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CURRENT TRENDS IN ANTIBIOTIC PRESCRIBING PRACTICES BY DENTISTS: - A CROSS SECTIONAL STUDY

Dental Science

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ABSTRACT

Aim and Objectives:
The use of antimicrobial agents has been increased, leading to bacterial resistance. Therefore the health professionals should have a sound knowledge about the prescription of antibiotics to overcome the increasing bacterial resistance.
A survey was conducted to determine prescribing pattern of antibiotics for various Dental procedures by Dental practitioners.

Materials and methods:
This was a survey based descriptive cross-sectional study. A self-administered semi-structured validated and pretested open and close-ended questionnaire was utilized for assessing the antibiotic prescription practice. A structured questionnaire was sent to 117 Dental health care practitioners. The survey encompassed demographic data, mechanisms to keep current with prophylactic practice, first- and second-line drugs prescribed with doses and directions, applicable Medical conditions and Dental procedures warranting antibiotic prophylaxis. The data were entered and analyzed using statistical package for social science [SPSS] version 16.0. Chi-squared test was used to test for any significant differences between groups of respondents based on qualitative variables.

Results:
With are response rate of 100%, Medical representatives, patients' preference, a fear of loss of patients and fear of spread of infections can potentially "influence" a Dentist's capability to prescribe antibiotics.

Conclusion:
Antibiotics, when judiciously used, are precise life-saving drugs. The Dental profession as a whole needs to acquire a deeper understanding of the global effects of superfluous antibiotic prescription
As a nation, we must respond to this growing problem so that antibiotics misuse can be stopped.

KEYWORDS:

Antibiotic; Dental practitioners; Knowledge; Questionnaire

INTRODUCTION:

The most common drugs that are used and misused in developing countries are the Antibiotics.[1]

Antibiotics are commonly used in Dental practice and typically prescribed to treat Dental, Oral and Maxillofacial infections and also as prophylaxis against potential focal infections in patients at risk of developing oral or distant infective diseases.[2]

Prescribing is the act of indicating one or more drugs to be administered to or taken by the patient, its dosage, and the duration of the treatment. The rational prescription process given by World Health Organization (WHO) recommends the following steps such as 1) Defining the patient's problem (diagnosis), 2) Specifying the therapeutic objective, considering the different alternatives, 3) Choosing a treatment with proven efficacy and safety, 4) Initiating the treatment, 5) Providing the clear information, instructions and warnings, 6) Stopping treatment, if the problem had been resolved or reexamining each step, if the problem persists. [3]

The irrational and overconsumption of antibiotics result not only in the emergence of bacterial strains that are resistant but also in various adverse reactions and pose financial burden on global health system.[4]

The first guidelines about the use of prophylactic antibiotics for BE (Bacterial Endocarditis) were issued by the American Heart Association (AHA) in 1955.These guidelines have since been regularly reviewed and revised as the new clinical or experimental evidence becomes available[5]. The most recent guidelines were published in 2016.

This study was conducted to assess the pattern of antibiotic prescribing and evaluate the knowledge and attitude of Dental practitioners to determine if there is a rationality in prescribing antibiotics and if it is in accordance with ideal practice and recent guidelines or not.

SUBJECTS AND METHODS:

Study population and Parameters:
This descriptive cross-sectional study was conducted among registered private Dental practitioners and their patients who were prescribed an antibiotic therapy in Dental offices during the period between Aug 2016 and Sept 2016, of Vellore City Tamilnadu state, India. They included both Graduates and Post-Graduates in Dentistry.

Inclusion criteria:
a) Any Dentist with minimum qualification of BDS degree who consent to be a part of this study.

Exclusion criteria:
a) Dentists included in the pilot study.
b) Dentists not present on the day of the study.
c) Medical and non Medical persons.
d) Dentists who were not willing to participate in the study.

Type and Size of the Sample:
The examined sample comprised of 150 private Dental practitioners from Vellore area. The lists of active Dental practitioners were obtained from IDA, Vellore branch.

The selected doctors individually followed the patients under the antibiotic therapy during the above mentioned period.

In order to achieve the statistically reliable results, the optimal numbers of examined doctors in the study were calculated from the total sample size, i.e. number of Dentists practicing in Vellore area (150) and it was determined to be 100%.

