Journal of Applied Dental and Medical Sciences
NLM ID: 101671413 ISSN:2454-2288
Volume 6 Issue 2 April-June 2020

Original Research

Assessment Of Knowledge & Attitude Towards Antibiotic Use Among Interns In The City Of Bhopal

Harsh Mahajan, Puja Hazari, Naveen S Yadav, Abhinav Khare, Shweta Narwani, Juhi Lohiya

Dept. of Prosthodontics, People's Dental Academy, Bhopal, India

ARTICLE INFO

Keywords:
Antibiotics, Vaccine, Prophylaxis, Infections, Odontogenic

ABSTRACT

Background: Antibiotics are one of the most effective weapons against diseases. In the control of many infectious diseases antibiotics play a vital role. The aim of this study is to assess knowledge, attitude, and practice toward antibiotic use among interns of different dental colleges of Bhopal.

Material and Methods: A cross-sectional study was conducted among the interns of dental colleges of Bhopal through the asynchronous platform of online learning google forms. The questionaire comprised of 20 questions. The questionnaire was prepared and distributed to interns of different dental colleges in the city of Bhopal.

Result: Majority of the participants (97%) believed that the antibiotics are effective against bacterial infection, different oral condition needs different antibiotics (91%) and have fixed protocol regarding dosage and duration (94 %). More than half of the participants (52.7%) disagreed about the prescription of antibiotics against viral infection.

Conclusion: It can be concluded that majority of the dental interns in the city of Bhopal were aware of commonly used antibiotics, their mechanism of action, dosage, indication, ethics and protocol. Further educational interventions on antibiotics and its association with drug resistance is needed to promote judicious use of antibiotic.

INTRODUCTION

Antibiotics are powerful medicines that fight certain infections and can save lives when used properly. They either stop bacteria from reproducing or destroy them. In general, antibiotic is a medicine that inhibits the growth of or destroys microorganisms. Alexander Fleming discovered penicillin, the first natural antibiotic, in 1928. He found it to be effective against all gram positive pathogens[1]. Since then many antibiotics are discovered that have saved millions of lives. The immune system is responsible for killing the pathogenic bacteria with the help of WBCs. Sometimes, however, the number of harmful bacteria is excessive, and the immune system cannot fight them all. Antibiotics are useful in such scenario. Use of antibiotics in dentistry is not uncommon. About 10% of all antibiotic prescriptions are related with dental infections[2]. The association of amoxicillin-clavulanate is the drug most frequently prescribed by dentists. In last few decades, an increased number of bacterial strains resistant to conventional antibiotics are found in the oral cavity. This has become a major problem amongst clinicians.Nowadays due to emergence of resistant microorganism the effectiveness of antibiotics is decreasing. The use of antibiotics without physicians recommendation is a most common contributing factor for antibiotic resistant[3,4] .A study was conducted among university students in Karachi reported 47.6% use of antibiotics without doctor's prescription[5].Over and improper use of antibiotics increases the risk of developing Antimicrobial

* Corresponding author***: Dr. Hazari Puja,*** *Dept. of Prosthodontics, People's Dental Academy, Bhopal, India*.

Resistance (AMR). Centers for Disease Control and Prevention and infectious disease organizations also suggested that inappropriate use of antibiotics should be reduced or stopped[6] because once the organism develops resistance it leads to delayed duration of therapy, increased hospital stay, increased mortality, use of additional drugs, and laboratory tests leading to increase in the overall expenditure of treatment[7].

In dentistry antibiotics are prescribed for odontogenic infections, as prophylactic treatment to prevent focal infection, and to prevent local infection and systemic spread among patients undergoing surgical oral or dental treatment. Since antibiotics have broad spectrum so they should be used very carefully and dental graduates must be aware of their protocol. The following study was conducted to assess the knowledge and attitude of interns towards antibiotics in the city of Bhopal.

