

A cross-sectional observational study on knowledge, attitude and practices about indiscriminate use of antibiotics and antibiotic resistance among medical doctors at Sapthagiri Hospital, Bangalore

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ABSTRACT

Background: WHO defines Antimicrobial resistance (AMR) as “the ability of a microorganism to stop an antimicrobial from working against it”. The Global burden includes increased morbidity, prolonged illness and a higher mortality rate, along with economic burden. The cause can be tracked down to irrational usage of antibiotics and lack of awareness of rational prescribing practices..

Methods: A cross-sectional questionnaire-based observational study was carried out using a standard pre-validated questionnaire, which was administered to all the medical doctors present in their respective departments during the study period, exploring their knowledge regarding rational antibiotic usage, their attitudes and awareness towards AMR. Informed consent from the participants was obtained verbally, and confidentiality assured. The collected data was analyzed as per descriptive statistics.

Results: Majority of doctors (91.3%) have a good knowledge and agree that indiscriminate use of antibiotics leads to antimicrobial resistance. 96.12% of doctors identify it as a global issue but only 85.5% consider it a problem in their hospital. Doctors (78%) have a positive attitude and do not prefer to prescribe an antibiotic for minor illnesses, but only 40% think it might contribute to antimicrobial resistance.

Conclusions: This study has demonstrated that doctors have a good knowledge about the emerging problem of antimicrobial resistance, however a minor percentage of doctors fail to acknowledge this at the level of their own hospital. Regular updates on the local antimicrobial resistance rates & antibiotic stewardship might help to control the global issue of AMR.

Keywords: Antimicrobial resistance, Antibiotic stewardship, Rational prescribing

INTRODUCTION

WHO defines Antimicrobial resistance (AMR) as “the ability of a microorganism (like bacteria, viruses, and some parasites) to stop an antimicrobial (such as antibiotics, antivirals and antimalarials) from working against it”.¹

The Global burden caused by AMR is not only restricted to Drug-resistant malaria, tuberculosis or HIV but also associated with many common infections.² Human burden includes increased morbidity, less time with

family, prolonged illness, untoward complications and a higher mortality rate. Economic burden being loss of daily wages and work hours, increased cost of diagnostics and treatment.³

The problem of AMR can be addressed at many levels, a committed political leadership with strict regulation policies, mandating antibiotic prescriptions at pharmacy outlets or even setting up a hospital antibiotic policy.⁴ But the cause can be tracked down to irrational usage of antibiotics and lack of awareness of rational prescribing practices.

Over-prescribing, under-prescribing and unnecessary antibiotic combinations contribute to irrational practices. Rational use of antibiotics comprises of right drug at the right dose for the right duration for each patient. Key points to remember would be to consider microbiological susceptibility testing and antibiotic stewardship with standardized hospital antibiotic policies.⁵

Though the concepts of antibiotic resistance and hospital antibiotic policies is generally introduced to the medical students in 2nd year MBBS, how much of it is actually carried forward is a question. Hence, the study was planned for the doctors in an attempt to enlighten the importance of antibiotic stewardship and stimulate the doctors to practice rational prescribing.

Objective of this study was to determine the knowledge, attitude and practice of antibiotic usage and antibiotic

resistance among doctors at Sathagiri Hospital, Bangalore.

METHODS

A cross-sectional questionnaire-based observational study was carried out over a period of 1 month (September 2018) at Sathagiri Institute of Medical Sciences and Research Centre, Bangalore. The study instrument is a standard pre-validated questionnaire (Table 1) that was only slightly modified to suit the objective of the current study, with a format that provides information regarding three distinct domains: Knowledge, Attitude, and Practice (KAP).⁶ Aspects that are explored include the knowledge of the respondents regarding rational antibiotic usage, their attitudes and awareness towards AMR and their practices.

Table 1: Questionnaire used for the study.

