



A Survey on Knowledge Attitude and Practices among Dental Faculty towards Antimicrobial Stewardship Program in Maharashtra

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Antibiotic resistance makes to the top ten threats to global health in 2019. It is important for dental faculty to make efforts to improve the quality of services provided; As a result the study of awareness of the dental faculty regarding antibiotic resistance and antibiotic stewardship program was undertaken.

Objectives: Assessment of the knowledge, attitude and practices of the dental faculty towards Antibiotic stewardship program through a questionnaire study in Maharashtra.

Methodology: The dental faculty in dental institutes located in Maharashtra will be the study participants. The questionnaire will be sent to all the faculty members as an online questionnaire survey.

Expected Results: Evaluating the need of Implementation of antimicrobial stewardship program in institutions which will reduce the profuse use of unnecessary antibiotic prescription and improve the appropriateness of the antibiotic use by the dental health faculty working in a dental college without compromising the clinical patient outcome.

Conclusion: The present study will assess the knowledge, attitude and practices of the dental faculty towards Antibiotic stewardship program.

Keywords: Antibiotic stewardship program; antibiotic resistance; dentist; dental faculty.

1. INTRODUCTION

Antibiotics remarkable health advantages are being jeopardised by the rapid emergence of antibiotic-resistant microorganisms[1]. This is a global crisis, owing to widespread overuse of antibiotics and a dearth of novel antibiotic agents being developed by pharmaceutical corporations to address the problem[2]. Antimicrobial resistance (AMR) was identified as a credible danger by WHO due to the lack of new antibiotics in the pipeline and diseases caused by multi-drug resistant microorganisms becoming irreversible [3]. Antibiotic discoveries, as well as its widespread use in hospitals and communities have been seen in the last 50 years. Respected as viable, safe and generally economical, the antibiotics have saved huge number of lives. In any case, this has prompted their abuse through use without a remedy and abuse for self-restricting infection[4-6].

Antibiotic resistance develops as a result of excessive use or abuse of antibiotics[4]. Hospitals have a 50% rate of antimicrobial overuse due to over prescription of broad spectrum antibiotics and a failure to reduce it. Coordinated efforts to enact new regulations, restart research initiatives, and explore crisis-management strategies are critical[5]. As a result, implementing structural interventions in healthcare institutions is a primary, although not exclusive, focus of attention in improving antibiotic stewardship. Antimicrobial resistance necessitates coordinated measures at all levels, including prescribers, wards, departments, hospitals, and national and international levels[6].

Antibiotic stewardship programmes (ASPs) are one technique to draw attention to excessive antimicrobial use. ASPs have established a goal to improve patient safety and outcomes while lowering healthcare costs by promoting antibiotic judiciousness and reducing AMR Leadership participation, prescriber responsibility, medication experience, and clinician and patient education are all critical components of effective ASPs[7]. In order to be competitive and long-lasting, ASPs can integrate hospital staff and facilities as extra services. As a result, the initial cost can be a disincentive for those who have not yet implemented an ASP. In recent years, there has been a surge in the number of research analysing the medical and economical effects of ASPs, owing to their growing importance[8].

ASP is at the heart of efforts to ensure that everyone who needs antimicrobials has access to them today and tomorrow. Antimicrobial stewardship is a term that has only recently gained popularity and is now being used in a growing number of situations. Due to the emergence of more severe diseases caused by bacteria resistant to many antibiotics, which result in high morbidity and mortality rates, the public and health care facilities are becoming more interested in antibiotic use and antibiotic resistance.

1.1 Background /Rationale

To assess the knowledge, attitude and practices of the dental faculty working in dental institutions towards ASP.

1.2 Objectives

1. Evaluate the knowledge of the dental practitioner towards Antimicrobial stewardship program through questionnaire.
2. To assess the attitude and practices on the prescription of antibiotics by dental faculty in Maharashtra.

