



ANTIBIOTIC PRESCRIPTION PATTERN OF DENTISTS – A QUESTIONNAIRE BASED SURVEY STUDY

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**ABSTRACT**

Based on surveys it has been observed that dentists have limited knowledge about prescribing antibiotics in their regular practice. The main aim of this study was to gauge the knowledge and perspective of dentists in Mumbai towards antibiotic prescription. The study was conducted amongst dentists in Mumbai, which is a city in the state of Maharashtra, India. A questionnaire was sent to 150 dentists via Google form, out of which 131 responses were received. The questionnaire included questions about the knowledge and perspective of dentists towards prescribing antibiotics to dental patients. Amoxicillin and amoxicillin clavulanic acid were found to be the most popular antibiotics. More than 66% of the recorded dentists prescribed antibiotics daily. An improvement in the awareness of dentists regarding antibiotic prescribing to patients particularly with respect to type of antibiotic and its clinical applications is needed.

**KEYWORDS :** Odontogenic Infections, Antibiotic, Dentists, Endodontic, Extractions

**INTRODUCTION**

The most common type of infection for which dentists advise antibiotics for patients is Odontogenic infection. Antibiotics are surely a boon but as well know a coin has two sides, similarly antibiotics can be dangerous if used injudiciously. Severe complications may be caused by irrational use of antibiotics. Antibiotics are an adjunct to definitive treatment, but dentists prescribe them regularly for shorter periods as a substitute for the definitive treatment.

Antibiotic resistance is a global problem. But with an increased awareness of antibiotic resistance, a lot of questions have been raised on the scope of antibiotic use in dentistry. However, antibiotic resistance during dental therapy is not very high, because dentists prescribe approximately 10% of all common antibiotics.

Health organizations have now emphasized on the appropriate use of antibiotics. A survey conducted among general dentists in 2004 revealed that 15% of the dentists in United Kingdom prescribe antibiotics on a daily basis and 40% of the dentists at least thrice a week.

Plenty of studies have been conducted all over the world regarding antibiotic prescription patterns. However, not much information is available related to these practices among dentists practicing in Mumbai. Hence, the aim of this study was to determine antibiotic prescription of dentists in Mumbai and their preference to professional guidelines while treating dental problems.

**MATERIAL AND METHODS**

The present survey was conducted to investigate the antibiotic prescribing practices among dental professionals in Mumbai, Maharashtra. A total of 150 dentists, agreed to treat patients in different public and private hospitals. A questionnaire to find out general information and questions related to antibiotics use in certain dental clinical procedures was given to the dentists. The questions were mostly close ended and had a few open questions to permit free response. The questionnaires were sent to the dentists via Google form. 131 of the 150 dentists responded to the questionnaire.

Apart from the demographic details, a questionnaire with multiple choices about antibiotic regimen was made:

- How often do you give a prescription for antibiotics for dental infections?  
 a. Daily b. Weekly c. Monthly d. Hardly ever

- Which antibiotic do you prescribe most commonly?  
 a. Penicillin b. Amoxicillin c. Clindamycin d. Cephalexin e. Amoxicillinclavulanic acid
- Which route of antibiotic administration is most common?  
 a. Oral b. Intravenous
- Do you get emergency calls?  
 a. Yes b. No
- Would you give an antibiotic for reversible pulpitis?  
 a. Yes b. No
- Would you prescribe antibiotics before extraction?  
 a. Yes b. No
- Would you give an antibiotic for pain?  
 a. Yes b. No
- For how many days do you prescribe antibiotics for children?  
 a. 2 days b. 3 days c. 5 days d. 7 days
- Do you record medical history of the patient before prescribing antibiotics?  
 a. Yes b. No
- Do you prescribe antibiotics to pediatric patients  
 a. Yes b. No

**Table-1: Information of the participants/dental professionals**

	Undergraduates n=77		Postgraduate n=54		p	OR
	Male	Female	Male	Female		
> 10 Years Experience	30	06	15	10	0.12	0.062
< 10 Years Experience	31	10	21	08		
Total n= 131						

