

Knowledge and Attitude Towards Antibiotic Prescription among Dental Students

P.S. Gayathri¹, Krithika C², V. Sandhya³, E.Sangeetha³, T.Santhoshika³ Priya Ramani⁴

¹Reader, ²Professor and Head of the Department, ³Junior Resident, ⁴Professor, Department of Oral Medicine and Radiology, Thai Moogambigai, Dental College and Hospital, DR MGR Educational and Research Institute, Chennai

Abstract

Introduction: Antibiotics play a crucial role in dental practice for both prophylactic and therapeutic purposes. Excessive consumption of antibiotics or using them unreasonably not only cause emergence of resistant bacterial strains and hostile drug reactions but also create an economic liability on the overall health system of a country.

Aim: The present study was aimed to evaluate the knowledge and attitude towards usage, antibiotic prescription and various concerns associated with antibiotics among dental students.

Methodology: A cross sectional study was conducted using self-administrated questionnaire, through Google forms using various social media platforms such as whatsapp, facebook among 202 dental students of third year, final year, interns and postgraduates across dental colleges in Tamil Nadu, India during COVID-19 pandemic lockdown period. Statistics was done and tabulated.

Results: Our study results show that the majority of dental students are aware of antibiotic prescription, uses of antibiotic and antibiotic resistance.

Conclusion: Though the knowledge and attitude about antibiotic prescription is high among dental students, there are still few areas where they lack adequate knowledge; these deficits can be rectified by encouraging them to attend cde programs, conferences related to antibiotic prescription.

Keywords: Antibiotics, Adverse drug reaction, Dental students, Prescription, Irrational practices.

Introduction

Resistance to antibiotic is an evolving and rapidly threatening serious concern leading to difficulty in treating infections caused by microorganism's particularly bacterial species. Excessive consumption of antibiotics or using them unreasonably not only cause emergence of resistant bacterial strains and hostile drug reactions but also create an economic liability on the

overall health system of a country [1].

Self-medication, sharing medication with other people, compliance of the patient and keeping part of the course for another occasion are the various patient related factors [2].

Among all these factors, the irrational use of antibiotics has contributed to the bacterial resistance with substantial clinical and economic impact. Recommending a particular antibiotic medication is a difficult task that requires theoretical and clinical knowledge combined with practical skills. Antibiotics play a pivotal role in dental practice for both prophylactic and therapeutic purposes[3].

Corresponding author:

Dr. Sangeetha,

Junior Resident, Thai Moogambigai Dental College and Hospital, Golden George Nagar, Chennai-600107, India
Email id: cutesangeet23@gmail.com

Contact:9344148021

The clinical effectiveness and efficacy of antibiotics depends on several influences such as the fear of losing a patient’s trust, lack of accurate information on indications of antibiotic usage and forced usage of antibiotics due to pressure from patients and families and partially on their precise usage, on patients, physicians and merchants [4].

It is high time to create awareness, find and bridge the gap about different dimensions of antibiotic uses including antimicrobial stewardship and inculcate a practice of rational uses of drugs in general and antibiotics in particulars among budding medical and dental practitioners [5].

Hence the present study was aimed to evaluate the knowledge and attitude towards usage, antibiotic prescription and various concerns associated with antibiotics among dental students.

Methodology

This study was designed to evaluate the knowledge and attitude towards usage, antibiotic prescription and various concerns associated with antibiotics. A cross sectional study was conducted among dental students of third year, final year, interns and postgraduates across dental colleges in Tamil Nadu, India during COVID-19 pandemic lockdown period. A total of 202 individual participated, in this study. The participants were informed about the study and assured that their participation was purely voluntary.

The self-administrated structured questionnaire consisting of 15 questions, in English, which is simple and easily understanding questions which helps the respondents. The questionnaire had a combination of

selected response to the questions and closed ended questions (Yes/No/options-based). It took 5-10 minutes to complete the questionnaires for participants. The questions were converted into google forms and shared to participants social media platforms such as whatsapp, facebook. The purpose and aim of the study were explained with requesting for participation, to the participants.

Statistical Analysis

On statistical evaluation using SPSS version20.0 (Ilanos, NY, USA) it was observed all the 202 samples were valid for the study with Cronbach’s alpha reliability score of 0.8947.

Results

On analysis of the given data it was observed majority of the study participants 57.42% pursue internship program followed by 15.8% final year students, 3rd year students and 11.38% postgraduates.

