



Pattern of antibiotic prescription by General dentists – A Questionnaire based study

KEYWORDS

Antibiotics, Questionnaire, Antibiotic audit, Amoxycillin

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ABSTRACT *Antibiotics play an essential role in the prevention and treatment of patients at risk of experiencing microbial disease. Increasing inappropriate use of antibiotics has helped the bacteria to armour themselves and develop "Antibiotic Resistance". Evidences have shown that antibiotic prescribed by most health care workers is sub-optimal and erratic and that about 75% of prescriptions are of questionable therapeutic value. A 2-page custom made questionnaire was presented to local registered general dentists. Dentists were requested to complete the form pertaining to the mode of their own prescription of antibiotics. All the filled in forms were analyzed personally. The results showed that females prescribed more antibiotics compared to males and as the number of years of clinical practice increased there was a moderation and more reasoning in the mode of antibiotic prescription. Amoxycillin is the most commonly used antibiotic irrespective of the number of years or the gender of the practicing dentist.*

INTRODUCTION

As the doorway into the antibiotic era opened with the discovery of Penicillin, the capability of dentists and medical professionals, to treat dental infections increased dramatically. As newer antibacterial agents were developed, concomitantly bacteria have also evolved to develop resistance to these antibacterial agents.

Antibiotics are one among the most commonly prescribed drugs by dentists for prophylactic and therapeutic management of oro-dental infections. Unnecessary, inappropriate, inadequate and overuse of antibiotics have caused, in fact have helped the oral microbiota to evolve and escape antibiotic attack. This microbial evolution have turned the most commonly used antibiotics ineffective against these so called "Super Species". Antibiotic resistance is an emerging global menace haunting all fields of the medical fraternity. All dentists should have to take moral responsibility to minimize and wisely use antibiotics.

Currently there are no specific guidelines in India which control the prophylactic and therapeutic prescription of antibiotics. Also there is limited evidence based research, describing the dental disorders for which antibiotics should be prescribed. Adding to the agony, no uniform consensus exists on the choice, frequency and the duration of antibiotic treatment. At present most dentists prescribe antibiotics randomly and to satisfy patients anxiety.

Henceforth, we planned this study to evaluate the knowledge of dental practitioners in the city of Pondicherry (Union Territory of Puducherry, South India) regarding the use of antibiotics for patients reporting with common oro-dental diseases.

MATERIALS AND METHODS

STUDY POPULATION

The study population consisted of registered dentists, both general dentists and those teaching in the nearby dental colleges (n= 150). The participating dentists were randomly selected among the local registered general dentists. All the participating dentists were assured that the data provided by them will be kept confidential and that the data was collected for study purposes only. Out of these randomly selected dentists, 37 refused to participate and 3 questionnaires returned were found incomplete which were excluded from the study.

QUESTIONNAIRE

A custom made, well-structured questionnaire was prepared, and then personally delivered to the participating dentists. The questionnaire comprised of questions which would elicit responses regarding antibiotic prescriptions. The questionnaire consisted of three sections, questions pertaining to the participant's demographic data, treatment of common dental diseases and queries that incited answers pertaining to the mode of antibiotic use for treating simple dental problems (acute odontogenic and periodontal pain) and complicated dental problems (periapical and dento-alveolar abscess, facial cellulitis, and fever associated with an odontogenic infection).

DATA ANALYSIS

Data was recorded in an Excel version 2007 spread sheet and the participants (n= 110) were categorised based on sex (males = 76 and females = 34) and number of years of clinical practice (1- 2 years = 22, 3-5 years = 51, 6-9 years = 25 and 10 years or more = 12). The data collected was categorised into - Category 1: - Pertaining to Antibiotic use for the various dental treatments commonly performed by the participating dentists and Category 2: - Pertain-

ing to pattern of antibiotic prescription for simple dental problems (pain due to odontogenic and periodontal problems) and for complicated dental problems (periapical and dentoalveolar abscess, facial cellulitis, and fever associated with an odontogenic infection). Within these two categories, the data was tabulated and analysed. The data analyses was done under the following parameters:

1. Pre-operative and post-operative use of antibiotics for common dental procedures based on the gender of the participating dentist.
2. Pre-operative and post-operative use of antibiotics based on the number of years of clinical practice.
3. The type of antibiotic used based on the gender of the participating dentist (Table 1)
4. The type of antibiotic used based on the number of years of clinical practice (Table 2)