2. METHODS

Sample size selection –

Sample size is determined using the following formula:

$$\sqrt{n} = z_{\alpha/2} \times \sigma / E$$

where,

σ = previous expected values=20

E =desired Margin of error = 5

$z_{\alpha/2}$, confidence interval of 90%, $z = 1.65$

n = sample size estimated 350

Sample includes the dental faculty in dental institutes located in Maharashtra.

2.1 Inclusion Criteria

- BDS and MDS faculty of various dental colleges in rural and urban areas of Maharashtra

2.2 Exclusion Criteria

- Dental faculty practicing BDS and MDS other than Maharashtra.

2.3 Measurement

It is an online based cross –sectional survey conducted in Sharad Pawar Dental College and Hospital. The participants of this study include various other dental colleges in rural and urban areas of Maharashtra to assess the antibiotic prescribing practices among BDS and MDS faculty members working in dental institutions. A special form is designed to record all the required relevant information. The self-administered questionnaire composed of two main sections in demographic information and Knowledge assessment questions related to Antimicrobial Stewardship Program and antibiotic prescribing patterns. Questionnaire will be used as a tool for data collection and evaluation and close ended questions were structured with few open questions to allow free response. The pilot study will be conducted consisting of all the PG students attending the Sharad Pawar dental college and hospital.

The knowledge, attitude, and behaviour of study subjects will be assessed by using a questionnaire method. The items for this questionnaire will be generated from three sources: theory, research and observation. The questionnaire was developed from the studies done by Chhabra et al 2019 and 2014.[9,10] The questionnaire consisted of a total of 15 items assessing knowledge, attitude, and behaviour, respectively. Attitude will assess on a three-point Likert scale: yes, neutral, no. A total of 15 questions will be based on knowledge, attitude and practices of the dental faculty towards Antimicrobial stewardship program.

Questions related to attitude included: whether the dentists required the need of AMSP in their institution and the antibiotic prescription regime, if they should act in coordination with other faculty toward AMR, if they should constantly update their knowledge on AMSP, and if they should maintain proper dental records of their patients. Correct answers for knowledge questions would be given a score of “1” and wrong answers would be given a score of “0.” Attitude scores range from 1(definitely yes) to 3(definitely no), and practice Bias: All the potential sources of bias has been removed.

2.4 Quantitative Variables

All the questions in relation to the questionnaire will be recorded with the help of electronic forms and record in the excel sheet.

2.5 Statistics

SPSS software version 22 will be used for frequency distribution and descriptive statistics. The data will be collected (MS Excel,MS Office), and statistical test of Pearson’s correlation analysis and chi square test will be used to assess associations of qualification, gender, age and dental faculty with knowledge, attitude, and practice of study participants.

Descriptive statistics and frequency distribution will be done for recording responses of the questionnaire. Pearson’s correlation and chi-square analysis will be done to evaluate the knowledge attitude and behaviour of dentist faculty towards antibiotic stewardship programs.

3. EXPECTED OUTCOMES/RESULTS

The knowledge and behaviour regarding Antibiotic Stewardship programme implementation would be less but attitude would be favourable. Evaluating the need for institutions to undertake antimicrobial stewardship programmes may help to prevent the overuse of antibiotics and improve the appropriateness of antibiotic use by the dental health faculty working in a dental college without compromising the clinical patient outcome.

4. DISCUSSION

The world is wide spreading antimicrobial resistance to astonishing levels. One of the World Health Organization's ten major potential global health risks in 2019 was antimicrobial resistance [11]. Antimicrobial stewardship is a key to ensuring that everyone who needs them, today and tomorrow has access to effective antimicrobials. The name AS has recently emerged and is used in an ever more diverse range of contexts; numerous current definitions of AS are technical and focus on prescriptions. We have suggested that AS should be viewed more widely as a strategy and as a coherent set of measures that encourage responsible use of antimicrobials. The specific actions vary depending on the actor, but share many commonalities at different levels within a healthcare system, as well as between human and animal health. Our suggested definition for antimicrobial stewardship is a tool: each actor can ask if they or their organizations are undertaking actions to use antimicrobials responsibly, and if these actions are coherent. Going forward, there is a continuous need for

'responsibly' to be defined and translated into context-specific and time specific actions[3].