MATERIALS AND METHODS

To assess the knowledge and attitude of interns towards antibiotics practice a cross sectional survey was performed among the interns of different dental colleges in Bhopal .It was a questionnaire-based study. Data was collected using an online self-administered Questionnaire containing 20 questions. A close ended questionnaire was used. All the participants who were willing to participate were included in the survey and link of questionnaire were shared with them, all the remaining students were excluded. The responses were unnamed and procedure of form filling was elucidated to the participants. There were two sections in the questionnaire, Section one includes basic knowledge of use of antibiotics among interns and section two includes clinical knowledge of commonly used antibiotics .The attitude questionnaires were designed according to the five-point Likert scale having options of “strongly disagree”, “disagree”, “neutral”,“agree”, and “strongly agree”. Second section mainly includes names of commonly used antibiotics. The collected data was tabulated using excel and analysis was done using Statistical Package for Social Science(SPSS), for windows version 22 computer software. Descriptive statistics, frequencies, and percentage were used to summarize the result and presented using tables.

RESULTS

A total of 300 interns from different dental colleges of Bhopal submitted a filled questionnaire. The description of Attitudes of interns towards use of antibiotics was reveal in **Table 1**. Majority of the participants (97%) believed that the antibiotics are effective against bacterial infection. Different oral condition needs different antibiotics (91%) and have fixed protocol regarding dosage and duration (94 %). More than half of the participants (52.7%) were disagree about the prescription of antibiotics against viral infection.More concerned attitude was seen in interns toward indiscriminate use of antibiotics causes’ drug resistance (90%), excessive and prolonged use of antibiotics lead to nosocomial infections (60.3 %) and negative effects on the body's own non pathogenic beneficial microorganisms (80.3%). Most of the participants (80%) were disagree about termination of course before completion, 75.7% of interns thought that in case of mild infection body recovers on its own while 65.3 % believed that antibiotics should prescribed along with probiotics.68.7 % interns believed that diarrhoea, vomiting and skin rashes were the common side effects of antibiotics. 79.3% interns believed that to prevent gastric ulcers antacids should be prescribed along with antibiotics. 92.3% interns believed that antibiotics had specific mechanism of action.

Regarding the knowledge towards use of antibiotics **Table 2** most of the interns agreed that Amoxycillin is the drug of choice following extraction and also as a prophylactic drug in oral surgical procedures (fig 1 & 2). They also agreed that Tetracycllin has teratogenic effects, and it also inhibit protein synthesis (fig 3 & 4) .86.3% interns agreed that penicillin is active against gram positive bacteria (fig5)

Table 1: Attitudes towards use of antibiotics among Interns of Bhopal city (n= 300)

Statement	Strongly Agree n(%)	Agree n(%)	Neutral n(%)	Disagree n(%)	Strongly Disagree n(%)
1. Antibiotics are effective against bacterial infection.	194 (64.7%)	97 (32.3%)	09 (3%)	00 (00)	00 (00)
2. Different antibiotics are indicated for different oral conditions.	88 (29.3)	185 (61.7)	27 (9)	00 (00)	00 (00)
3. Antibiotics have fixed protocol regarding dosage and duration.	149 (49.7)	133 (44.3)	15 (5)	3 (1)	00 (00)
4. Antibiotics can be prescribed for viral infections?	23 (7.7)	70 (23.3)	49 (16.3)	113 (37.7)	45 (15)
5. Indiscriminate use of antibiotics can lead to drug resistance.	161 (53.7)	109 (36.3)	27 (9)	00 (00)	3 (1)
6. Excessive use of antibiotics lead to nosocomial infections.	46 (15.3)	135 (45)	64 (21.3)	46 (15.3)	9 (3)
7. Prolonged use of antibiotics cause negative effects on the body's own non pathogenic beneficial microorganisms.	93 (31)	148 (49.3)	45 (15)	14 (4.7)	00 (00)
8. Prescribed antibiotic course can be terminated before completion of the course if one feels better.	9 (3)	28 (9.3)	23 (7.7)	120 (40)	120 (40)
9. The body recovers on its own without antibiotics in case of mild infections.	75 (25)	152 (50.7)	52 (17.3)	18 (6)	3 (1)
10. Probiotics should be prescribed along with antibiotics.	78 (26)	118 (39.3)	83 (27.7)	12 (4)	9 (3)
11. Diarrhoea, vomiting and skin rashes are the common side effects of antibiotics	150 (50)	56(19)	77 (25.7)	10(3)	07(2)
12. In case of gastric ulcers antacids are prescribed along with antibiotics	168(56)	70(23.3)	42 (14)	10(3)	10(3)
13. Antibiotics have specific mechanism of action	227(75)	50(16.6)	17 (5.7)	04(1)	2(0.6)

