

Knowledge Regarding Prescription of Antibiotic for Endodontic Treatment among House Officers of Multan



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OBJECTIVE: To evaluate the knowledge regarding the prescription of antibiotic for treatment of endodontic disease and errors made by the house officers at Multan Dental College.

Since the discovery of antibiotics, they have been in use broadly for the treatment of odontogenic infections. Prescription is a dynamic, customized clinical process, which is set owing to the necessities of patient & the acquaintance of the practitioner.

METHODOLOGY: This survey-based study was conducted among 40 house officers working at Multan Dental College. A survey form was designed, about the pattern of antibiotics prescription and the situations for which they were recommended by the House officers.

RESULTS: The medication of choice was mostly Amoxicillin + clavulanic acid (52.6%) and Amoxicillin alone (47.3%). The most incidence of antibiotic prescription was reported for acute abscess of periapical area of the tooth (62.8%) and patient having fever with malaise (62%). Chronic apical abscess with sinus tract (58%). Overall, 12% of part takers were used to suggest p antibiotics for root canal treatment.

CONCLUSION: We conclude that here is deficiency of information & knowledge for the proper indication, kind, and antibiotics dose. Different educational activity like symposium or lectures should be practiced to teach the practitioner to prescribe antibiotics. Curriculum & syllabus should offer great emphasis on prescribing.

KEYWORDS: Antibiotics, Endodontics, Prescription, prophylaxis, Root canal treatment (RCT)

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INTRODUCTION

Anti-microbials have been commonly used in the treatment of odontogenic diseases since their discovery. Anti-infection medication were introduced, which led to a dramatic drop in the occurrence of dangerous contaminations and foreshadowing a remarkable phase in the treatment of incurable diseases.¹

Medication treatment has been the primary tool applied by medical care professionals to enhance the patient's well-being. Prescribing a drug is a dynamic & individualized clinical process.^{2,3} Since last decade, micro-organism's evolutionary responses to the particular pressure wielded by the antibiotics have led to resistant of microbial species against nearly each identified antibiotic agent. Antibiotic abuse and overuse have been implicated as major contributors to the emergence of multidrug-resistant strains.^{4,5} Antibiotic resistance is increasing in obligatory anaerobic bacteria, with clindamycin, cephalosporin, and penicillin resistance discovered in both major and small hospitals⁶. Before administering antibiotics, the benefit-to-risk ratio should always be considered. Certain patients will benefit from antibiotics, particularly those delivered systemically. In endodontic clinical therapy, antibiotics should be administered conservatively and judiciously; nonetheless,

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indiscriminate use (patients with pulpitis but no infection) is against basic medical practices. This could lead to a selective pressure and an increase of naturally hardy bacteria, exposing people to super and secondary infections and rendering therapies ineffective against potentially fatal infectious diseases.^{7,1}

Prescription is a dynamic, customized clinical process, which is set owing to the necessities of patient & the acquaintance of the practitioner.⁸ Prescription writing is considered as necessary determinant of a medical or dental practitioner and has been part of the syllabus during their graduation.⁹ It is also an obligatory skill for doctors of all specialities.¹⁰

Dentists prescribe various drugs for a number of situations. If these medications are not recommended accordingly, they might cause damage to patient. Adverse medication events are stated to have been linked with mistake or incorrect writing of the prescription.^{11,12} Even if none of these instances end in death, they may induce morbidity in a certain individual. The act of suggesting has gotten increasingly difficult in recent years for a variety of reasons. Prescription mistakes are classified into two types: prescription writing errors and decision-making errors. While the latter may consist of errors, such as overprescribing, under prescribing, inappropriate prescribing and irrational prescribing while the former emphasizes on errors made during writing of a prescription.^{13,14} Several studies have found poor prescription by students and junior practitioners, with some of the blame being assigned to knowledge or information-based errors.^{15,16} The goal of this study was to assess and evaluate house officers' expertise of providing antibiotics for root canal therapy, as well as the errors they made.

METHODOLOGY

Forty Multan Dental College house officers took part in this survey-based study. A survey form was developed to collect information on the reasons for prescribing antibiotics as well as the circumstances in which House officials recommended them. To collect data, the universal sampling approach was utilized. The questionnaire assessed house officers' understanding of antibiotic prescription indications for a wide range of clinical symptoms associated with oral cavity infections. Malaise and fever were clinical markers, as were scattered edoema, indications of systemic spread, and swallowing difficulties. Participants were also asked if they had any clinical cases in which antibiotics were required, as well as what therapy they favoured, if any. Acute apical abscess, acute pulpitis, chronic apical periodontitis, and long-term apical swelling with sinus tract

were the clinical situations studied. Factors influencing antibiotic prescriptions were also explored. The questionnaire asked if the patient's expectation of receiving an antibiotic, multiple visit root canal procedures, single visit RCT, or retreatment may be the reason for the antibiotics being prescribed. The second section of the questionnaire assessed/evaluated knowledge of medical circumstances and oral procedures that may require prophylactic antibiotics. The oral procedures were all randomized controlled trials, including pre and post endodontic surgeries; the medical conditions included hepatitis B, HIV, congenital heart diseases, mitral valve prolapsed, uncontrolled diabetes, and patients who had prosthetic joints in the previous two years or those reporting a history of radiotherapy and cancer. The data obtained was collated and examined.