O.J. Dyar et al, in 2016 reviewed the emergence and evolution of the term 'antimicrobial stewardship'. They describes the historical background behind how antimicrobial stewardship came into use in clinical settings and discusses challenges emerging from the varied descriptions of antimicrobial stewardship in the literature, including an over-emphasis on individual prescriptions, an under-emphasis on the societal implications of antimicrobial use, and language translation problems. They address these challenges and suggest viewing AS as strategy, a coherent set of actions which promote using antimicrobials responsibly [12].

In one of the overview more stress was given on continuous need for 'responsible use' to be defined and translated into context-specific and time-specific actions furthermore present examples of actions that can be undertaken within antimicrobial stewardship across human and animal health. They suggested that AMSP can be define as 'Antimicrobial stewardship is a coherent set of actions which promote using antimicrobials in ways that ensure sustainable access to effective therapy for all who need them[13].

Studies done in 2016 and 2019 by K Al-Johani et al and Nathwani D et al, on Antibiotic prescription pattern inappropriately and determined the antibiotic prescription practices of dental practitioners and faculty guidelines while treating oral health problems among Children. This study included the dental faculty, in which 126 dentists working in Jeddah had given the consent to participate in the study. A two-part questionnaire was applied where First section explored the demographics and questions related to antibiotic use for certain dental clinical procedure and the second section used clinical case scenarios to elicit the antibiotics prescription practices and adherence to faculty guidelines by the dentists. The study concluded that most commonly preferred antibiotic for most of the orofacial infections among the dentists was Amoxicillin (73.8%). This study illustrated lack of consistency in the antibiotic prescription pattern and overall low adherence to the faculty guidelines[14,15].

The report by WHO in 2019 and the cross sectional study done by Sonia Trikha et al in 2019 on Antibiotic prescribing patterns and knowledge of antibiotic resistance amongst the

doctors working at public health facilities in states of northern India. The study included doctors of the civil hospitals of Haryana state of India. Data were collected by self-administered questionnaire from a total of 215 doctors posted at the 22 district hospitals. 66% Doctors perceived antibiotic resistance as a very important global problem., 68% considered it as very important problem in India and 31% considered it as an important problem in their hospital. 52.3% Doctors reported that they started antibiotics 12 hours before surgery; 15 (17%) prescribed antibiotics 6 hours before surgery; and 23 (27%) 1 day before the surgery. Time for stopping antibiotics after surgery, as reported by participants, was 1 day (15%), 23 days (35%), 57 days (44%), respectively. A total of 71 (83%) doctors thought that surgical incision could lead to post-surgical site infection[16-18].

4.1 Generalize Ability

The study has a good external and internal validity.

5. CONCLUSION

The Knowledge and behaviour about the execution of the AS Program would be lower, but attitudes would be more favourable. Since dentists prescribe 10% of all human antibiotics, this study will aim to determine whether they are aware of their role in antibiotic prescription and their contribution to antimicrobial resistance.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

* Please tick the appropriate answer []

	Definitely Yes	Yes	Neutral	No	Definitely no
Do you think Dentists should actively acquire knowledge about antibiotic stewardship?					
Do you think Dentists should regularly update their knowledge antibiotic stewardship?					
Do you think Dentists should coordinate with other health professionals in antibiotic stewardship?					
Do you think antibiotic stewardship should be included in undergraduate BDS syllabus?					
Do you think Dental institutions should conduct continuing dental education programs related to antibiotic stewardship?					
Do you think Dentists should maintain accurate and complete dental records for antibiotic stewardship?					
Do you think Dentists should assist in the identification of people suffered from antibiotic resistance in antibiotic stewardship program?					
Do you think DCI should include education in antibiotic stewardship in dental curriculumas "Mandatory"?					