Table 2: Knowledge towards use of antibiotics among Interns of Bhopal city n (300)

Knowledge Statement	Responses	Total n	Percentage %
1. Which antibiotic is the drug of choice post extraction?	Amoxicillin	291	97
	Gentamicin	3	1
	Doxyciclin	3	1
	Azythromycin	3	1
2. Most common antibiotic indicated as prophylactic drug in oral surgical procedures?	Amoxicillin	194	64.7
	Augmentin	78	26
	Metronidazol	28	9.3
	Clotrimazole	00	00
3. Which of the following has teratogenic effects?	Ampicillin	11	3.7
	Tetracyclin	251	83.7
	Ciprofloxacin	20	6.7
	Rifampicin	18	6
4. Antibiotics which can be prescribed in case of Severe periodontitis?	Ciprofloxacin	32	10.7
	Metronidazole	80	26.7
	Both	174	58
	None	14	4.7
5. Which of the following antibiotic inhibit protein synthesis?	Penicillin	52	17.3
	Ampicillin	32	10.7
	Tetracycline	187	62.3
	Cephalosporin	29	9.7
6. Which of the following is a broad spectrum antibiotic?	Azythromycin	18	6
	Tetracycline	45	15
	Amoxicillin	43	14.3
	All of them	194	64.7
7. Antibiotic used for gram positive bacteria?	Cotrimoxazole	9	3
	Ofloxacin	16	5.3
	Penicillin	259	86.3
	Levofloxacin	16	5.3

