

Research Article

A STUDY OF KNOWLEDGE, ATTITUDE, PERCEPTIONS AND PRACTICES REGARDING ANTIMICROBIAL RESISTANCE AND USAGE AMONG THIRD AND FOURTH YEAR MEDICAL STUDENTS

Rekha M.S¹, Afzal Khan A.K², Bagewadi .H.G³, Venkatadri.T.V⁴

¹Associate Professor, ²Professor, ³Asst. Professor, ⁴Professor & HOD, - Department of Pharmacology, MVJ Medical College & Research Hospital, Bangalore, India -562114

Corresponding author: Dr Bagewadi .H .G. Department of Pharmacology, MVJ Medical College & Research Hospital, Bangalore, India -562114

ABSTRACT

Aim: To study the knowledge, attitude, perception and practices (KAP) of medical students regarding antimicrobial resistance (AMR) and usage in order to plan an appropriate educational intervention for them.

Methods: Ours was across sectional, questionnaire based study among third and fourth year medical students, whereby their KAP regarding antimicrobial use and resistance was assessed on a five point likert scale whose responses ranged from “strongly agree” to “strongly disagree,” always” to “never” and “very important” to “unimportant” as well as a few true/false type questions. The resulting data was tabulated and analyzed using simple descriptive statistics.

Results: Almost all students agreed that antimicrobial resistance (AMR) is an important and serious public health issue facing the world, but when the same issue concerning our hospital was put forward, 20% (n=48) of the students expressed their lack of knowledge regarding the same. For choosing an appropriate antimicrobial for prescribing, in vitro, antimicrobial sensitivity of the organism, immune status of the patient and drug interactions were considered as important factors deserving consideration by more than 90% of the students while at the same time cost of the antibiotic was considered as important by only 65% (n=137). 28% (n=59) were not aware of the fact that bacteria are not responsible for causing colds and flu.

Conclusions: Majority of the students were aware of antimicrobial resistance and its consequences. Their practice with regards to antimicrobial usage and consumption was also satisfactory. Future educational interventions may be planned to improve their understanding, perception and attitude towards antimicrobial use.

Keywords: antimicrobial chemotherapy, antimicrobial resistance, education, knowledge, medical students

INTRODUCTION

Several studies have demonstrated that antimicrobials are often used inappropriately and unnecessarily giving rise to antimicrobial resistance.¹ This threat of antimicrobial resistance is progressing rapidly as well as intensifying. With regards to this various approaches have been undertaken globally to meet the challenges posed by its spread. Instructional, educational campaigns among the general population² as well as health care staff³ about antimicrobial resistance is one of the approaches which is commonly suggested.

Various studies undertaken previously have described the inability of the prescribing physicians in creating awareness and imparting necessary education to the patients regarding antimicrobial usage.² One of the top most Determinants of irrational use is lack of provider knowledge, particularly with regard to prescribers who are insufficiently qualified, supervised or supported.

⁴Therefore great importance is attached for adequate training of undergraduate medical, pharmacy and nursing students regarding the proper prescribing, dispensing and usage of antimicrobials respectively. It is a significant measure which has been widely proposed in order to promote judicious & rational use of antimicrobial drugs.⁵

For any innovative educational measure to be successful and for the changes to be sustained, it should have an impact on the knowledge, attitudes and practices (KAP) of the intervention group.⁶It was in this regard that the present study was undertaken among the third and fourth year undergraduate medical students in order to assess their baseline knowledge and attitude concerning antimicrobial resistance as well as their self reported practices related to antimicrobial usage in order to devise appropriate educational interventions for them. A similar study was conducted previously by Khan AKA et al⁷among second year medical students for the same reason.

MATERIALS AND METHODS:

This was a cross-sectional, questionnaire based study undertaken in a teaching hospital of Southern Karnataka in India. The study group consisted of 210, third and fourth year undergraduate medical students.

After obtaining an informed consent, the questionnaire was distributed to the students. They were asked to complete the questionnaire anonymously. The questionnaire we used was the same as the one earlier used by Khan AKA et al⁷which was created by modifying the earlier ones used by Wester CW et al⁸, Eng JV et al⁹ and others.^{2, 10-12}Prior to the study, the questionnaire was validated by subject experts for its content and relevance.

Questions based on 5-point Likert scale were used in order to assess the students' perceptions of the causes of AMR as well as the factors which influence the decision about antimicrobial selection and prescribing as well as their attitude. Their self reported practices regarding antimicrobial usage was also assessed by using a likert scale ranging from "always" to "never". The data was tabulated and simple descriptive statistics was used in the form of frequencies, percentages and proportions to analyze the data.