Knowledge				
True/False				
Indiscriminate use of antibiotics can lead to:				
K1.	<ul style="list-style-type: none"> • Ineffective treatment. • Increased adverse effect. • Exacerbation or prolongation of illness. • Emergence of bacterial resistance. • Additional burden of medical cost to the patient. 			
K2.	If taken too often, antibiotics are less likely to work in the future.			
K3.	Bacteria that cause common cold and flu need to be treated exclusively with broad spectrum antibiotics.			
Antibiotic resistance is an important and serious public health issue:				
K4.	<ul style="list-style-type: none"> • Facing the world. • In the country. • In the hospital. 			
Attitude				
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	2	3	4	5
A1. When a patient complains of common cold, I should prescribe antibiotics to prevent a more serious illness.				
A2. When a patient complains of fever, antibiotics help him to get better more quickly.				
A3. Whenever an antibiotic is prescribed, it might contribute to the development of antibiotic resistance.				
A4. Skipping one or two doses does not contribute to the development of antibiotic resistance.				
A5. Antibiotics are safe drugs; hence they can be commonly used.				
Practice				
Always/Usually	Sometimes		Seldom/Never	
1	2		3	
You prescribe a course of antibiotic treatment for your patient. After taking 2-3 doses your patient starts feeling better.				
P1.	<ul style="list-style-type: none"> • Should he stop taking the further treatment? • Should he save the remaining antibiotics for the next time he gets sick? • Should he discard the remaining, leftover medication? • Should he give the leftover antibiotics to his friend/roommate if they get sick? • Should he complete the full course of treatment? 			
P2. Is it important to check the expiry date of the antibiotic before using it?				
P3. Do you prefer to prescribe an antibiotic for common illness like cough, common cold, mild GE, etc?				

Approval for conducting the study was obtained from the Institutional Ethical Committee. Informed consent from the participants was obtained verbally, and confidentiality assured. The questionnaire was administered to all the medical doctors present in their respective departments during the study period and were willing to participate. Enough time was provided to fill the form, and their queries were attended by the investigator if any.

Statistical analysis

Questionnaires were collected back, and the data was entered into Microsoft Excel 2013. Analysis was done as per descriptive statistics.

RESULTS

Out of approximately 120 doctors at our institution, 103 doctors participated in the current study showing a response rate of 85%. Doctors of all ages participated in the study, showing a range of the youngest doctor aged 23 years and oldest aged 69 years. The study comprised of 54 (52.4%) male participants and 49 (47.6%) female participants. Doctors with any medical degree were allowed to participate in the study, and comprised of 4 with MBBS (3.9%), 71 with MD (68.9%), 23 with MS (22.4%), 4 with DNB (3.9%) and 1 with MRCP (0.9%). ‘True’ or ‘False’ responses were used to interpret the Knowledge. Analysis of attitude was done using five point response Likert scale, and three point response Likert scale for analysing responses of practice based questionnaire.

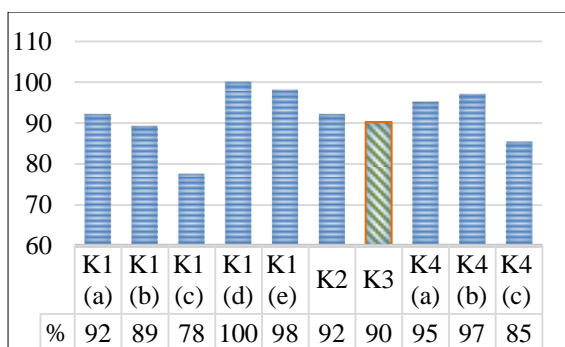


Figure 1: Responses obtained for the knowledge based questionnaire.

Note: Blue colored columns represent the number of ‘True’ responses while the green colored column represents the number of ‘False’ responses.

In this study, majority of doctors (91.3%) agree that the indiscriminate use of antibiotics leads to antimicrobial resistance. Participants expressed their awareness towards indiscriminate use of antibiotics, and that it might lead to ineffective treatment (92.23%), increased adverse effect (89.32%), emergence of bacterial resistance (100%) and that it imposes additional burden of medical cost to the patient (98.06%). But not as many think it might cause exacerbation or prolongation of illness (77.67%), 96.12%

of doctors identify it as a global issue but only 85.5% consider it a problem when it comes to their own hospital (Figure 1).

Doctors in this study do not prefer to prescribe an antibiotic for minor illnesses (94.17%) or fever (64.08%) and believe that they cannot be used commonly considering them to be safe (74.76%). Nevertheless, only 51.45% of them think that antibiotic doses should not be skipped, and only 39.8% of doctors in this study think it may contribute to antimicrobial resistance whenever an antibiotic is prescribed (Figure 2).

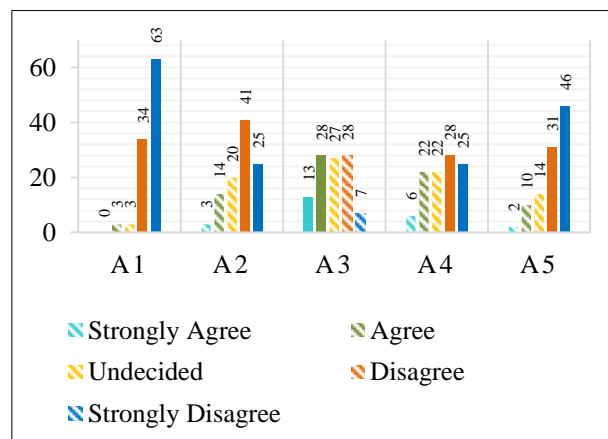


Figure 2: Responses obtained for the attitude based questionnaire.