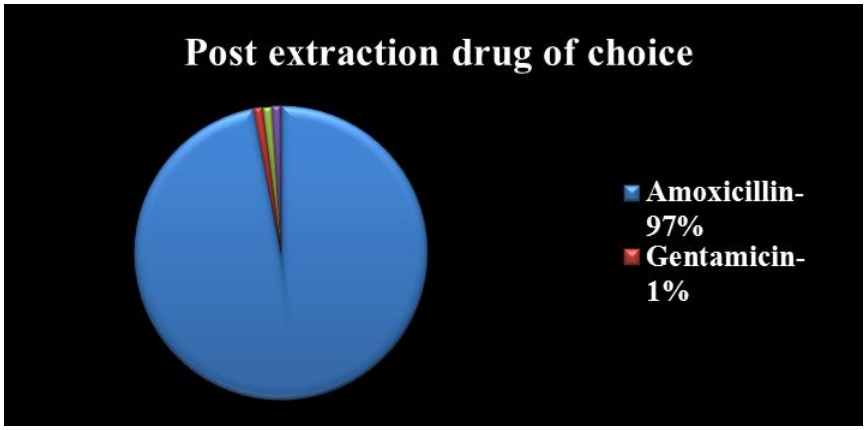

Fig. 1: Drug of choice post extraction

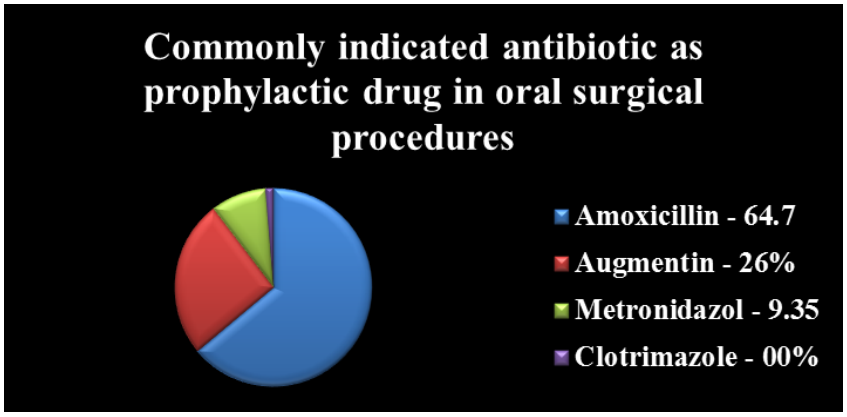

Fig. 2: Prophylactic drug

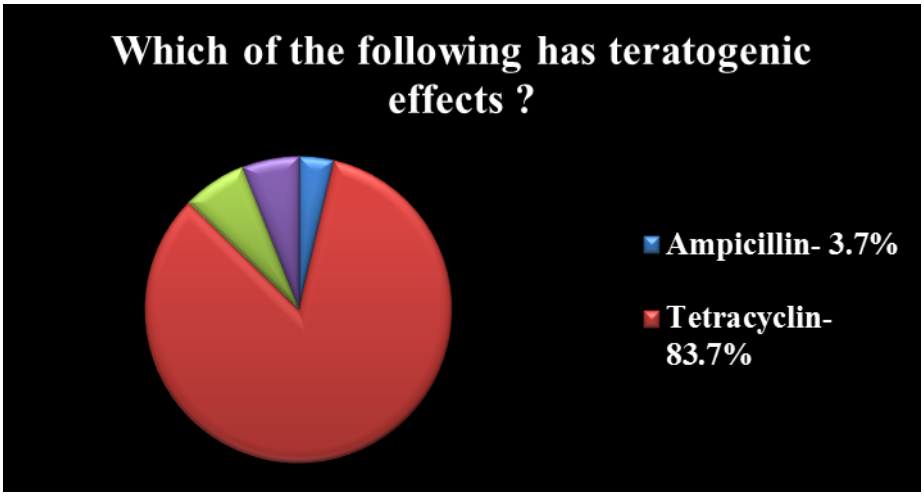

Fig. 3: Drug having Teratogenic effect

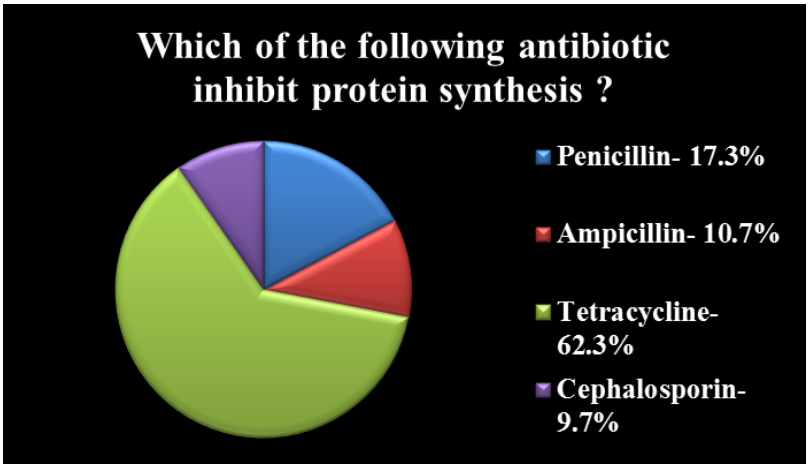

Fig. 4: Drug inhibiting protein synthesis

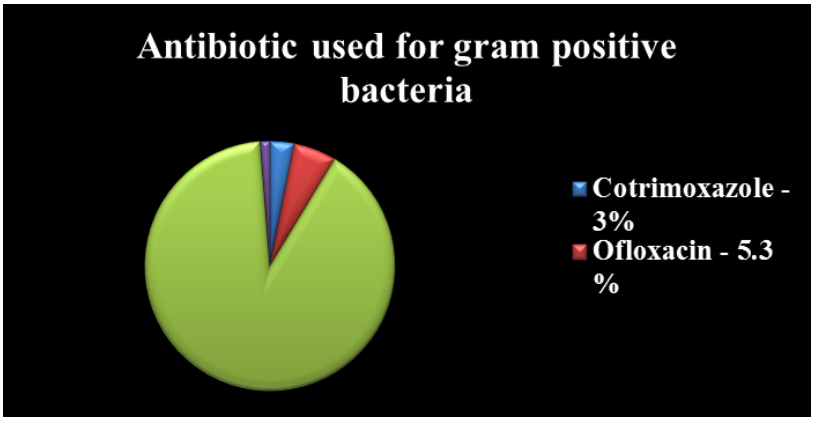

Fig. 5: Antibiotic active against gram positive bacteria

DISCUSSION

The aim of this study was to assess the knowledge and attitude of dental interns about use of antibiotics. Many studies have been conducted for medical students to access the knowledge about use of antibiotics A study by Ibia et al. concluded that senior medical students do not choose antibiotics appropriately in various clinical settings[8]. Similar study was carried out in Malaysia among final-year dental and pharmacy students also reported a good knowledge of antibiotic use among medical students[9,10].

