Knowledge of Antibiotic Prescription Habit among Dental Students

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ABSTRACT

Antibiotics are commonly prescribed by almost all dental practitioners. The prescription habits of dentists vary among different groups of practitioners which can lead to various complications. This study aims in assessing the knowledge and practice on antibiotic prescription among the undergraduate students of a private dental college in Chennai. This study was conducted as a questionnaire based online survey in a private dental institute in Chennai. The data collection was done through google forms. Data was analysed using SPSS software. A correlation test and chi square analysis was done. On chi square analysis, the results showed p value 0.692. (> 0.05), does not have significant association. Most of the dentists preferred amoxicillin as their choice of antibiotics (82.35%). Majority of the dentists prescribed antibiotics for a period of 3-5 days (52.94%) and they prescribed antibiotics based on the symptoms of the patients. Thus, it can be concluded that the dentists had good knowledge on antibiotic prescription which is in contrary to many other studies, which may be attributed various limitations.

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INTRODUCTION

Antibiotics and analgesics are the most commonly prescribed medicine by dental practitioners (Tanwir and Khan, 2011). Antibiotics are chemical substances that are capable of destroying and inhibiting the growth of microorganisms such as bacteria and fungi (Naveen *et al.*, 2015). Antibiotics have been used for many years to manage infections and are prescribed by general dental practitioners (Zahabiyoun *et al.*, 2015). What does not kill you makes you stronger is probably the best for antibiotic resistant strains of bacteria developing because of unjustified antibiotic prescription (Ismail *et al.*, 2018). Since their introduction, antibiotics have been successfully introduced in dental practices for management as well as prevention of infections (Halboub *et al.*, 2016). Antibiotics may be prescribed in situations where dentists fail to give sufficient time for patient evaluation. They also antibiotics based on anecdotal experiences, heavy or just in case. Dentists prescribe antibiotics for orofacial pain, for localised signs and symptoms of infections without presence of systemic effects and clinical treatment may also be sufficient (Ismail *et al.*, 2018). There are various dental procedures being done such as extractions, root canal therapy, prosthetic procedures etc., (Patturaja and Pradeep, 2016). Patients sometimes tend to self medicate due to counter availability of antibiotics. Unjust antibiotic use increases the incidence of antibiotic reactions that are allergic to

patients (Ismail *et al.*, 2018).

Antibiotics resistance is a cause of major concern as more and more resistant strains are being seen (Tanwir and Khan, 2011). There are many researchers that determine on how dentists prescribe antibiotics to patients and their knowledge on it. This study was undertaken to determine the antibiotic prescription habits and knowledge of dentists in a private dental college.

MATERIALS AND METHODS

It is a questionnaire based cross-sectional study conducted among the undergraduate students of a private dental college in Chennai. It is an online survey conducted to assess the knowledge on antibiotic prescription habits. Ethical board clearance was obtained.

The data collection was done through google forms. The questionnaire contained 20 questions about their knowledge, attitude and practice of students in antibiotic prescription. Google forms were used to circulate the questionnaire. The data collected was tabulated in excel sheet.

Figure 1 X axis represents the most commonly preferred antibiotics and Y axis represents the number of patients. Among the male patients, 29.41% of the dentists preferred amoxicillin, 5.88% of them preferred amoxi clav. Among all the females 52.94% of the dentists preferred amoxicillin, 5.88% of the dentists preferred amoxi clav and 5.88% of the dentists preferred Clindamycin. On chi square analysis test results showed p-value 0.692. (> 0.05). Hence, there was no significant association between gender and antibiotics.

Figure 2 X axis represents the most preferred antibiotics and Y axis represents the number of respondents. Orange colour represents the dentists who prescribed amoxicillin, Green colour represents the number of dentists who prefer amoxi clav and blue colour represents the number of dentists who prefer clindamycin. 82.4% of the participants prescribe amoxicillin, 11.76% of the dentists prefer amoxi clav and 5.89% of the dentists prefer clindamycin. Amoxicillin is mostly preferred antibiotics by most of the dentists.

Figure 3 X axis represents the duration of antibiotic course and Y axis represents the number of dentists.47.06% of dentists prescribe antibiotics for less than three days (orange) and52.94% of the dentists prescribe it for 3-5 days (Green). Majority of the dentists prescribed antibiotics for a period of 3-5 days.

Figure 4 X axis represents the opinion of den-

tists and Y axis represents the number of dentists. 47.06% of the dentists accept antibiotic prescription before extraction is helpful for reducing pain and anxiety (Orange) whereas 52.94% of the dentists do not agree with it (Green). Majority of the dentists do not accept antibiotics before extraction is necessary.

