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## Knowledge, Attitude and Practice Regarding Prophylactic Use of Antibiotics Among Crri Students in A Private Dental Institution -A Questionnaire Based Study

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NIVETHA G<sup>1</sup>, SRI SAKTHI D<sup>2\*</sup>, ARVIND S<sup>3</sup>

<sup>1</sup>Saveetha Dental College, Saveetha Institute Of Medical and Technical Science, Saveetha University, Chennai-600 077

<sup>2</sup>Reader, Department of Public Health Dentistry, Saveetha Dental College, Saveetha Institute Of Medical and Technical Science, Saveetha University Chennai-600 077

<sup>3</sup>Reader, Department of Orthodontics, Saveetha Dental College, Saveetha Institute Of Medical and Technical Science, Saveetha University, Chennai-600 077

\*Corresponding Author

Email ID: 151501082.sdc@saveetha.com<sup>1</sup>, srisakthi@saveetha.com<sup>2</sup>, arvind.sdc@saveetha.com<sup>3</sup>

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**Abstract:** Antibiotics are important in the management and prophylaxis of infection in patients at risk experiencing microbial disease. Overuse and inappropriate use of antibiotics is closely related to an increase in bacterial resistance. The aim of this present study is to assess the knowledge, attitude, practice of interns who are studying in Saveetha Dental College regarding prophylactic use of antibiotics. A cross sectional study was carried in April 2020 among interns of Saveetha Dental College and Hospital, Chennai. A questionnaire based study. A questionnaire consisting of 15 questions on knowledge, attitude and practice regarding prophylactic use of antibiotics were formulated and distributed among interns through Google forms. The responses were obtained and entered in Excel sheet. A chi square test were done between gender and knowledge, gender and attitude and gender and practice using SPSS software. The independent variables were age and gender while dependent variables were knowledge, attitude and practice of prophylactic use of antibiotics. The results showed that about 52.89% of interns had fair knowledge, 51.92% had negative attitude, 44.23% had good practice towards prophylactic use of antibiotics. The present study concludes that interns possessed fair knowledge but a negative attitude and moderate practice on prophylactic use of antibiotics.

**Keywords:** Antibiotics, Dentistry, Interns, Prophylaxis. innovative

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### INTRODUCTION

Antibiotics are the most frequently prescribed drugs around the world. But, it has been prescribed irrationally in a large number of cases (Chandan and Nagabushan, 2016). The main function of antibiotics is the eradication of bacterial infection either by killing or slowing down bacterial growth. (Iqbal, 2015) The aim of the prescription of prophylactic antibiotics is to prevent the spread of infection in some patients with special systematic conditions (Zareei, Navabi and Chamani, 2008). The irrational and overuse of antibiotics results not only in the emergence of resistance bacterial strain but also in adverse reactions and economical burden on the national health system (Gyssens, 2001). The irrational use arises from economical factors, health politics, lack of physicians about long term resistance and effect versus treating current symptoms and the sale of antibiotics without prescription in some countries. (Metlay, Stafford and Singer, 1998)

In dentistry, the utilization of antibiotics prophylactically and therapeutically has become common practice. Early reports stated that penicillin showed effectiveness in treating cellulitis and angular cheilitis (Lewis, 2008). The most common infections treated with antibiotics in the field of dentistry are infections related to the root canal (endodontic infections). However, the use of antibiotics in such situations is not always warranted. Recent research shows that most endodontic infections could be managed with only local interventions to eliminate or relieve the source of infection, such as incision and drainage, root canal treatment, and tooth extractions, without the need for antibiotic therapy (Roy and Bagg, 2000)

Important use of the drugs have resulted in antimicrobial resistance, which is now emerging as one of the major threats to health care (Nayak *et al.*, 2016). Resistance is a serious issue leading to serious difficulty in treating infections caused by bacteria. Resistance occurs due to many reasons which include self-medication without prescription, over the counter, high medical consultation fees, insufficient regulation of antibiotics (Dutt *et al.*, 2018).

Many studies have been conducted within the UK, India, and Iran assessing the knowledge of dentists and dental students regarding the prescription and indications of antibiotics, and although the number of evidence of mounting antimicrobial resistance in medical literature is increasing, studies show that the dental community lacks adequate knowledge in this area (Zahabiyou, Sahabi and Kharazi, 2015) (Vessal *et al.*, 2011) (Laxminarayan *et al.*, 2013) (The Lancet Infectious Diseases, 2013).

