

Knowledge and Awareness of Antibiotic Resistance among Dental Students

S. S. Shivanni¹, Dr. Anitha Roy²

¹11 year BDS, Saveetha Dental College and Hospitals, Chennai

²Professor, Department of Pharmacology, Saveetha Dental College and Hospitals, Chennai

Abstract: Aim: To study the knowledge and awareness of antibiotic resistance and causes among dental students of Saveetha Dental College. Materials and Method: A cross-sectional study was conducted to study the knowledge about antibiotic resistance. A pretested questionnaire containing 12 questions based on the knowledge of antibiotic resistance and its causes was given to second year students of Saveetha Dental college. About 100 students took part in the survey. Result: 74% of the students knew the importance of antibiotic resistance. 52% knew about the consequences of antibiotic resistance. 45% of the students did not take antibiotics according to the prescription. 67% of the students were not aware of the antibiotic policy followed in various countries of the world. Conclusion: Proper educational programs must be conducted to improve their knowledge about antibiotic resistance, its causes and prevention.

Keywords: antibiotic resistance, consequences, prescription

1. Introduction

Antibiotics are widely used, and they form an indispensable part as both prophylactic and treatment modalities in documented as well as suspected infections. In dental practice, antibiotics are used mainly after oral surgical and periodontal procedures⁽¹⁾. Antibiotic resistance has increasingly been recognised as a major issue in healthcare. Antibiotic use is viewed as a key driver for the increase and spread of antibiotic resistance⁽²⁾.

Antibiotics can be called as "Life-saving drugs". However, antibiotic prescribing may be associated with unfavourable side effects ranging from gastrointestinal disturbances to fatal anaphylactic shock⁽³⁾. Inappropriate, indiscriminate and irrational use of antibiotics has led to the development of antibiotic resistance. Even more alarming is the rate at which bacteria develop resistance; micro organisms exhibiting resistance to new drugs often are isolated soon after the drugs have been introduced⁽⁴⁾. Antibiotics are societal drugs that affect microbial resistance not only in the person taking drug but also everyone else, because resistance genes are easily passed via personal contacts, fomites, human and animal refuse⁽⁵⁾. Dental diseases are predominantly because of local factors; mere removal of the local causative factors reduces the need for prescribing antibiotics considerably. Despite the awareness on antibiotic resistance, dentists show lack of concern in curbing this grave public health problem⁽⁶⁾. It is the duty of every dentist to arrive at the correct diagnosis in order to avoid the indispensable use of antibiotics⁽⁷⁾. The relatively relaxed regulation on antibiotics without prescription (over-the-counter) worsens the scenario. Knowledge, attitude, and practice (KAP) among dental specialists towards antibiotics have to be analyzed in order to decrease the incidence of antibiotic resistance⁽⁸⁾.

2. Materials and Methods

The study was a cross-sectional survey. A self-designed questionnaire was prepared in English that contained questions about antibiotics, resistance, usage and causes.

The questionnaire contained closed ended questions and was distributed among 100 dental students studying second year in Saveetha Dental College and Hospitals. The response rate was 100%. The data obtained was collected, tabulated and statistically analysed.

Questions	Options
What are antibiotics?	A. Antimicrobial drugs that kill bacteria B. Natural compounds that fight bacteria C. Both D. None
Which are the infections caused by viruses that should not be treated using antibiotics?	A. Cold B. Sore throat C. Sinus infections D. All of the above
Do you think knowledge about antibiotic resistance is necessary?	A. Yes B. No
Antibiotic resistance can cause illness that were once curable with antibiotics to become dangerous infections.	A. Agree B. Disagree C. Not sure
Over use and misuse of antibiotics can promote the growth of antibiotic resistant bacteria.	A. Agree B. Disagree C. Not sure
How do bacteria become Resistant to antibiotics?	A. Change the nature of the antibiotic B. Pump the antibiotic back before it causes harm C. Changes its outer surface D. All of the above
Do you take antibiotics According to prescription?	A. yes B. No
Do you save antibiotics for the next time you get sick?	A. Yes B. No C. Sometimes
Can resistance develop using acne medication?	A. Yes B. No C. Not sure
Do you discard any leftover medication?	A. Yes B. No

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Can probiotics help reduce resistance?	A. yes B. No C. Not sure
Do you know about the antibiotic resistance policy?	A. Yes B. No

Figure 1: Questionnaire on antibiotic resistance.

3. Results

43% of the students defined antibiotics as antimicrobial drugs that kill bacteria. Only 14% could identify all the viral infections that shouldn't be treated using antibiotics. 74% of the students knew the importance of antibiotic resistance. 52% knew about the consequences of antibiotic resistance.

47% of the students knew that overuse and misuse of antibiotics lead to resistance. Only 39% of the students knew completely about how the bacteria become resistant. 45% of the students did not take antibiotics according to the prescription. Only 47% discarded leftover antibiotics. 53% save the same antibiotics for the next time. 55% of the students did not know that acne medication would develop antibiotic resistance. 56% did not know that probiotics help reduce antibiotic resistance. 67% of the students were not aware of the antibiotic policy followed in various countries of the world.