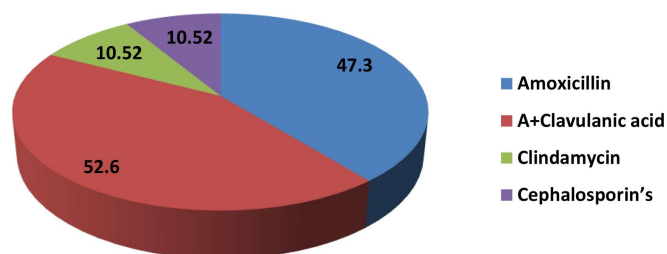
RESULTS

This study included 24 females and 16 males (Table 1). The most incidence of antibiotic prescription was reported for acute abscess of periapical area of the tooth (62.8%) and patient having fever with malaise (62%). Antibiotic prescription for Chronic apical abscess and Chronic periodontitis with sinus tract is 58%. and 55% respectively.

Table 1: Gender distribution

MALE n %	FEMALE n %	TOTAL n %
16(40%)	24(60%)	40

Graph 1: Percentage of antibiotics that were prescribed by respondents



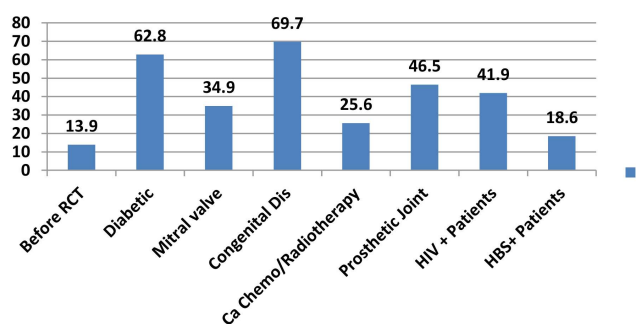
Patients with swelling & difficulty in swallowing (58%) while 33% was reported during prolong root canal treatment. Overall, 12% of partakers always suggested antibiotics for root canal treatment.

In the study mostly antibiotics were prescribed as prophylactic measures for congenital heart diseases 69.7%, and 62.8% is for poorly controlled diabetes mellitus. Participants prescribed Prosthetic joint in past 2 years 4 6.5% & Mitral valve prolapsed 34.9%. Graph 2

Table 2: Conditions and percentage of antibiotic prescription

CONDITIONS	PRESCRIBED ANTIBIOTICS (%)
Acute Pulpitis	25.5%
Apical Abscess (Acute)	62.8%
Chronic apical abscess with sinus tract	58%
Chronic apical periodontitis	55
Patients with swelling	44%
Patients with malaise & fever	62%
Patients with swelling & difficulty in swallowing	58%
If patients insist	14%
In retreatment	18.5%
During prolong root canal treatment	33%
Post RCT	12%

Graph 2: Conditions and percentage of Prophylactic antibiotic prescription



DISCUSSION

The majority of oral issues are inflammatory conditions that produce pain. In many cases, chronic or acute infections of the pulp produce oral pain, needing surgical surgery rather than medications. Antibiotics are not always required to treat endodontic source problems. Amoxicillin + clavulanic acid (52.6%) and Amoxicillin alone (47.3%) were the drugs of choice in this study, which is similar to other studies in which Amoxicillin was the medicine of choice 57.6% & 46.47% 17,18. Clindamycin was usually the last choice in this study. These findings are congruent with those of Fahad et al and Jain A et al, who discovered that amoxicillin was the most often suggested antibiotic, whereas clindamycin was rarely used.^{19,18}

Antibiotics were predominantly administered for acute apical abscess (62.8%) in our study, which differs with the findings of M Reza et al, who utilised antibiotics for apical/dental abscess (74% & 71%, respectively).^{17,19} This finding is similar with another study²⁰, which found that antibiotics were given to 62.6% of participants with peri-apical abscess. Our survey found that 62% of patients

with malaise and fever were given antibiotics, which is similar to another study that found that 57% of patients with fever were given antibiotics.¹⁹ In this investigation, 25.5% contributors suggested antibiotics for acute pulpal inflammation which is twofold as reported by Palmer et al where 12.5% of participants advised antibiotics for acute pulpitis²¹ and this is three fold as compared to another study (8.2%).²⁰ Antibiotics may not be needed and may not help critical pulp situations when there are no symptoms of systemic or local involvement/infection²², in contrast to the current study in which antibiotics were taken for pulpal disorders by the majority of individuals.