In the present study on analysing the knowledge about antibiotic prescription 47.5% of participants choose amoxicillin-clavulanic acid as their choice of drug (fig: 1). Around 87% of students are aware that antibiotics are effective against bacterial infections (fig: 2). 74.5% are unaware that ceftriaxone is a beta-lactam antibiotic. About 75% of the study participants prescribe antibiotics over a period of 5 days as recommended (fig: 3). On analysing the attitude towards prescription of antibiotics 87.5% students prescribe antibiotics for acute pulpitis. 87% of students prescribe antibiotics before any extraction procedure and 77.5% of students prescribe antibiotics for pain. 90% of the study participants believe antibiotic resistance as a public health issue (fig: 4) and recommended addressing this issue is important. In the present study the overall Knowledge and Attitude score was found to be good among postgraduates and interns, where as it was least among final years and third years respectively.

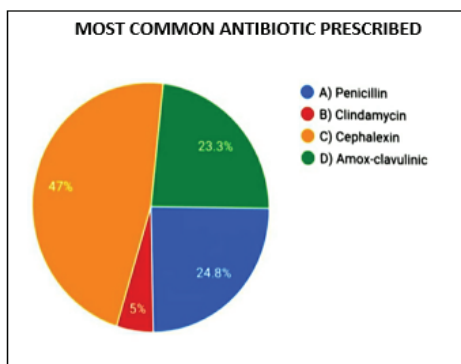


Figure 1

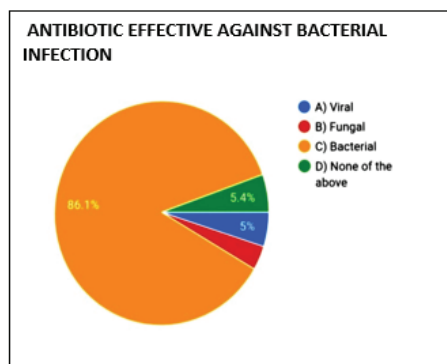


Figure 2

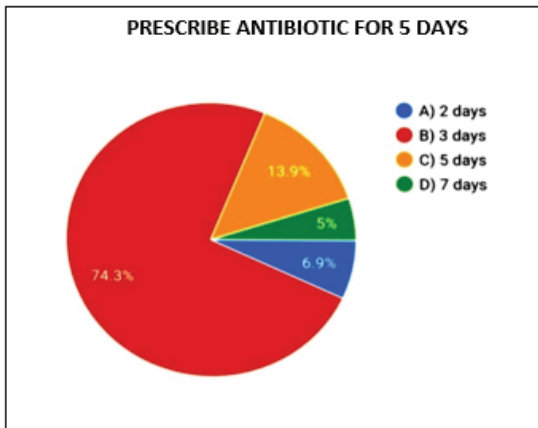


Figure 3

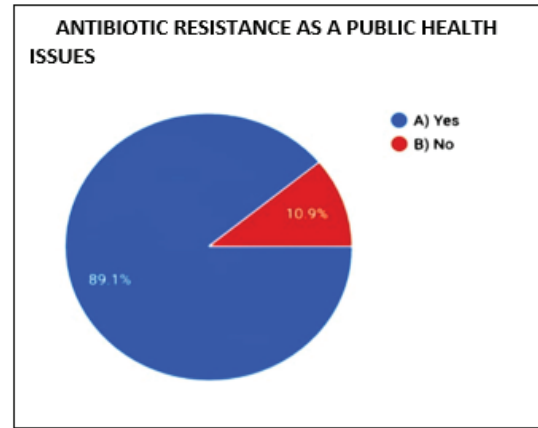


Figure 4

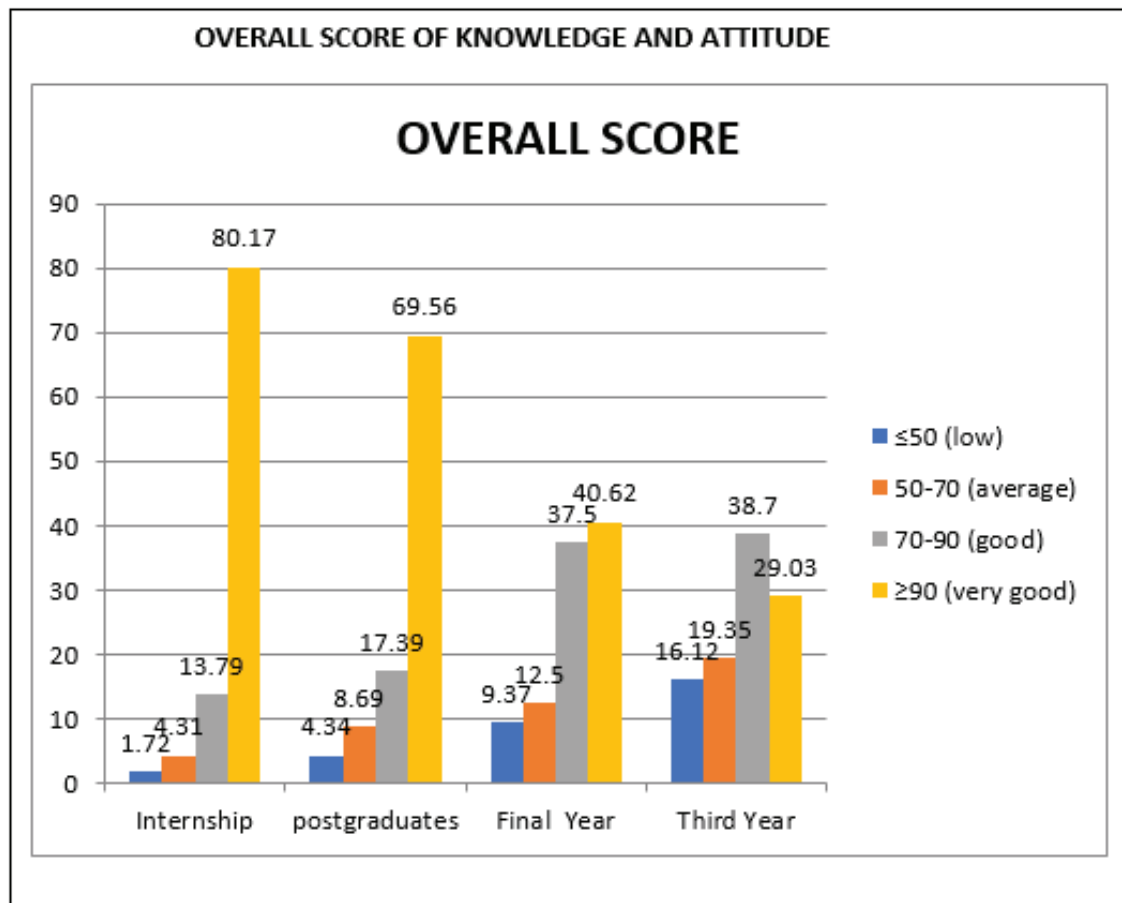


Figure 5

Discussion

Misconception in prescribing medicine is very common, particularly with new practitioners. The fundamental issue which adds to this irrational prescription is that in the clinical and therapeutic undergraduate studies, students are not satisfactorily trained and wherever it is taught, the learning provided is just theoretical [4]. Majority of our respondents had knowledge about the antibiotic resistance pertaining to ability of the drug to resist the effect of drugs. This was in contrast to Dyar et al [5] and Haque et al [6] who found that medical student's knowledge on antibiotics and antibiotic resistance was limited.

In the present study on analyzing the knowledge about antibiotic prescription, 47.5% of participants choose amoxicillin-clavulanic acid as their choice of drug. This is similar to the study by Tancawan et al [7,8] who showed amoxicillin-clavulanic acid was well-tolerated drug of choice with a safety profile consistent with the known pharmacologic effects and effective agent.