**Table-2: Age of the participants**

S No	Age (Years)	N(131)	p	OR (Odds Ratio)
1	2530	45	0.32 (NS)	0.16
2	3145	57		
3	> 46	29		
(NS-Statistically non significant)				

**Table-3: Specialities of the postgraduate dentists**

S No	Speciality	n
1	Periodontics	14
2	Oral Surgery	12
3	Orthodontics	05
4	Conservative Dentistry and Endodontics	06
5	Prosthodontics	11
6	Pedodontics	02
7	Oral Pathology	02
8	Oral Medicine	01
9	Public Health Dentistry	01
		54

**Table-4: Responses to questions 110**

S No	Question	Choices	UG Response (%)	PG Response (%)	p
1	Ques no 1	a)	45 50.44%	25 46.29%	0.022 (Significant)
		b)	12 15.58%	22 40.74%	
		c)	15 19.48%	5 9.25%	
		d)	5 6.49%	2 3.70%	
2	Ques no 2	a)	10 12.98%	2 3.70%	0.037 (Significant)
		b)	20 25.97%	8 14.81%	
		c)	2 2.59%	2 3.70%	
		d)	5 6.49%	15 27.77%	
		e)	40 51.94%	27 50.00%	
3	Ques no 3	a)	77 100.0%	54 100.0%	0.063
		b)	0 0.00%	0 0.00%	
4	Ques no 4	a)	75 97.40%	50 92.59%	0.12
		b)	2 2.59%	4 7.40%	
5	Ques no 5	a)	60 77.92%	35 64.81%	0.062
		b)	17 22.07%	19 35.19%	
6	Ques no 6	a)	77 100.0%	42 77.77%	0.047 (Significant)
		b)	0 0.00%	12 22.22%	
7	Ques no 7	a)	12 15.58%	12 22.22%	0.066
		b)	65 84.41%	42 77.77%	
8	Ques no 8	a)	5 6.49%	2 3.70%	0.031 (Significant)
		b)	15 19.48%	22 40.74%	
		c)	45 58.44%	25 46.29%	
		d)	12 15.58%	5 9.25%	
9	Ques no 9	a)	60 77.72%	50 92.50%	0.012 (Significant)
		b)	17 22.07%	4 7.40%	
10	Ques no 10	a)	75 97.40%	50 92.50%	0.071
		b)	2 2.50%	4 7.40%	

**Statistical Analysis**

The data was numerically coded and entered into SPSS - version 20 (SPSS Inc., Chicago, IL, USA) database and analyzed using crosssection descriptive statistics. Chi square test was used to assess the significance in the difference in the proportion of responses with p <0.05 was considered statistically

**RESULTS**

A total of 10 pretested closed ended questions were made and sent to 150 dental clinicians via Google form. Out of which only 131 filled the form. Overall 77 undergraduate dental practitioners and 54 postgraduate specialists took part in this

survey by filling the questionnaire. The questionnaires with less than 90% completed answers were not included in the study. Out of all the 77 undergraduate general dentists, 36 dentists were having less than 10 years of clinical experience out of which 30 were male and 6 were female. 31 undergraduate male dental practitioners and 10 undergraduate female dental practitioners with more than 10 years of experience participated in the study. In the postgraduates' group, 15 male dentists and 10 female dentists with less than 10 years of experience and 21 males and 8 females with more than 10 years of experience completed the survey (Table 1).

The mean of prescribing antibiotic treatment was 4 + 0.23 days for adults and for children the antibiotic therapy was 4 + 0.84 days. In terms of the age of the dental practitioners, the study population was divided into three age groups of 25 - 30, 31 - 45 and over 46 years of age (Table 2).