Total 95.15% of the doctors in this study tend to advise their patients to complete the course even if they start feeling better after a few doses. But a few (43.69%) feel it would be fine for them to discard the antibiotics after they start feeling better. All of the participants (100%) agree that it is important to advise the patient to check for the expiry date of the antibiotic before use. Only 1.94% of the doctors felt the need to prescribe antibiotics for common illness like cough, common cold, mild GE, etc (Figure 3).

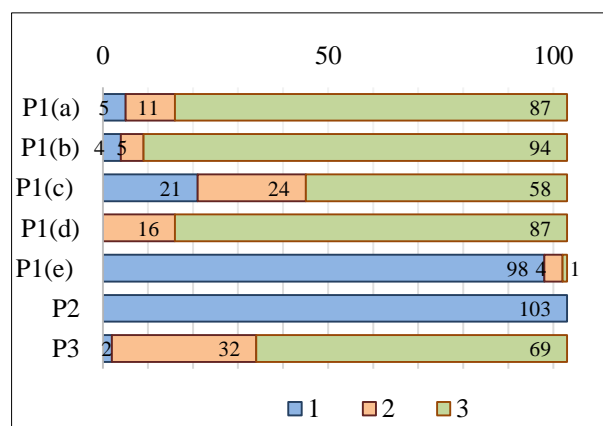


Figure 3: Responses obtained for the practice based questionnaire.

DISCUSSION

KAP studies act as a tool to provide valuable insights about various scenarios (in case of this study: antibiotic resistance), to give basic platform on which author can design interventions and antibiotic policies based on the current mindset of doctors and requirement of the community.⁷

Antimicrobial resistance (AMR) is not a sudden phenomenon, but evolving over decades with increasing number of bacteria acquiring resistance to newer antimicrobial agents. Many studies have been depicting the changing trends in bacterial resistance and creating awareness of this global issue. WHO has estimated that the resistance to specified antimicrobial agents is exceeding 50% especially for organisms like *E. coli*, *K. pneumoniae* and *S. aureus*, that are commonly isolated in community acquired infections.³

Majority of doctors now believe that overuse of antibiotic prescriptions, self-medication and irrational use of broad spectrum antibiotics due to their easy availability have led increased resistance to antibiotics.⁸ Lack of sufficient knowledge among nursing staff and pharmacist leading to insufficient dosing of antibiotic and prolonged duration of treatment can also be considered. Doctors now believe that formulating rigid guidelines, resistance data and focusing on education of target population might help to curb the problem.⁹

Most of the doctors acknowledge AMR as global issue, but fail to recognize the same at the level of their own institute/hospital, leading to injudicious use of antibiotics, further contributing to the issue. In this study only 85.5% of the doctors feel that AMR is an issue in their hospital that is comparable to the results of a study by Padmanabha et al.⁶

More awareness and education is needed to change the attitude of both doctors and patients that it is important to complete the course of antibiotics prescribed. The gut flora act as a major reservoir of resistant bacteria, capable of spreading the same to the pathogenic strains.¹⁰ Only a few doctors (51.45%) think that antibiotic doses should not be skipped.

Rational prescribing habits of antibiotics should be matched with microbiological susceptibility testing and infection control, which would help to combat the problem of AMR. Early and timely interventional programs and interactive learning of rational prescribing habits would help to curb the growing resistance as suggested by Khan et al.¹¹

Updating and creating awareness about the current scenarios through continued medical education and workshops on AMR and hospital antibiotic policies help a doctor towards rational antibiotic usage, as opined by the

results of this study similar to another study by Ghosh et al.¹²

CONCLUSION

From this study, it can be concluded that study has gathered useful information testing the knowledge, attitude and practices of doctors in northern Bangalore. It has demonstrated that the doctors have a good knowledge and awareness about the emerging problem of antimicrobial resistance, however a minor percentage of doctors fail to acknowledge the same at the level of their own hospital. CMEs and regular meetings, stressing on the importance of antibiotic stewardship might help to improve the perception of the issue. The study has also helped to identify gaps in the attitude and practicing habits about the rational prescribing of antibiotics. Regular updates on the local antimicrobial resistance rates, a rigid hospital antibiotic policy revised from time to time and giving proper instructions to patients while prescribing antimicrobials, might help to control the global issue of AMR.

Limitations of the current study targeted the doctors of the institution, it would have been better to conduct a similar study among the interns, so as to create awareness and train them at the grass root level to have a better impact on the mindset of young doctors.

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