Around 87% of students accepted antibiotic as effective mode of treatment against bacterial infections. 74.5% of students are unaware that ceftriaxone is a beta-lactam antibiotic.

About 75% of the study participants prescribe antibiotics over a period of 5 days as recommended. Pouwels et al in 2019 [9] in his study concluded with the similar results thus stating that considerable reductions in antibiotic exposure and limiting the usage can be accomplished by bringing the duration of antibiotic prescriptions with guidelines.

On analyzing the attitude towards prescription of antibiotics 87.5% students prescribe antibiotics for acute pulpitis, 87% of students prescribe antibiotics before any extraction procedure and 77.5% of students prescribe antibiotics in patients complaining of tooth pain. This is similar to the study by Dar-Odeh NS [10] et al who demonstrated antibiotics are prescribed by dentists for treatment as well as prevention of infection. The Indications for systemic antibiotic use in dentistry are limited, since most dental and periodontal diseases are best managed by operative intervention and oral hygiene measures.

90% of the study participants believe antibiotic resistance as a public health issue and recommended addressing this issue is important. Similar observation was made by Sharma et al [11] where Self-medication and excessive choice of antibiotics holds key to development of antibiotic resistance. Large number of participants in our study had practiced self-medication with antibiotics; that is similar to a study done by Shubha R et al [12]. Majority of our participants had advised their friends and relatives to take antibiotics for which they are not qualified and not supposed to. However, the writing provides evidence of inadequate prescribing practices by dentists, due to a number of factors ranging from inadequate knowledge to social factors. There should be a mandated guide line that who should prescribe antibiotics and who shouldn't and it should be enforced strictly at the national level.