The division of the 54 postgraduate dental specialists is given in (Table 3). Their response to the given questions is mentioned in table 4. Within the limitations of the present study the descriptive statistics was used for representing each category of response and kappa statistics was used to assess the reliability of the initial cohort. Kappa statistic was discovered to be 0.82 and the same questionnaire was used in the main study (initial cohort participants were not included). Chi square test which was used to assess the significance in the difference in the proportion of responses shows that with p <0.05 being statistically significant, statistically significant differences were observed in questions 1,2,6,8 and 9 among undergraduate and postgraduate practitioners which indicates there is a need of awareness and that knowledge deficits regarding correct and standardized use of antibiotic regimen.

**DISCUSSION**

Under the limitations of the present study it was observed that a high number of dentists (almost 50%) prescribed antibiotics daily while less than 6% of the practitioners did not prescribe antibiotics regularly. Amoxicillin and clavulanic acid was the antibiotic of choice for most of the dentists with almost 50% of the 131 responders making them the choice of drugs. According to BMJ group and the Royal Pharmaceutical Society of Great Britain amoxicillin/clavulanic acid can be used. They also mentioned that 29.7% doctors prescribe combination antibiotics like amoxicillin/clavulanic acid combined with metronidazole. Paterson SA and Palmer NO saw that amoxicillin was very effective in the treatment of pediatric infections. Combined drug prescription in dental practice is becoming more important as now a days the doctors face resistant or mixed infections.

Gowri S et al found out that the most prescribed antibiotic in Uttar Pradesh, India is amoxicillin. Dar-Odeh NS et al conducted a survey in Jordan and concluded that dentists extensively prescribed unnecessary antibiotics in irrelevant clinical conditions as an alternative to sterilization or to postpone treatment which might be one of the reason for prolonged usage of antibiotics in our study as well. Llor C et al stated that in Spain, amoxicillin plus clavulanic acid is the highest used antibiotic. Amoxicillin is also the principal antibiotic prescribed in dental practitioners in other European countries. This was observed by Tulip DE et al.

In USA amoxicillin prescribing dentists were only by 27.5% of members while 18.7% members prescribed ofloxacin+ornidazole. Whereas, metronidazole and clindamycin were the most prescribed drugs in non penicillin-allergic patients.

In this survey, almost 50% of dentists prescribed antibiotics daily, similar to the finding of Segura-Egea et al and higher

than what was observed by Rodriguez Nuñez et al. Surveys which have been conducted in the USA showed higher percentages.

In the current study, greater than 75% of the participants prescribed antibiotics following extractions. This was observed to be 100% in undergraduate respondents. This is because of the fact that antibiotics prevent further infection. However, antibiotics should be prescribed only if there are signs of systemic spread of infection.

Studies have also shown that antibiotic prescription by postgraduate dental practitioners is much lesser when compared to that of undergraduate dentists because of the better understanding of the disease conditions and superior diagnostic and treatment skills.

The duration of antibiotic course was seen to be different in various studies. A short course of antibiotic usage for 23 days is advisable in children. Usage of a sub therapeutic dosage for longer duration can cause the development of mutant strains. Not only this, but it can also result in the destruction of normal flora in the gut and oral cavity.

It was seen that more than 60% of the participants prescribed antibiotics for endodontic pain in our study. Baumgartner JC has stated that a majority of infections of endodontic origin can be managed without antibiotics.

Conflicting results from other studies might be attributed to differences in demography and the lack of understanding of the rationale of usage of antibiotics and anti-inflammatory.

## CONCLUSION

Under the limitations of the present study it can be concluded that maximum dentists participating in the survey prescribed antibiotics on a daily basis. Even if low number of participants is a limitation of the study, the results of this study provide an insight about the perspective and knowledge of dentists on prescribing antibiotics. Also, it was seen that there was no consensus among participants regarding the important aspects of antibiotic prescribing like dose, frequency and duration. Pain is the most commonly faced problem by dentists in a dental clinic on a daily basis. Pain may or may not be caused by an infection. If the pain is not due to an infection, there is no point in prescribing antibiotics. Antibiotics may be used as an adjunct in the treatment.

**SOURCE OF SUPPORT:** Nil

**CONFLICT OF INTEREST:** None

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