The usual response rate to the questionnaires (50%) and average of 15% of completely filled questionnaires were taken into account.

Out of these randomly selected Dentists, 33 (22%) refused to participate and the calculated final number of participants was 117 (78%).

The sampling was done according to the convenience of investigator.
Survey tool (questionnaire):

In this study, the antibiotic prescription pattern of the Dentists has been evaluated. The questionnaire was designed based on the previous surveys done in Yingling NM et al[6]., Al-Haroni M et al[7]., Rodriguez-Nunez A et al[8].

A three-paged self-administered 40 questionnaire was developed in English language and was distributed among the Registered Dental Practitioners to assess the pattern of antibiotics prescription, with an explanatory letter requesting participation as well as ensuring anonymity.

The questionnaire was pre-tested among a group of Dentists not participating in the main study, and appropriate alterations were made. Modifications were made to the questionnaire to reach an acceptable level in validity and reliability.

The purpose of the study was explained only those who satisfied the inclusion and exclusion criteria.

They were asked to anonymously fill out a structured questionnaire.

A self-administered questionnaire consisting of both 11 open ended and 29 close ended questions.

The study was conducted by a single examiner and complete anonymity of all the data collected was maintained.

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.

Respondents were requested to avoid use of any reference materials while answering the questionnaire. There was no follow-up with non respondents due to the anonymity of the survey.

For most of the above-mentioned questions, the participants were given 2-4choices Always "yes", occasionally "no", or Never comment to select the appropriate answer.

This questionnaire, which went through numerous revisions following discussions with Dentists, doctors and methodologists, was based on previously published surveys, AHA guidelines and other current literature in conjunction with clinical experience.

All the participating doctors were contacted personally several times during the study period.

Sufficient time was given to them to fill the questionnaires anonymously and it was collected back on the same day.

Each form was checked for completion and the participants were asked orally if items had been missed.

The questionnaire was based on similar studies and it was divided into 5 sections. The questionnaire collected information in the following areas:

1. Demographics: questions related to socio-demographic detail (age, gender, year of graduation, years of experience after graduation, highest professional degree, area of specialization, and place of work) 6 questionnaire.
2. Responses rate of clinicians according to experience 10 questionnaire.
3. Pattern of referral of patients and pattern of antibiotic use for Dental patients because of their Medical conditions by participants 1questionnaire.
4. List of Dental procedures that require prophylactic antibiotic coverage as recommended by AHA and the respondents' answers 20 questionnaire.
5. Respondents prescribing first- and second-line antibiotics 3 questionnaire.

Statistical Analysis of Data:

Only the duly filled forms were collected and analyzed for statistical significance. Convenient cluster sampling was done.

Data was recorded in a computer spread sheet (Microsoft Excel, version 2007, Corp.) and analyzed using Statistical Package for Social Sciences Inc. (version 16 for Windows, Chicago Illinois, USA.).Chi-squared test was used for any significant differences between respondents based on qualitative variables. Statistical significance was kept as P<0 .05.

RESULTS:

Response Rate:

Table.1 shows summary of the socio-demographic and professional characteristics of the participants.

Of the 150 questionnaires were distributed, during the months of Aug 2016 to Sept 2016, only 117 volunteered to be a part of the study thus making the response rate as 78% that were eligible for statistical analysis.

In the present study, the data collected through 40 open and close-ended questions that discussed factors that influenced the Dentist's decision on prescription of antibiotics. Participants' Characteristics:

Out of the 117 respondents, 54 %(n=64) were males and 45% (n=53) were females Dentists.

About 53.8% of respondents aged 30 years old and younger. Among the participants, more than half (65%) were general practitioners. The consultants were the minority (14.5%).