Previously our team has conducted numerous cross sectional studies (Prabakar, John and Srisakthi, 2016; Kannan *et al.*, 2017; Neralla *et al.*, 2019), clinical trials (Prabakar, John, I. Arumugham, *et al.*, 2018; Prabakar, John, I. M. Arumugham, *et al.*, 2018; Khatri *et al.*, 2019; Pratha, Ashwatha Pratha and Prabakar, 2019; Mathew *et al.*, 2020; Samuel, Acharya and Rao, 2020), in-vitro studies (Prabhakar, Murthy and Sugandhan, 2011; Kumar and Vijayalakshmi, 2017; Kumar, Pradeep Kumar and Preethi, 2017; Mohapatra *et al.*, 2019; Pavithra, Preethi Pavithra and Jayashri, 2019) and review (Harini and Leelavathi, 2019) over the past 5 years. Now we are focussing on epidemiological surveys.

Our department is passionate about research we have published numerous high quality articles in this domain over the past years (Kavitha *et al.*, 2014), (Praveen *et al.*, 2001), (Devi and Gnanavel, 2014), (Putchala *et al.*, 2013), (Vijayakumar *et al.*, 2010), (Lekha *et al.*, 2014a, 2014b) (Danda, 2010) (Danda, 2010) (Parthasarathy *et al.*, 2016) (Gopalakannan, Senthilvelan and Ranganathan, 2012), (Rajendran *et al.*, 2019), (Govindaraju, Neelakantan and Gutmann, 2017), (P. Neelakantan *et al.*, 2015), (Pradeep Kumar *et al.*, 2016), (Sajan *et al.*, 2011), (Lekha *et al.*, 2014a), (Neelakantan, Grotra and Sharma, 2013), (Patil *et al.*, 2017), (Jeevanandan and Govindaraju, 2018), (Abdul Wahab *et al.*, 2017), (Eapen, Baig and Avinash, 2017), (Menon *et al.*, 2018), (Wahab *et al.*, 2018), (Vishnu Prasad *et al.*, 2018), (Uthrakumar *et al.*, 2010), (Ashok, Ajith and Sivanesan, 2017), (Prasanna Neelakantan *et al.*, 2015). Several studies within the literature have evaluated antibiotic knowledge and prescribing patterns amongst dental practitioners. However, these studies have mostly been concerned with practicing dentists, rather than exploring the knowledge and attitudes of dental students. Thus the main aim of the study is to assess the knowledge, attitude and practice among dental students regarding prophylactic use of antibiotics

## **MATERIALS AND METHOD**

### **Study site**

Saveetha Dental College and Hospital, Chennai

### **Survey instrument**

A structured questionnaire consisted of two parts. First part contained a set of questions for collecting demographic data of participants and second part contained a set of questions to assess knowledge, attitudes and practice of participants about prophylactic use of antibiotics. A pretested, self administered, closed ended questionnaire comprising the following sections formed the survey instrument. Knowledge section consisted of 5 questions, adopted from a validated questionnaire developed by an expert group following related and relevant literatures. The goal of developing this questionnaire was to know about intern's knowledge regarding prophylactic use of antibiotics. An attitude section consisted of 6 questions and a practice section consisted of 2 questions. Subjects rated their attitudes by using a five point Likert scale (strongly agree to strongly disagree).

### **Study design**

Cross sectional, questionnaire based study

### **Data collection**

A cross sectional study was conducted in April 2020 among interns of Saveetha Dental College and Hospital, Chennai. It was questionnaire based study, conducted to assess the knowledge, attitude and practice of prophylactic use of antibiotics. 104 interns participated in this study. The study was conducted in an online setting. The data collection was done via google forms. The questionnaire contained questions about knowledge, attitude and practice of prophylactic use of antibiotics. Google forms were used to circulate the questionnaire.

### **Ethical approval**

Ethical approval was obtained from the Institutional Ethical Committee and Scientific Review Board (SRB) of Saveetha Dental College.