Table 1: - Based on the gender of the participating dentist

Antibiotic	Male dentists (n=76)		Female dentists (n=34)	
	Number	%	Number	%
Amoxycillin 250mg/500mg alone	7	9 %	0	0%
Amoxycillin,Cloxacillin Combinations	10	13 %	2	5 %
Amoxycillin250mg/500mg, Metronidazole 200mg/ 400mg combinations	39	51 %	10	29 %
Amoxycillin and clavulanic acid combinations	17	22 %	6	17 %
Cephalosporins and other higher generation antibiotics	3	4 %	16	47 %

Table 2: - Based on the number of years of clinical practice

Antibiotic	No. of years of clinical practice							
	1-2 years (n = 22)		3-5 years (n = 51)		6-9 years (n = 25)		10 or more years (n = 12)	
	n	%	n	%	n	%	n	%
Amoxycillin 250mg/500mg	5	22%	15	29%	20	80%	10	83%
Amoxycillin, Cloxacillin Combinations	0	0%	7	13%	3	12%	0	0%
Amoxycillin 250mg/500mg, Metronidazole 200mg/400mg combinations	8	36%	7	13%	2	8%	2	16%
Amoxycillin and clavulanic acid combinations	2	9%	10	19%	0	0%	0	0%
Cephalosporins and other higher generation antibiotics	7		12	23%	0	0%	0	0%

RESULTS

Analysing the results of the questionnaires, it was found that female dentists more frequently prescribed antibiotics paralleled to their male counterparts. They also trusted on higher generation antibiotics for odontogenic infections with systemic manifestations of fever. The younger dentists were frequently using antibiotics and the volume of antibiotic prescriptions reduced as the dentist gained experience. These mature dentists solely relied on amoxycillin even for severe odontogenic infections. Overall assessment showed that amoxycillin was the most commonly used antibiotic in dentistry.

DISCUSSION

Drug prescription studies need to be conducted at regular intervals to assess the change in attitudes of the prescribing dentist. These studies also provide an insight into the modality and the quality and also reveal the determinants of drug prescription and use. Within the last few decades antimicrobial resistance has become a worldwide problem and constitutes a major threat to public health. The un-systematic prescribing of antibiotics by health care professionals is a major factor to be considered. The drastic increase in the number of antibiotic prescriptions prescribed by dentists each year ⁴ shows the importance of examining the role of dentists in prescribing antibiotics in everyday practice. Evidence of the inappropriate use of antibiotics in dentistry has increased.

The main aim of our study was to assess the mode of antibiotic prescription by dentists in commonly encountered clinical situations and to propose a rationale regarding the antibiotic use by dentists.

In our study, the female dentists (76%) had a tendency to aberrantly prescribe antibiotics and had a habit of prescribing higher generation antibiotics compared to their male counterparts (26%). The gender difference in the methodology of antibiotic prescription was also reported by other similar studies. None of the authors cited reasons for this trend of female trend of antibiotic prescription. On oral interviewing of a group of female dentists, we were able to reveal reasons like not willing to take chances, an extra cautious approach, losing to peer pressure on bettering the healing rates compared to their colleagues.

Dentists with a clinical practice of 10 years or above had a more controlled approach in prescribing antibiotics. Younger dentists used antibiotics pre and post operatively for oral prophylaxis and root canal treatment whereas dentists with more than 10 years of experience never prescribed antibiotics for these clinical scenarios. The number of years of clinical practice also determined the type of antibiotic used in handling various clinical situations. Experienced dentists seldom used higher generation antibiotics and relied more on Amoxycillin, whereas, younger dentists used Cephalosporins for treating analogous situations. Amoxycillin is still the widely used antibiotic in general dental practice.

The methodology of antibiotic prescriptions by practicing dentists should be appraised at regular intervals and these give an impression about the changing trends of antibiotic prescriptions. The practicing dentist should be always encouraged to attend continuing education programs to appraise antibiotic knowledge. Furthermore, pioneers in the field should formulate an identical consensus which will control the use of antibiotics and their usage in various clinical circumstances.

CONCLUSION

Dentists should educate themselves and patients about the development of antibiotic resistance. As a part of the medical fraternity, we dentists should take moral responsibility towards unwanted use of antibiotics and play a determinant role in curtailing the developing antibiotic resistance. Antibiotics definitely form the core of treating odontogenic infections but they are not the sole parameters in treating these infections. Definitive dental treatment should form the real backbone of treating dental infections.

ACKNOWLEDGEMENTS

We personally thank all the dentists who spared their valuable time in filling out the questionnaires.

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