Around 53.8% of the respondents treat less than 20 patients per day. The majority of the participants (60.5%) practiced Dentistry more than 5 years

TABLE 1. SOCIAL -DEMOGRAPHIC VARIABLES OF RESPONDENTS

INDIVIDUAL SCENARIO			
VARIABLES	RESPONDENTS	N	RESPONSE RATE (%)
TOTAL NO OF RESPONDENTS		117	78
GENDER	MALE	64	54
	FEMALE	53	45
YEARS OF PRACTICE AFTER DEGREE	LESS THAN 5 YRS	46	39.3
	MORE THAN 5 YRS	71	60.6
ACADEMIC QUALIFICATIONS	GENERAL PRACTITIONER	100	85.4
	DENTAL SPECIALIST	17	14.5
NO. OF PATIENTS ATTENDED	LESS THAN 20	63	53.8
	20-30 MORE THAN	54	46
AGE- GROUP (YEARS)	25-35 YRS	82	70
	ABOVE 36 YRS	35	30
TYPE OF PRACTICE (JOB PROFILE)	SELF-EMPLOYED (PRIVATE)	76	65
	EMPLOYED BY SOMEONE	24	20.5
	CONSULTANT-VISITING DENTAL SPECIALIST	11	9.4
	PRIVATE PRACTITIONER ATTACHED TO ACADEMIC INSTITUTE	6	5.1

Table 2 shows summary of the response rate of clinicians according to experience.

It was observed that majority of Dentists (55.5%, n = 65) agreed that they prescribed antibiotics depending upon patient preference, and most of them (60.6% n = 71) agreed that their prescriptions were influenced by advertisements/Medical representatives, hence Statistical significance (P< 0.006). The participations agreed to the fact that they prescribe antibiotics depending upon cost (58%, n = 68), hence Statistical significance (P<0 .037).

It was observed that only (53% n = 62) agreed that they prescribe antibiotics due to a fear of loss of patients.

60% of the Dental practitioners thought widespread use of antibiotics is a very important factor contributing to antibiotic resistance.

TABLE 2: RESPONSE RATE OF CLINICIANS ACCORDING TO EXPERIENCE

VARIABLES	RESPONDENTS	N	RESPONSE RATE (%)	P- Value
ARE YOUR PRESCRIPTIONS INFLUENCED BY ADVERTISEMENTS (FREE SAMPLES/ MEDICAL REPRESENTATIVES, BRAND NAME)?	ALWAYS YES	71	60.6	0.006
	OCCASIONALLY NO	28	24	
	NEVER	18	15.3	
DO YOU FEAR THE SPREAD OF AN INFECTION JUST BECAUSE YOU HAVE NOT PRESCRIBED ANTIBIOTICS?	ALWAYS YES	103	88	0.298
	OCCASIONALLY NO	10	8.5	
	NEVER	4	3.4	
DO YOU FEEL OVERDOSE OF PRESCRIPTION OF ANTIBIOTICS CAN LEAD TO RESISTANCE?	ALWAYS YES	70	59.8	0.013
	OCCASIONALLY NO	39	33.3	
	NEVER	8	6.8	
DO YOU HAVE A FEAR OF LOSS OF PATIENTS, WHEN YOU DON'T PRESCRIBE ANTIBIOTICS?	ALWAYS YES	62	53	0.547
	OCCASIONALLY NO	33	28.2	
	NEVER	22	18.8	
DO YOU PRESCRIBE ANTIBIOTICS DEPENDING UPON ITS COST?	ALWAYS YES	68	58.1	0.037
	OCCASIONALLY NO	30	25.6	
	NEVER	19	16.2	
DO YOU TAKE PAST DENTAL/MEDICAL HISTORY OF CONSUMPTION OF ANTIBIOTICS BEFORE PRESCRIBING ANTIBIOTICS?	ALWAYS YES	16	13.6	0.974
	OCCASIONALLY NO	99	84.6	
	NEVER	2	1.7	
DOES YOUR ANTIBIOTICS PRESCRIPTION DEPEND UPON PATIENT PREFERENCE?	ALWAYS YES	65	55.5	0.287
	OCCASIONALLY NO	30	25.6	
	NEVER	22	18.8	
DOES YOUR ANTIBIOTICS PRESCRIPTION DEPEND UPON SOCIOECONOMIC STATUS OF THE PATIENT?	ALWAYS YES	57	48.7	.0.602
	OCCASIONALLY NO	24	20.5	
	NEVER	36	30.7	
UNCERTAIN DIAGNOSIS	ALWAYS YES	91	77.7	0.014
	OCCASIONALLY NO	26	22.2	
	NEVER			
PROFESSIONAL READING	NO PROFESSIONAL READING	37	31.6	0.703
	PROFESSIONAL READING DENTAL JOURNALS	80	88.3	

Pattern of referrals and prescribing antibiotics among dental practitioners for clinical status are shown in table 3.