### Data analysis

The collected data were entered in Excel sheet and subjected to statistical analysis using SPSS software. Chi square test were done between knowledge and gender, attitude and gender and practice and gender. The independent variables were age and gender while dependent variables were knowledge, attitude and practice of prophylactic use of antibiotics. The level of significance is  $p < 0.05$ .

## RESULTS & DISCUSSION

Antibiotics are important to modern medicine and resistance to antibiotics is a serious threat to human health worldwide. The problem needs attention both at population level and at individual patients level. (Andersson *et al.*, 2020). Our aim in this study was to assess the knowledge, attitude and practice of dental students regarding prophylactic use of antibiotics by administering questionnaires. Totally, 104 interns participated in this questionnaire survey. 56.73% of interns had completed 23 years whereas 43.27% had completed 22 years (chart 1). Out of 104 interns, 57.7% were females and 43.3% were males. (chart 2).

29.81% of female interns had fair knowledge whereas 23.08% of male interns had fair knowledge. Association of gender and knowledge was found to be insignificant (graph 1). A study conducted by Lomi *et al* among Undergraduate, interns and postgraduate dental students, concluded that knowledge was higher in postgraduate students than undergraduate and interns, this could possibly be due to higher exposure to various types of patients and gaining knowledge with increasing years of training. (Lomi *et al.*, 2019). A study conducted by Lokhasudhan *et al* (Lokhasudhan and Nasim, 2017), Tajuddin *et al* (Shaik and Meher, 2017) showed that students possessed inadequate knowledge which is dissimilar to our present study. This difference in the finding is due to existing dental curriculum and continuing education programs in our country, in particular to the study population in question.

Attitude was assessed by Likert scale. Both female and male interns had positive and negative attitude towards prophylactic use of antibiotics. 26.92% of female interns had negative attitude whereas 25.00% of male interns had negative attitude which was found to be statistically not significant (graph 2). Previous studies conducted by Mansour *et al* (Mansour *et al.*, 2018) and Tajuddin *et al* (Shaik and Meher, 2017) concluded that the majority of students possessed a positive attitude towards attitude which is not similar to our current study finding. This difference could be attributed to exposure to varied cases or differences in type of training between the study population. About 70.01% of students were discussed about problems of prophylactic use of antibiotics during their course and 54.8% of students attended the CME programs about prophylactic use of antibiotics.

Limited sample size and a single source data from only one institution can be a limitation, which can be rectified by including a large sample size and participants from many teaching hospitals in Tamil nadu.

## CONCLUSION

Within the limitations of this study, it can be concluded that female students had a better knowledge and practices towards antibiotic prophylaxis, when compared to their male counterparts. However on the whole the knowledge can be improved by conducting continuing education programs for the study group along with case based learning strategy.

### Author Contribution

First author [Nivetha G] performed analysis, interpretation and wrote the manuscript. Second author [Dr. Srisakthi] contributed to conception, data designs, analysis, interpretation and critically revised the manuscript. Third author [Dr. Arvind Sivakumar] participated in the study and revised the manuscript. All the three authors have discussed the results and contributed to the final manuscript.

### Conflict of Interest

Nil.