Debridement of the root canal space is the recommended therapy for irreversible pulpitis. Non-surgical root canal treatment without antibiotics is often sufficient to treat chronic apical periodontitis, acute pulpitis, irreversible pulpitis, and draining sinus area. The pulpal circulation/flow is frequently disrupted in these situations, and systemic antibiotics may not reach the required therapeutic concentrations inside the pulp.²³ A thorough non-surgical root canal treatment might eradicate the source of the infection and typically allow healing of the peri-radicular lesion. Nonetheless, analgesics are used for peri-apical diseases and pulpitis pain.¹⁷

58% of partakers of this study specified the use of antibiotics in Chronic apical abscess with sinus tract which is two times that of reported in another study. 55% of partakers of this study specified the use of antibiotics in Chronic apical abscess with periodontitis which is far greater than that reported in another study.²⁴ Results of this study stated that 33% participants give antibiotics during the root canal treatment which is like the result of other study where 35.2% partakers wrote antibiotics during RCT.²⁰ About 11.6% of defendants used to recommend antibiotics afterward root channel treatment. For peri-apical chronic lesions and chronic peri-apical abscess with sinus tracts, fifty eight percent & fifty five percent respondents recommended an antibiotic respectively which is similar to the results stated by Nabavezadeh et al (58% and 73.1%) respectively.¹⁴ Our study showed that 55% subjects gave antibiotics apical abscess with periodontitis which is like the result of other study where 58% partakers wrote antibiotics as an adjunct.¹⁹

13.9% participants of this study advice medicine before RCT which is quite similar to another study which indicates 11.4%. 41.9% participants of this study advice antibiotics for HIV+ patients. This is in accordance with the other study where 58% of dentists stated prescribing antibiotics. In the current study, 25.6% of patients with a history of carcinoma and chemo/radiotherapy were prescribed antibiotics. This figure is lower than that reported by Yousufi S (40.6%).²⁰ Our study found that 69.7% of individuals were given preventive antibiotics for congenital heart disease, which is somewhat

higher than the number reported in another study, which was 6019. 34.9% participants reported that we prescribe prophylactic antibiotics for mitral valve prolapsed patients which is alike with the study conducted by Fahad et al who reported 35% 19. 14% subjects reported that they gave antibiotics if patients insist which is less than observed by Liaquat A et al (70%).²⁵

Prophylactic antibiotic treatment is recommended only for patients who are at high risk of developing infective endocarditis following bacteremia. The use of prophylactic antibiotics by these patients prevents blood-borne microorganisms from colonising shunts and prostheses or spreading within a compromised system. Prophylactic antibiotics are required for patients with prosthetic mitral valve prolapses, uncontrolled diabetes, and inherited heart conditions (AV shunt and cardiac valve replacement) during endodontic treatment.¹ Although antibiotic prophylaxis prior to endodontic therapy is not routinely recommended for healthy patients following prosthetic joint replacement, it should be considered during the first three months after the joint replacement.^{26,27}

According to our current study, house officers at Multan Dental College use antibiotics improperly, which can lead to issues such as resistant microorganisms, drug resistance, and other negative results. This examination resulted that knowledge for the use of antibiotics is far from ideal. This was also reported in the Wali A study.²⁸

In endodontics, the routine uses of antibiotics either systemic or local, is still a debatable issue.²⁹ According to one study, dentists must administrate the antibiotics according to the guidelines, only if therapies or treatments require it.³⁰ Antibiotic abuse is a major worldwide issue.³¹ Prescriptions must be logical and supported by extensive evidence-based knowledge. Medical and dental students, as well as healthcare workers, must be aware of the various aspects of the drugs prescribed in order to effectively treat the illness for which the drug was prescribed.³² According to evidence³³, antibiotics may provide both benefits and harm in certain situations. Antibiotics, particularly broad-spectrum antibiotics, are commonly used in dentistry.³⁴ Many studies on antibiotic prescription in dentistry have found that overuse is a global problem.³⁵ Antibiotics may be used more frequently in endodontics.³⁶ The publication of recommending protocols and guidelines may help to achieve better results, and appropriate educational intervention may also be effective. The use of computers and clinical audits, as well as additional tools to increase antibiotic prescription knowledge and improve and increased patient care, should always be considered.

CONCLUSION

We conclude that here is deficiency of information & knowledge for the proper indication, kind, and antibiotics

dose. Different educational activity like symposium or lectures should be practiced to teach the practitioner to prescribe antibiotics. The curriculum and syllabus should place a strong focus on prescribing, and appropriate medication prescription should be learnt through clinical rotations utilizing hypothetical or actual instances.

LIMITATIONS

Sample size is very small. Multiple institutes were not included in the study. Different institutes delivered different level of knowledge to the students. Public institutes must be included in the future studies. Level of house officers were not mentioned in the study because as experience of the house officers' increases, level of education must increase.

CONFLICT OF INTEREST

None declared

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