The highest rate of referral was when patient has bleeding disorders 91.4% followed by patients if they have congenital Cyanotic heart diseases 84.6%, Pacemaker 73.5% or Myocardial Infarction 71.7% Immunocompromised 60.6%.

A low percentage of dentists refer Dental patients if they have Hypertensive 52.9% or Diabetic 45.2%, Hyperthyroidism or Hypothyroidism 16.2% and Epilepsy 8%.

TABLE 3: LIST OF MEDICAL CONDITIONS THAT REQUIRE PROPHYLACTIC ANTIBIOTIC COVERAGE AS RECOMMENDED BY AHA AND THE RESPONDENTS' ANSWERS

VARIABLES (CLINICAL STATUS)	REFER TO SPECIALIST		PRESCRIBE ANTIBIOTICS	
	N	RESPONSE RATE (%)	N	RESPONSE RATE (%)
BLEEDING DISORDERS	10	8.5	107	91.4
CONGENITAL CYANOTIC HEART DISEASES	18	15.3	99	84.6
DIABETES MELLITUS	64	54.7	53	45.2
EPILEPSY	105	89.7	12	8
HISTORY OF PREVIOUS OF INFECTIVE ENDOCARDITIS/ MYOCARDIAL INFRACTION	33	28.2	84	71.7
HYPERTENSION	55	47	62	52.9
HYPERTHYROIDISM OR HYPOTHYROIDISM	98	83.7	19	16.2
IMMUNOCOMPROMISED	46	39.3	71	60.6
PACEMAKER	31	26.4	86	73.5

Table 4 shows the common antibiotic prescription patterns of Dental practitioners according to clinical symptoms and general considerations.

The table demonstrates a wide range of variation among the respondents. Antibiotic prescription would be considered for cases diagnosed with Cellulitis, Pericoronitis, and Trismus by 88.8%, 81.1%, and 31.6% of the respondents respectively.

A considerable percentage of the respondents (69.2%) would prescribe antibiotics for surgical extraction, while 13.6% would consider the same for routine extraction. 41.8% of the Dental practitioners would prescribe antibiotics for dry sockets.

Acute pulpitis and acute periapical infection conditions were also considered for antibiotic therapy by 31.6% and 56% of the respondents respectively.

Up to 68.3% of the Dental practitioner would prescribe antibiotics for periodontal abscess. When root canal treatment is considered, 88.8% of the respondents would recommend antibiotic therapy. Generally, 35% of the respondents would prescribe antibiotics for Root canal surgery pre-operatively and 43.5 % post-operatively.

In addition, the majority of participants do not prescribe antibiotics in Restorative treatments (98.2%), Scaling and Polishing (97.4%), Sinusitis (74.3%), chronic marginal gingivitis (71.7%), Reimplantation of teeth (67.5%) and Apicectomy (65.5%).

TABLE 4: LIST OF DENTAL PROCEDURES THAT REQUIRE PROPHYLACTIC ANTIBIOTIC COVERAGE AS RECOMMENDED BY AHA AND THE RESPONDENTS' ANSWERS

VARIABLES		N	RESPONSE RATE (%)
ACUTE PERIAPICAL INFECTION (BEFORE DRAINAGE)	ALWAYS YES	62	53
	OCCASIONALLY NO	55	47
ACUTE PERIAPICAL INFECTION (AFTER DRAINAGE)	ALWAYS YES	66	56.4
	OCCASIONALLY NO	51	43.5