The total knowledge and attitude **towards antibiotic prescription among dental students** based on summing all the positive responses was 93% (highest) for interns group, 86% for post-graduates, 78% for final years and 69% for third years (least) respectively. Our study results were similar to the study by Nyquist et al [13] among 503 interns and senior physicians who showed 98% of physicians in France were aware of the resistance. Study done by Huang et al [14] that showed 83% of the Chinese medical students considered antibiotic resistance as a serious national issue. The study was contrast to various studies that shows an excessive use of antibiotics especially among senior medical students, reflecting a deficiency of antibiotics usage instruction in their curriculum.

According to the study conducted by Guzman-Alvarez et al [14] only 30% of dental students followed the WHO guidelines for prescribing, and the remaining did not follow them as most of them were not aware of such guidelines which in contrast to the present study where 75% of study participants were aware of WHO guidelines.

Conclusion

This survey was able to assess the knowledge and attitude of dental students toward antibiotic prescription. Under the limitations of the present study, it can be concluded that most dental students are aware of antibiotic resistance. However, there is no concurrence

among participants regarding important aspects of prescribing antibiotics such as dose, frequency and duration. Awareness need to be done through educational interventions. Students need to be updated on the current scenario and keep up with the latest emerging trends. Though the knowledge and attitude about antibiotic prescription is high among dental students, there are still few areas where they lack adequate knowledge; these deficits can be rectified by encouraging them to attend cde programs, conferences related to antibiotic prescription.

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References

1. Lipsitch M. The rise and fall of antimicrobial resistance. *Trends in microbiology*. 2001 Sep 1;9(9):438-44.
2. Alhomoud F, Aljamea Z, Almahasnah R, Alkhalifah K, Basalelah L, Alhomoud FK. Self-medication and self-prescription with antibiotics in the Middle East—do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. *International Journal of Infectious Diseases*. 2017 Apr 1;57:3-12.
3. Alghadeer S, Aljuaydi K, Babelghaith S, Alhammad A, Alarifi MN. Self-medication with antibiotics in Saudi Arabia. *Saudi pharmaceutical journal*. 2018 Jul 1;26(5):719-24.
4. Doshi A, Asawa K, Bhat N, Tak M, Dutta P, Bansal TK, Gupta R. Knowledge and practices of Indian dental students regarding the prescription of antibiotics and analgesics. *Clujul Medical*. 2017;90(4):431.
5. Dyar OJ, Howard P, Nathwani D, Pulcini C. Knowledge, attitudes, and beliefs of French medical students about antibiotic prescribing and resistance. *Médecine et maladies infectieuses*. 2013 Oct 1;43(10):423-30.
6. Haque M, Rahman NA, McKimm J, Sartelli M, Kibria GM, Islam MZ, Binti Lutfi SN, Binti Othman NS, Binti Abdullah SL. Antibiotic use: A cross-sectional study evaluating the understanding, usage and perspectives of medical students and pathfinders of a public defence university in Malaysia. *Antibiotics*. 2019 Sep;8(3):154.
7. Tancawan AL, Pato MN, Abidin KZ, Asari AS, Thong TX, Kochhar P, Muganurmah C, Twynholm M, Barker K. Amoxicillin/clavulanic acid for the treatment of odontogenic infections: a randomised study comparing efficacy and tolerability versus clindamycin. *International journal of dentistry*. 2015 Aug 2;2015.
8. Pouwels KB, Hopkins S, Llewelyn MJ, Walker AS, McNulty CA, Robotham JV. Duration of antibiotic treatment for common infections in English primary care: cross sectional analysis and comparison with guidelines. *bmj*. 2019 Feb 27;364.
9. Dar-Odeh NS, Abu-Hammad OA, Al-Omiri MK, Khraisat AS, Shehabi AA. Antibiotic prescribing practices by dentists: a review. *Ther Clin Risk Manag*. 2010 Jul 21;6:301-6.
10. Sharma S, Mehta RK. Knowledge, attitude and practice of self-medication among medical students. *Age (years)*. 2015;20(49):65-3.
11. Shubha R, Savkar MK, Manjunath GN. Self medication pattern among dentists with antibiotics. *Journal of Evolution of Medical and Dental Sciences*. 2013 Nov 18;2(46):9037-42.
12. Nyquist AC, Gonzales R, Steiner JF, Sande MA: Antibiotic prescribing for children with colds, upper respiratory tract infections, and bronchitis. *Jama* 1998, 279(11):875–877.
13. Huang Y, Gu J, Zhang M, Ren Z, Yang W, Chen Y, Fu Y, Chen X, Cals JW, Zhang F. Knowledge, attitude and practice of antibiotics: a questionnaire study among 2500 Chinese students. *BMC medical education*. 2013 Dec;13(1):1-9.
14. Guzmán-Álvarez R, Medeiros M, Lagunes LR, Campos-Sepúlveda AE. Knowledge of drug prescription in dentistry students. *Drug, healthcare and patient safety*. 2012;4:55.