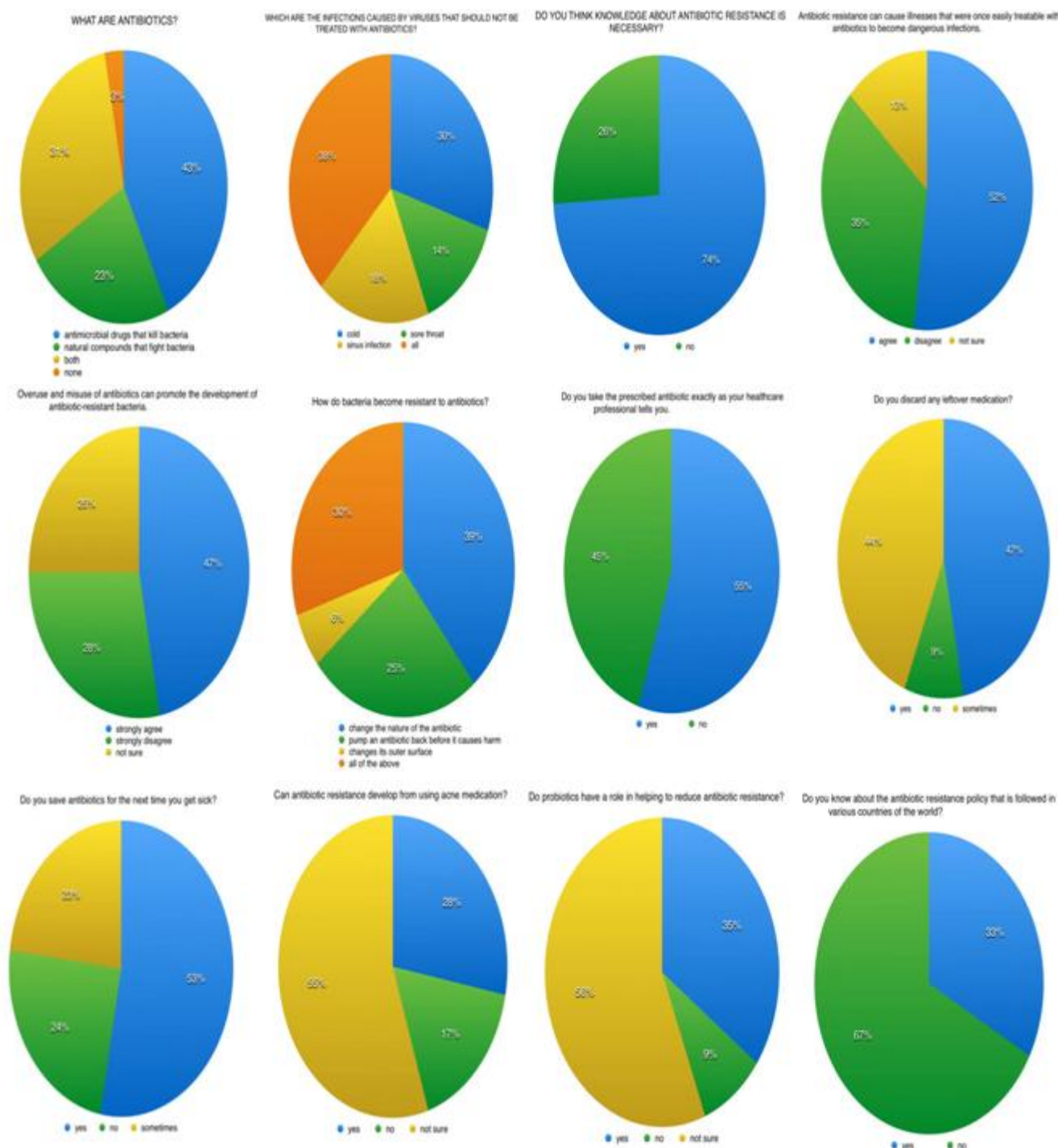


Figure 2: pie charts on antibiotic resistance questionnaire.

4. Discussion

The uncontrolled use of antibiotics is a well-established reason for antibiotic resistance due to the emergence of virulent strains of resistant microbes. The overuse of antibiotics decreased their efficacy and increased tendency for resistance. Misuse of antibiotics in treating viral infections is common and the prevalence of self-medication is alarmingly high^(9,10). A study conducted by Martina Vallin *et al*, show that the Swedish population's level of knowledge about antibiotic use and resistance represented by the participants has not only remained high but has also increased since 2006. A decrease was observed in the percentage of people who agreed to the wrong statement that antibiotics make one recover faster when having a cold (19.1% in 2006 and 13.4% in 2013), that ear infections in a 3–6 year old child always need to be treated with antibiotics (49.5% in 2006 and 29.5% in 2013) and that people become resistant to antibiotics (84.7% in 2006 and 70.8% in 2013). Regarding whether bacteria can become resistant to antibiotics the percentage of respondents who agreed increased from 80.7% in 2006 to 93.7% in 2013⁽¹¹⁾. Similarly, an European survey showed that Swedish respondents had the highest knowledge compared to other European participants about antibiotic ineffectiveness against viruses (77% vs EU27 average of 40%) and common colds (77% vs EU27 average of 52%)⁽¹²⁾. Previous studies from the United Kingdom, Germany and the Netherlands have reported lower knowledge levels among the general public in relation to similar questions, as compared to our results^(13,14,15). In our study it was found that though the students had knowledge about antibiotic resistance, they did not follow appropriate measures to reduce the risk of antibiotic resistance.

5. Conclusion

Although most of the students knew about antibiotics and antibiotic resistance they did not know all the causes for antibiotic resistance to occur. They did not know about the viral infections that should not be treated using antibiotics. Refilling of prescription without consultation may be another reason for resistance. Thus, proper measures should be taken to reduce the incidence of antibiotic resistance.

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