ACUTE PULPITIS	ALWAYS YES	80	63.8
	OCCASIONALLY NO	37	31.6
APICECTOMY	ALWAYS YES	40	34
	OCCASIONALLY NO	77	65.8
CELLULITIS or LYMPHADENOPATHY.	ALWAYS YES	104	88.8
	OCCASIONALLY NO	13	11.1
CHRONIC APICAL INFECTION	ALWAYS YES	87	74.3
	OCCASIONALLY NO	30	25.6
CHRONIC MARGINAL GINGIVITIS	ALWAYS YES	33	28.2
	OCCASIONALLY NO	84	71.7
CONVENTIONAL ROOT CANAL TREATMENT	ALWAYS YES	104	88.8
	OCCASIONALLY NO	13	11.1
DRY SOCKET	ALWAYS YES	49	41.8
	OCCASIONALLY NO	68	58.1
PERICORONITIS	ALWAYS YES	95	81.1
	OCCASIONALLY NO	22	18.8
PERIODONTAL ABSCESS	ALWAYS YES	80	68.3
	OCCASIONALLY NO	37	31.6
REIMPLANTATION OF TEETH	ALWAYS YES	38	32.4
	OCCASIONALLY NO	79	67.5
RESTORATIVE TREATMENT	ALWAYS YES	2	1.7
	OCCASIONALLY NO	115	98.2
ROOT CANAL SURGERY PRE - OPERATIVE	ALWAYS YES	41	35
	OCCASIONALLY NO	76	65
ROOT CANAL SURGERY POST - OPERATIVE	ALWAYS YES	66	56.4
	OCCASIONALLY NO	51	43.5
ROUTINE EXTRACTION	ALWAYS YES	16	13.6
	OCCASIONALLY NO	101	86.3
SCALING AND POLISHING	ALWAYS YES	3	2.5
	OCCASIONALLY NO	114	97.4
SINUSITIS	ALWAYS YES	87	74.3
	OCCASIONALLY NO	30	25.6
THIRD MOLAR EXTRACTION (SURGICAL)	ALWAYS YES	81	69.2
	OCCASIONALLY NO	36	30.7
TRISMUS	ALWAYS YES	37	31.6
	OCCASIONALLY NO	80	68.3

Table 5 indicates proportions (%) of respondents prescribing First-And Second-Line antibiotics

The first-choice antibiotic (no penicillin allergy, otherwise healthy patient) was Amoxicillin 95.7% .Patients that was allergic to Penicillin was most frequently given Clindamycin (77%) or Erythromycin (23%).

Table 5 indicates proportions (%) of respondents prescribing First-And Second-Line antibiotics

VARIABLES	RESPONDENTS	N	RESPONSE RATE (%)
WHAT IS YOUR FIRST PROPHYLACTIC ANTIBIOTIC OF CHOICE?	AMOXICILLIN	112	95.7
	ANOTHER ANTIBIOTIC	5	4.2
YOUR ALTERNATIVE ANTIBIOTIC IF THE PATIENT IS ALLERGIC TO FIRST CHOICE	CLINDAMYCIN	90	77
	ERYTHROMYCIN	27	23
TIME OF ADMINISTRATION	ONE HOUR BEFORE PROCEDURE	87	74.3
	ONE HOUR AFTER PROCEDURE	30	25.6
FIRST LINE ANTIBIOTICS	AMOXICILLIN, PENICILLIN, OTHER		
SECOND LINE ANTIBIOTICS	CLINDAMYCIN, ERYTHROMYCIN, OTHER		

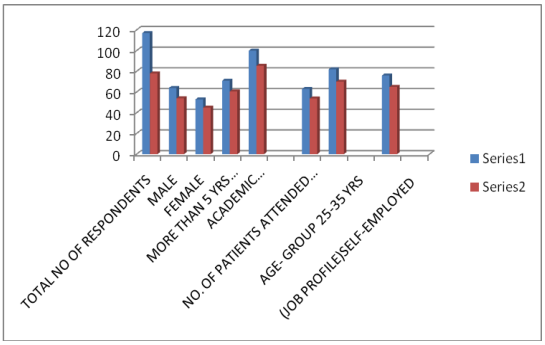

Figure 1. Social -demographic variables of respondents

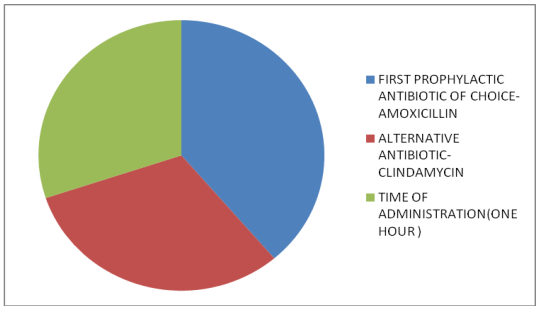

Figure 2: Indicates proportions (%) of respondents prescribing First-And Second-Line antibiotics