Figure 5 X axis represents the factors for choosing a drug and Y axis represents the number of dentists. 70.59% of the dentists prescribe antibiotics based on symptoms (orange) and 29.41% of the dentists prescribed antibiotics based on guidelines (Green). Majority of the dentists prescribe antibiotics based on patients symptoms.

Figure 6 X axis represents the opinion of dentists and Y axis represents the number of dentists. Every dentist accepted that the medical history of a patient is an important consideration before starting any surgical procedure (orange).
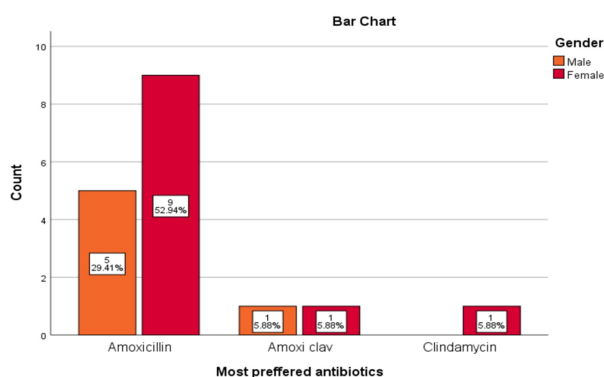

Figure 1: Bar graph representing the correlation between the most commonly preferred by both the gender
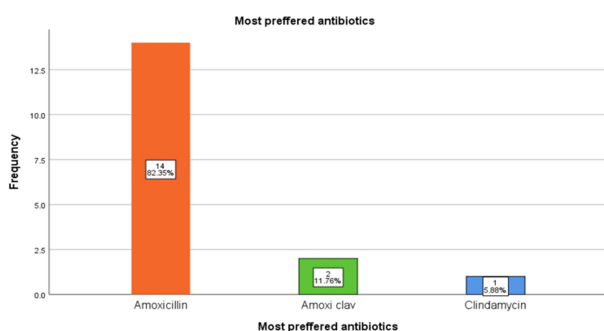

Figure 2: Bar chart representing the frequency association of most commonly preferred antibiotics by dentist post extractions

The data collected was entered in excel sheet and output variable was defined in SPSS software. A correlation test and chi square analysis test was done. The independent variables were age and gender. The dependent variables were knowledge, atti-
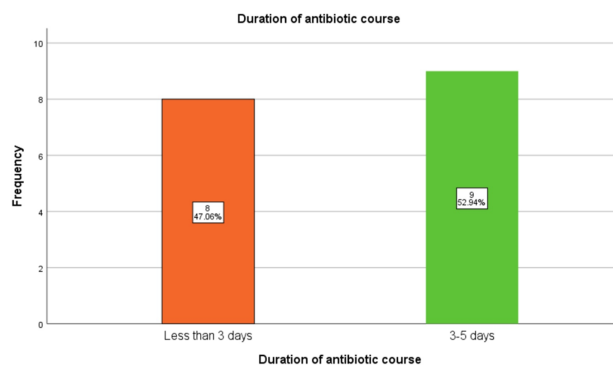
Figure 3: Bar chart representing the frequency distribution of duration of antibiotic course prescribed by dentists
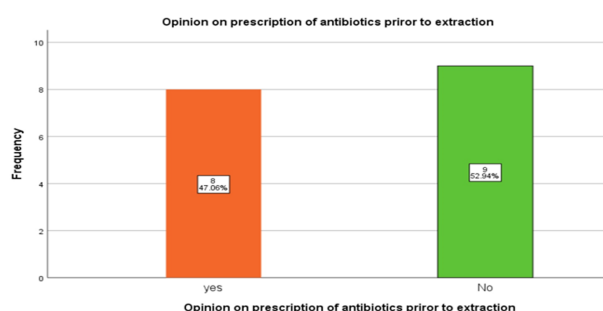

Figure 4: Bar graph representing the frequency distribution of dentists opinion on prescription of antibiotics prior extractions
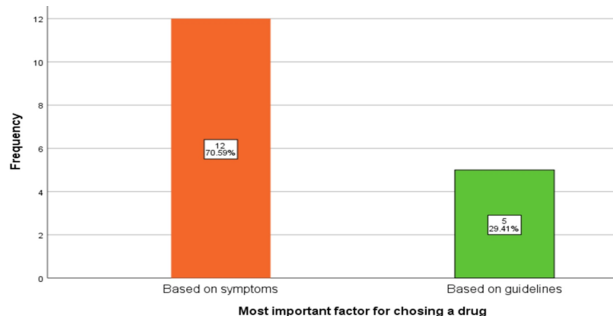

Figure 5: Bar graph representing the frequency distribution of most important factor for choosing a drug

Figure 6: Bar chart representing the frequency distribution of dentists ' opinion on importance of medical history before starting any surgical procedure

tude and practice of dentists in antibiotic prescription.The results were recorded and the difference was considered statistically significant.