* Please tick the appropriate answer []

	< 1 month	1-6 months	6-12 months	> 1 year	Never
How often do you Participate in antibiotic stewardship program involving human subjects in dental profession?					
How often do you obtain information related to antibiotic stewardship from the internet					
How often do you obtain information related to antibiotic stewardship from various scientific journals?					
	Always	Very often	Often	Rarely	Never
How often do you maintain accurate patient records and protocol for any of the research work done in the field of antibiotic stewardship?					
How often do you attend workshops/programs regarding antibiotic stewardship					
How often do you obtain information related to scientific misconduct in antibiotic stewardship					
How often do you obtain information related to prevention of antibiotic resistance in antibiotic stewardship					
How often do you obtain information related to governing bodies of antibiotic stewardship					

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1. Who coined the term Antimicrobial Stewardship?
 - A. O.J. Dyar and B. Huttner
 - B. J. Schouten and C. Pulcini
 - C. Mc Gowan and Dale Gerding
 - D. F. Allerberger and H. Mittermayer

2. Goals of Antibiotic stewardship program are all of the following except
 - a. improve patient safety
 - b. reduce antibiotic resistance
 - c. improve patients outcome
 - d. increase mortality and morbidity

3. What are the three types of antibiotic stewardship interventions
 - a. broad, pharmacy driven, specific interventions
 - b. narrow pharmacy driven, different interventions
 - c. broad, pharmacy driven, therapeutic interventions
 - d. . broad, pharmacy driven, preventive interventions

4. What is Strama
 - a. Swedish strategic program against antibiotic resistance
 - b. Indian strategic program against antibiotic resistance
 - c. Indian strategic program against MRSA
 - d. Swedish strategic program against MRSA

5. How many rights of medical administration in antimicrobial therapy
 - a. 5
 - b.6
 - c.4
 - d.8

6. How many core elements are there in Antibiotic stewardship program?
 - a. 5
 - b.6
 - c.7
 - d.8

7. The 30% rule includes All except
 - a. equal to 30% all hospital in patient receive antibiotics
 - b. greater than 30% antibiotics prescribed inappropriately in community
 - c. 10-30% pharmacy cost saved by AMSP
 - d. 30% of all surgical prophylaxis appropriate

8. When did the antimicrobial stewardship begin?
 - a. 1996
 - b. 1997
 - c.1957
 - d. 1967

9. What does front-end strategy follows

- a. preauthorization and restrictions
- b. prospective audit and feedback
- c. retrospective audit and feedback
- d. prospective audit and restriction

10. Which national standards cover Antibiotic stewardship program

- a. National sanitation and quality health service standard
- b. . National intervention and quality health service standard
- c. National care and quality health service standard
- d. National safety and quality health service standard

11. What of the following is not included in multidisciplinary Antibiotic stewardship team

- a. physician
- b. clinical microbiologist
- c. clinical pharmacist
- d. pathologist

12. A successful approach in UK for AMSP is

- A. start smart – then focus
- b. save antibiotics save life
- c. right drug for the right bug
- d. antimicrobial stewardship program : our role our responsibility

13. What is action of Antibiotic stewardship program

- a. making approx diagnosis
- b. Ensuring sufficient sustainable and delicate funding for AMS Team
- c. Using leftover antimicrobials
- d. Use antimicrobial as a growth promoter

14. How to implement antibiotic stewardship program

- a. assist the motivation
- b. ensure accountability and leadership
- c. educate and train
- d. all the above

15. What is the role of microbiologist in antibiotic stewardship program

- A. timely identification of pathogens
- b. performance of susceptibility resistance
- c. assist in infection control effort in resistance surveillance
- d. preparing and prescribing antibiotics

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