DISCUSSION:

Antibiotic therapy is of great importance in Medicine and Dentistry. We depend on its effectiveness as clinicians and as members of the population. Dentistry should strive to achieve full compliance with the recommendations related to antibiotic prophylaxis and understanding the proper use of antibiotics in the profession. Continuous use of antibiotics is imperative for all clinicians, including Dentists, especially considering the rapid development of antibacterial resistance and the alarming consequences of this trend.[9]

In the present study is a comparison of Dentists practicing in Vellore region with respect to their knowledge and application of currently accepted guidelines on antibiotic prophylaxis for Dental treatments.

In the recent years, there certainly has been a change in outlook of Indian women as they have broken the traditional norms and taken up various careers in health care professions, which were mostly opted by males.[10]

Due to advancement of women, there is an increase in the enrollment of females into Dental colleges, which explains the high percent of female participation seen in study by Anjum M and etal 11, which is not similar to the present study.

In the present study it was observed that majority of Dentists agreed that they prescribed antibiotics depending upon patient preference, and most of them agreed that their prescriptions were influenced by advertisements/medical representatives as well as agreed to the fact that they prescribe antibiotics depending upon cost, which was similar to other studies.[12-13]

However, in contradiction to these findings, Chimonas et al. in their study reported that physicians “denied” being influenced by medical representatives.[14]

The present study coated that around 13.6 % of the students reported that they do not always question the patient about the history of adverse drug reactions. Not questioning the patient on the history of allergy, wrong duration for an antibiotic prescription, and improper dosage can have adverse impact on patient's health and can lead to failure of therapy. [15]

The prescription should be rational, and patient's financial status also should be considered while prescribing antibiotics [16,17] which are similar to the present study.

It was seen that majority of Dentists agreed that overdose of prescription of antibiotics can lead to resistance and many of them regularly keep themselves updated by reading any latest scientific material prior to the use of antibiotics in Dentistry. This statement is in agreement to Karibasappa and Sujatha who in their study found out that approximately 90% of the Dentists were aware of the term "antibiotic resistance" and knew that injudicious prescription pattern among health professionals and self-medication with antibiotics inappropriately were contributing to the emergence of antibiotic resistance around the globe[18]

The injudicious use of antibiotics can lead not only to resistant bacterial strains and adverse reaction (88 % n = 103) but also it adds to unnecessary economic burden to the patientas recorded in the study which was similar to study by Shehadeh M et al[19].

It was observed that only (53% n = 62) agreed that they prescribe antibiotics due to a fear of loss of patients which is similar to study by Butler CC and et al. [20]

The present study is according to the latest guidelines from the British Society for Antimicrobial Chemotherapy[21] and the American Heart Association[22] that recommends that only patients in the high risk category require antibiotic cover. On the other hand, National Institute for Health and Clinical Excellence (NICE) clinical guideline issued on 2008 do not support any kind of antibiotic prophylaxis against IE for all individuals undergoing dental or other surgical procedures [23].

According to Longman LP et al there is no added benefit of systemic antibiotic use in management of acute periapical infection until there is systemic involvement like cellulitis or lymphadenopathy. Most of the uncomplicated swellings are best managed by drainage of an infection.[24]

In the present study patient who received antibiotics for periapical or periodontal abscess 68.3%, this is similar to the results obtained by Palmer et al. [25]

The next most common diagnosis were, after extraction, were in according to Tong et al[26] and Steed et al[27],, these were not indications for prescribing antibiotics.