Result suggested that dental students also have good knowledge regarding use of antibiotics. In the present study, many students (53.7%) agreed that injudiciously use of antibiotics could lead to drug resistance. Findings of our study was lower than the study which was done in Bahir Dar (69.7%)[11] and Namibia(72%)[12]. 45 % students think that excessive use of antibiotics lead to nosocomial infections.

A study conducted in 2013 stated that probiotics should always be paired with antibiotics to which students of our study also agreed. 40% of students in our study are against the termination of antibiotics before the

completion of its course. This result is less than study done in China, 49.8%[13], and Malaysia, 55.9%[14]. But higher than the study conducted in Namibian in which they reported only 20% result.Results obtained from the above study reveal that majority of the dental interns in the city of Bhopal are aware of commonly used antibiotics, their mechanism of action, dosage, indication, ethics and protocol.

CONCLUSION

This study was conducted to access the knowledge, attitude, and practice of dental interns toward antibiotic use. In the present study respondent displayed fair knowledge particularly in regard to the role of antibiotics in common dental infections. From the study it can be drawn that additional antimicrobial education should be incorporated in the dental curriculum to combat antimicrobial resistance (AMR)

REFERENCES

1. Siang Yong Tan, Yvonne Tatsumura. Alexander Fleming1881-1955: Discoverer of penicillin. Singapore Med J. 2015; 56(7):366-367
2. Rafael Poveda Roda, José Vicente Bagán, José María Sanchis Bielsa, Enrique Carbonell Pastor. Antibiotic use in dental practice. A review. Med Oral Patol Oral Cir Bucal. 2007; 12:186-92.
3. I.A Rather, BC Kim, VK Bajpai, YH Park. Self medication and antibiotic resistance: Crisis, current challenges, and prevention. Saudi Journal of Biological Sciences. 2017; 24(4):808-812
4. Shafie M, Eyasu M, Muzeyin K, Worku Y, Martin Aragon S. Prevalence and determinants of self medication practice among selected households in Addis Ababa community, PLoS One. 2018 , 13(3).
5. Shah J, Ahmad H, Rehan B et al. Self-medication with antibiotics among non-medical university students of Karachi: A cross-sectional study. BMC Pharmacology & Toxicology. 2014; 15(1): 1-7
6. Srinivasan A, Song X, Richards A, Sinkowitz-Cochran R, Cardo D, Rand C. A survey of knowledge, attitudes, and beliefs of house staff physicians from various specialties concerning antimicrobial use and resistance. Arch. Intern. Med. 2004; 164:1451-1456.
7. Dellit TH, Owens RC, McGowan JE Jr et al. Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America guidelines for developing an institutional program to enhance antimicrobial stewardship. Clinical Infectious Diseases. 2007; 44(2):159-177
8. Ibia E, Sheridan M, Schwartz R. Knowledge of the principles of judicious antibiotic use for upper respiratory infections: a survey of senior medical students. South. Med. J. 2005; 98:888-894.
9. Ahmad A, Khan MU, Patel I, Maharaj S, Pandey S, Dhingra S. Knowledge, attitude and practice of b.Sc. Pharmacy students about antibiotics in Trinidad and Tobago. J Res Pharm Pract. 2015; 4:37-41
10. Jamshed SQ, Elkalmi R, Rajiah K, Al-Shami AK, Shamsudin SH, Siddiqui MJ et al. Understanding of antibiotic use and resistance among final-year pharmacy and medical students: a pilot study. J Infect Dev Ctries. 2014; 8:780–5.
11. Tesfaye Z. Patient Knowledge and Practice on Antimicrobial Use and Resistance in Felege Hiwot Hospital, Bahir Dar, Ethiopia. J Basic Clin Pharma. 2017; 8:S010-S015
12. Pereko DD, Lubbe MS, Essack SY. Public knowledge, attitudes and behaviour towards antibiotic usage in Windhoek, Namibia," Southern

African Journal of Infectious Diseases. 2015; 30(4):134-137

13. Chen C, Chen YM, Hwang KL et al. "Behavior, attitudes and knowledge about antibiotic usage among residents of Changhua, Taiwan. Journal of Microbiology, Immunology, and Infection. 2005; 38(1): 53-59
14. Islahudin F, Tamezi AMA, Mohamed Shah N. Knowledge, attitudes and practices about antibiotic use among the general public in Malaysia. Southeast Asian Journal of Tropical Medicine and Public Health. 2014; 45(6):1474-1482.