RESULTS AND DISCUSSION

From the analysis of the reports, all were undergraduate students, with two participants were in their third years, six people were final years and the remaining participants were interns. Most of the participants were undergraduate interns presumed to have a fair knowledge about their practice.In a similar study on biomedical waste management, intern students have the highest level of knowledge and practices toward dental waste disposal when compared to final year and 3rd year students. Hence, these findings imply that proper training, continuing education programs, and short-term courses are required to motivate the dental students and dental auxiliaries (Kumar and Rahman, 2017).

Penicillin and cephalexin were not in practice. In this sample, Amoxicillin was the most frequent first choice of antibiotics for dental problems followed by clindamycin and Amoxi-Clav. The results are in consistence with international preferences and standards (Ismail *et al.*, 2018). The analgesic, anti-inflammatory, and antipyretic effects of NSAIDs are a result of the ability of these agents to inhibit cyclo-oxygenase (COX) enzymes, which catalyze the conversion of arachidonic acid to prostaglandins, which are fatty acids involved in the generation of pain, fever, and inflammation (Rao and Kumar, 2018). A study was done to compare the effect of application of 0.2% chlorhexidine gel, a eugenol-based paste, together with a control group on the postoperative incidence of alveolar osteitis in patients having underwent extraction of third molars, recorded post op pain, inflammation, infection, and wound healing. This can be used as an alternative to antibiotics to relieve postoperative complication (Jesudasan *et al.*, 2015). BTX-A was found very effective in the management of various facial pain conditions such as tension headache, migraine, myofascial pain, trigeminal neuralgia and in post-operative wound pain (Rahman and Kumar, 2017). Relatively large number of participants prescribed antibiotics for a course of 3-5 days, followed by less than 3 days. Many dentists in private practice may prescribe antibiotics on demand of patients and to avoid complications (Tanwir and Khan, 2011). Most of the dentists did not receive any emergency calls due to the antibiotic reactions (88.2%), with a few people did receive it.(11.8%). When asked about the ways to encounter this problem, most of the dentists asked their patients to stop the medication followed

by an immediate medical consultation. Prescription of antihistamine was also chosen by some dentists to encounter it. Almost every student ps are aware of the pharmacokinetics and pharmaco-dynamics of the drugs that are prescribed. Also, they are aware of the side effects of the drugs they prescribe. A few mentioned by them include nausea, vomiting, diarrhoea, gastritis, bloating, headache, rashes, stomach ache.

Everybody agrees that taking medical history prior to the procedure is important. For each patient, data on demographic information and details on type and site of injury, etiology of trauma, management undertaken, associated complications, alcohol use, the month during which the injuries occurred, and admissions should be collected (Abhinav, 2019). Pharmacological methods like sedation can be used for reducing the pain and anxiety related to the treatment in indicated patients (Kumar, 2017a,b) for patients with dentophobias.

A similar study on Comparison of Pterygomaxillary Disjunction With Tuberosity Separation in Isolated Le Fort I Osteotomies was also done (Christabel, 2016). Knowledge of dental students about the newest guidelines for antibiotic prophylaxis for high-risk patients in dentistry and the correct application of these guidelines in different aspects are very important for a safe dental practice (Kumar and Snena, 2016).

The steps taken to encounter a patient's antibiotic resistance includes giving test dosage, change of antibiotic, incomplete antibiotic course. Everyone are aware of the culture sensitivity test for antibiotics and its importance in prescribing antibiotics based on the nature of causative organisms. With improved survival rates due to the success of antiretroviral therapies, it is expected that more HIV positive patients will require increasingly competent and compassionate health care, including oral care, in the near future (Kumar and Rahman, 2017). Evaluation of Three-Dimensional Changes in Pharyngeal Airway Following Isolated Lefort One Osteotomy for the Correction of Vertical Maxillary Excess was done (Jain, 2019).

Yet a lot of oral and dental problems remain undiagnosed or untreated due to various reasons including alterations in gene expression. OSCC remains a major health problem and understanding the molecular basis of this malignancy is of great importance. Hardly, few studies have been carried out in the past to study the correlations of clinically relevant variables and the expression changes of possible oncogenic genes (Marimuthu, 2018). Other than medical management,with the advent of technology, newer

non invasive medical management and use of lasers have gained acknowledgement in the management of other severe diseases (Packiri, 2017). A study was done to assess application of extended nasolabial flap versus buccal fat pad graft in the surgical management of oral submucous fibrosis (Patil, 2017). From the above results it is said that the practitioners have a fair knowledge on prescription of antibiotics.

CONCLUSION

Within the limitations of the study, it can be concluded that the dentists had good knowledge on antibiotic prescription which is in contrary to many other studies. This difference may be due to various limitations such as single ethnic group ,unicentric study and limited population.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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