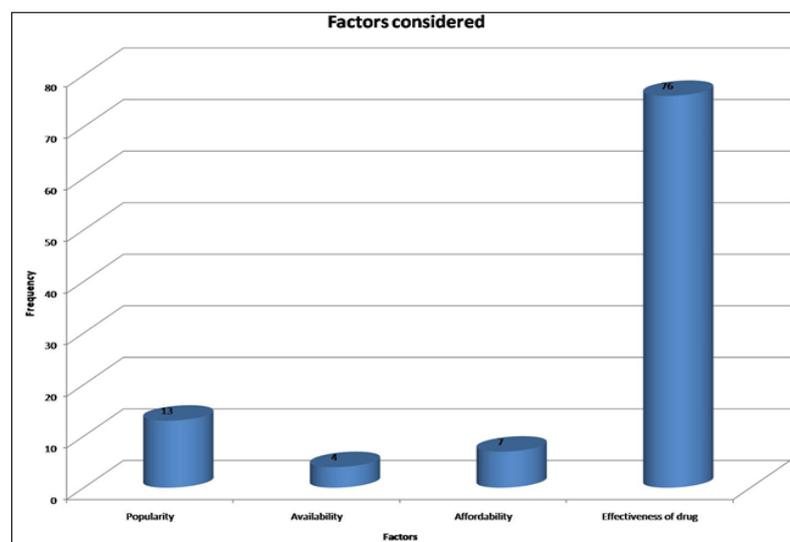
38% of the dentist availed information regarding the drugs from attending conferences, workshop and internet resources. 15% and 9% from reading scientific literature and reading textbooks respectively. Majority of the dentists did not know the antibiotic prescription for sinusitis, chronic marginal gingivitis, and for implant treatment.



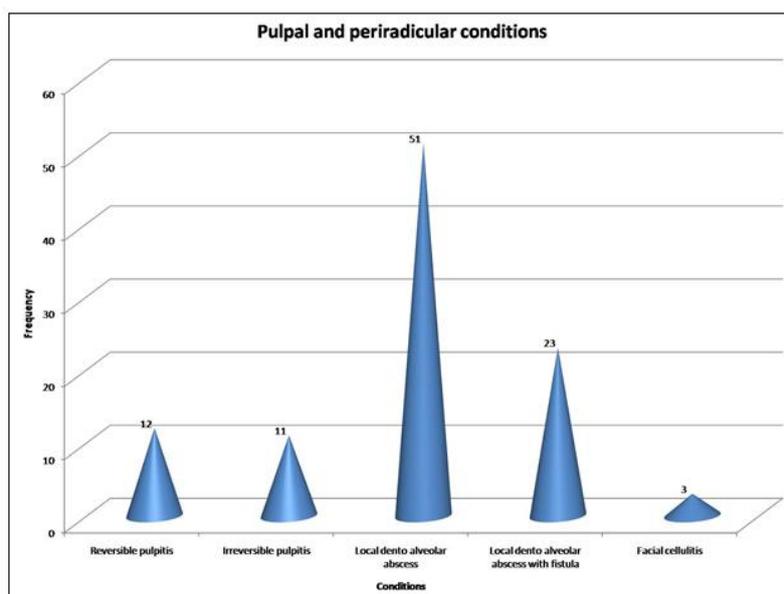
Graph-1: Commonly prescribed Antibiotic



Graph-2: Alternative to Penicillin



Graph-3: Factors Considered



Graph-4: Pulpal and Periradicular Conditions

DISCUSSION

The present study was done with the objectives of assessing knowledge of rationale use of antibiotics. It was found that knowledge regarding different aspects of antibiotics is satisfactory but not excellent among dentists. Although majority of the dentists were diligent enough to avoid the influence of nonclinical factors in their prescription practice, lesser percent of dentists gave importance to guidelines and gave more importance to symptoms while prescribing antibiotics. Many did not know the exact dosage of drugs prescribed. Few inappropriately prescribed antibiotics prophylactically in conditions which did not require prophylactic therapy. Antibiotics to prevent the recurrence of rheumatic fever is not required which was not known by majority of the dentists who is under physician's care. This points toward the inappropriate and inadvertent use of antibiotics, which could raise the concern of antibiotic resistance.

Results of the present study suggests that penicillins are the most commonly prescribed drugs. The study found that cephalosporins are the 2nd most frequently used drugs. The drug of choice in patient allergic to penicillin was found to be erythromycin (45%). Other drugs are Azithromycin (25%) and Clindamycin (15%). In contrast to the present study, Clindamycin was the most prescribed drug in penicillin allergic patients in USA and Spain [8]. Inadequate duration of therapy or overdosing of antibiotics has resulted in damaging host response, thereby producing toxic effects. Treatment for most odontogenic infections requires an average of 5 to 7 days of therapy [8]. In this study 50% of them suggested 3 days and 40% of them suggested 5 days. Different dentists are raising concern that antibiotic resistance is a global public health problem and potential threat to mankind. Most common dental infections such as pulpitis and periapical

periodontitis require only operative measures such as root canal therapy, or extraction if tooth is not restorable [9]. Unfortunately dentists still prescribe antibiotics for this condition. The same study. In present study, higher % of dentists prescribed antibiotics for necrotic pulp with sinus tract/fistula as compared with Spanish and American dentists [8]. Rationale of antibiotics is based on well defined indications in cases of infection of endo- origin. Therefore, antibiotics must be considered only as an adjunct to conventional RCT or when emergency treatment is not possible. Dental surgeons need to have thorough understanding of the clinical indications for antibiotic prescription and in order to prevent the misuse. Dental surgeons need to focus on preventive measures for antibiotic resistance, as 91% of dentists accept that antibiotic resistance is of growing concern.

CONCLUSION

Curriculum also should be modified accordingly and different aspects of antibiotic resistance should be incorporated in their pharmacology course. Sensitization and awareness need to be done through educational interventions. CDE programmes and workshops need to be conducted at regular intervals to highlight the causes and impact of antibiotic resistance. The programs should be easily accessible and specific to the changes occurring in prescription of antibiotic therapy. The focus should be on reinforcing the existing knowledge and updating it with newer antibiotic regimen, their drug interaction and proper use based on the clinical situation. The private dental practitioners should be self-motivated to be a part of this continuum. This would be a step not only for the well-being of the patient but also for dentist to avoid any untoward adverse event just because of sheer lack of awareness.

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