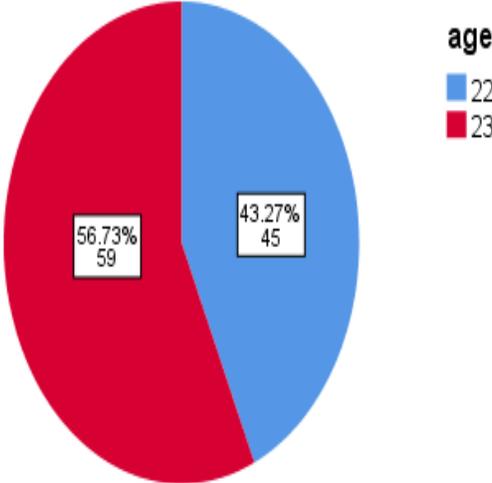
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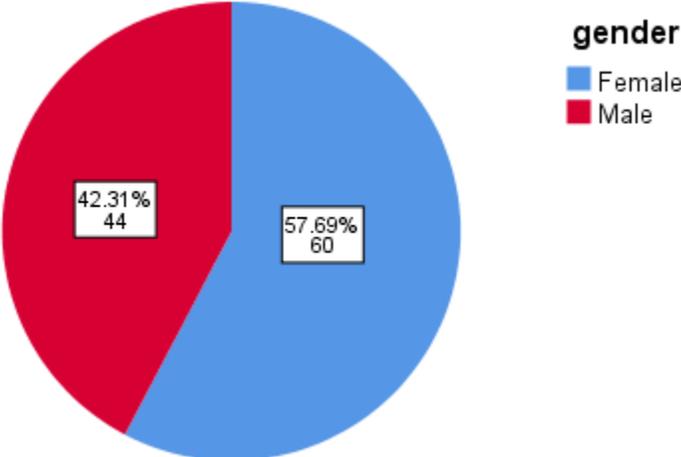
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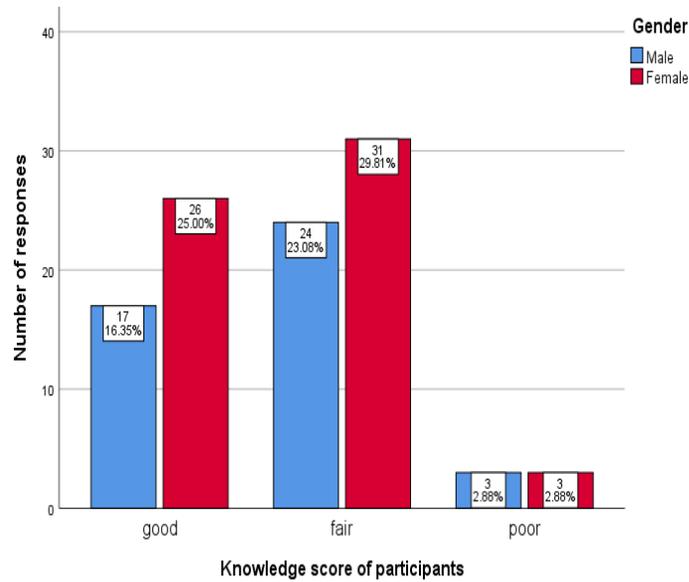
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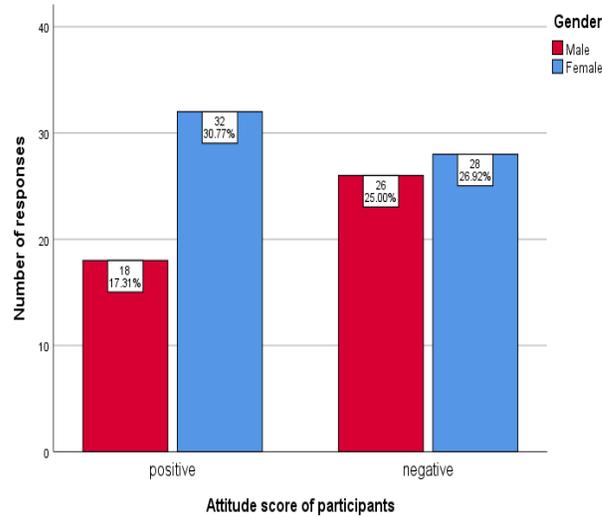
**Chart 1:** Pie chart depicts that distribution of study population based on age. Majority of interns had completed 23 years (red), and 43.27% had completed 22 years of age.



**Chart 2:** Chart 2 depicts that distribution of study population based on gender. It shows that more number of female interns (blue) participated in this study when compared to male interns (red).



**Graph 1: This graph represents the association between gender and knowledge of interns towards antibiotics. X axis represents knowledge score of participants and Y axis represents number of responses. Even though the majority of students in both genders had fair knowledge towards prophylactic use of antibiotics, Females (red) were better when compared to males (blue). Chi square test was done to test the association (p-value=0.852) and it was not statistically significant.**



**Graph 2: This graph represents the association between gender and attitude of interns towards antibiotics. X axis represents attitude of participants and Y axis represents number of responses. Majority of females (blue) had a positive attitude (30.7%) towards antibiotic prophylaxis when compared to males (17.31%) (Red). Chi square test was done and it was found not to be statistically significant (p value - 0.210), proving that observed difference in attitude between the genders is due to chance and is not significant.**