Konde S and et al stated in their study that antibiotic prophylaxis following surgical procedures such as extraction in an otherwise medically fit individual is unnecessary [28]

Amoxicillin is found to be the most preferred antibiotic in an acute Dental infection for adult patients without any known allergy in the present study. Although amoxicillin or amoxicillin clavulinate are suggested for treatment of dental infection in some studies[29,30]

AHA (1997)[31] and the British Society for Antimicrobial Chemotherapy (BSAC) (1993)[5] recommendations that Clindamycin is the prophylactic anti-biotic of choice in patients allergic to penicillin, replacing erythromycin because of its gastrointestinal side effects and complicated pharmacokinetics in this study, erythromycin continues to be the preferred antibiotic of choice by the surveyed dentists in other studies [32,33] which is co related to the present study.

A study of antibiotic prescribing practices among Norwegian Dentists by Preus et al34revealed some shortcomings in the knowledge of the prophylactic use of antibiotics when treating patients with history of endocarditis which was not similar to the present study.

When there is doubt about the need for antibiotic prophylaxis in any cardiac patient, it is recommended that this patient is referred to a Cardiologist for assessment of the need for prophylaxis. The cardiologist should be informed of the planned dental procedures and likelihood of causing bactremia which was in line with the present study.[31,26]

The dosage and duration of antibiotic therapy of Vellore Dentists is in accordance with the study by Ellison SJ. [35]

On the contrary, Tomar-Carmona et al.[5] found in a survey among Spanish general dental practitioners that a single-dose protocol was used by only 13.4% respondents. They also showed that the most frequent protocol used was that of the AHA from 1990 (1 hour before and 6 hours after). In the present study about one-fourth of the dentist are still applying this protocol, and majority of these are from the private sector which might be explained by limited continuing education in private clinics.

Use of antibiotics for management of acute pulpits is not supported by any evidence in literature[36] in Comparision with the present study.

LIMITATION AND STRENGTH OF THE STUDY:

The limitations of this study:

1. The study conducted in private sectors, so it is not represent for Vellore district.
2. Presence of a social desirability bias by the Dentists while answering the questionnaire.
3. Under-reporting/over-reporting of the answers by the respondents is quite a common feature in questionnaire surveys.

The Strength of this study:

1. Sample size was large enough to compare with other studies related to it.
2. The response rate was fine and comparable with the other studies.
3. This study is descriptive study.

RECOMMENDATIONS: [36]

1. Activities of Pharmaceutical companies should be monitored by firm legislations because drug markets must be subjected to scientific rules.
2. Electronic prescribing (enhancing approval and decision support systems)
3. Group discussions and case studies for the whole primary care team, symptomatic management pads offer alternatives to antibiotics.
4. Interventions combining doctor, patient and public education are the most successful at reducing inappropriate antibiotic prescribing.
5. Mass media, TV, should be directed to advice and clarify how it is dangerous to use the drugs irrationally without prescription.
6. Online learning modules on antibiotic prescribing individual academic detailing for general practitioners and Pharmacists.
7. Pharmacists should not prescribe drug by their own nor give drugs as patents' will. This is also should be ruled by legislation from ministry of health.
8. Prescriber and patient education programs.
9. Prescribing feedback-Prescribing rates sent to individual general practitioners allowing comparison with local and national averages tools provided for practices to perform clinical audits on antibiotic use
10. Regular update should be done annually for Dentist about antibiotics how to prescribe and when.
11. Restricting antibiotics via the Pharmaceutical Benefits Scheme
12. The best way to prevent re- filling an old prescription is to follow the program of bar code which is widely distributed in developed countries.

CONCLUSIONS:

Antibiotics are adjunct not an alternative. Antibiotics are indicated when clinical signs of involvement are evident. Clinicians do prescribe antibiotics for both therapeutic and prophylactic reasons to manage oral and Dental infections Within the limitation of this study, the following conclusions can be drawn: In this study the results demonstrate that majority of the surveyed prescribe antibiotics is often not based on a defined criterion. Wide variation observed for the type of antibiotic prescribed among Dentist for different cases, but Amoxicillin were the most common antibiotic used.

CLINICAL SIGNIFICANCE:

In this study it is highlighted that there is a need of developing guidelines regarding antibiotic prescription by the regulatory bodies based on available literature to prevent resistance development and regulating appropriate use of antibiotics.

ETHICAL APPROVAL: Not required.

CONFLICT OF INTEREST & SOURCE OF FUNDING:

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