RESULTS:

The respondents knowledge, attitude and practices regarding antimicrobial use and resistance was assessed on a five point likert scale whose responses ranged from "strongly agree" to "strongly disagree," "always" to "never" and "very important" to "unimportant". These responses were later condensed on a scale of three for evaluation. The results are shown in Tables 1, 2 and 3. Only 72% (n=153) were aware that bacteria are not responsible for causing colds and flu. The remaining 28% (n=59) were unaware of the same.

The questionnaire also consisted a list of possible causes which might be responsible for the development of antimicrobial resistance and the students were asked to rate them according to their importance. The corresponding ratings given by the students are depicted in table 3.

Table 1 Respondents' attitude regarding antimicrobial use and resistance

	Survey item.	Agree. n(%)	Uncertain. n(%)	Disagree. n(%)
A1	Antibiotic Resistance is :			
	a) An important & serious public issue facing the world..	209(99.52)	0 (0.00)	1 (0.48)
	b) An important and serious public health issue in our Country	202 (96.19)	2 (0.95)	6 (2.86)
	c) An important and serious public health in our Hospital	168 (80.00)	4 (1.90)	38 (8.10)
A2	When I have a cold, I should take antibiotics to prevent getting a more serious illness	88 (41.90)	101(48.10)	21 (10.00)
A3	When I get fever, antibiotics help me to get better more quickly	146 (69.52)	41 (19.52)	23 (10.95)
A4	Whenever I take an antibiotic, I contribute to the development of antibiotic resistance.	124 (59.05)	44 (20.95)	42 (20.00)
A5	Skipping one or two doses does not contribute to the development of antibiotic resistance	61 (29.05)	101 (48.10)	48 (22.86)
A6	Antibiotics are safe drugs, hence they can be commonly used	53 (25.24)	120 (57.14)	37 (17.62)

Table 2. Respondents' Self reported practices regarding antimicrobial use

	Survey item	[n(%)]	[n(%)]	[n(%)]
P1	The Doctor prescribes a course of antibiotic for you. After taking 2-3 doses you start feeling better.			
	a)Do you stop taking the further treatment	44 (20.95)	53 (25.24)	113 (53.81)
	b)Do you save the remaining antibiotics for the next time you get sick	27 (12.86)	44 (20.95)	139 (66.19)
P2	Do you give the leftover antibiotics to your friend / roommate if they get sick	58 (27.62)	54 (25.71)	98 (46.67)
P3	Do you complete the full course of antibiotics?	139 (66.19)	62 (29.52)	9 (4.29)
P4	Do you consult a doctor before starting an antibiotic?	135 (64.29)	63 (30.00)	12 (5.71)
P5	Do you check the expiry date of the antibiotic before using it?	202 (96.19)	6 (2.86)	2 (0.95)
P6	Do you prefer to take an antibiotic when you have cough and sorethroat?	89 (42.38)	64 (30.48)	57 (27.14)

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Sl. No.	Cause of antibiotic resistance	Important (N=210)	Unsure(N=210)	Unimportant(N=210)
		n(%)	n(%)	n(%)
1	Use of antibiotics for self-limited non bacterial infections	106 (50.48)	55 (26.19)	49 (23.33)
2	Use of antibiotics for shorter than standard duration	125 (59.52)	74 (35.24)	11 (5.24)
3	Use of antibiotics with a broader than necessary spectrum	144 (68.57)	53 (25.24)	13 (6.19)
4	Poor Infection control measures	120 (57.14)	83 (39.52)	7 (3.33)
5	Poor access to microbiological facilities	119 (56.67)	83 (39.52)	8 (3.81)
6	Use of antibiotics for self limited bacterial infections	127 (60.48)	68 (32.38)	15 (7.14)
7	Empirical Antibiotic therapy (Best Guess Therapy)	136 (64.76)	70 (33.33)	4 (1.90)
8	Mutational & evolutionary changes in the microorganism	164 (78.10)	44 (20.95)	2 (0.95)
9	Lack of restrictions on antibiotic usage	158 (75.24)	42 (20.00)	10 (4.76)
10	Excessive antibiotic use in live stock (animals raised for food)	117 (55.71)	85 (40.48)	8 (3.81)
11	Use of antibiotics for longer than standard duration.	117 (55.71)	58 (27.62)	35 (16.67)

DISCUSSION:

Most of the respondents were aware of the fact that AMR is a major global and national issue but quite a number of them were unaware of the fact that antimicrobial resistance one of the important issues at our hospital as well. Some of the previous studies, have reported the same where most respondents underestimated the prevalence of antibiotic resistance at their own institution.^{8,13} Using charts or handouts regarding the antimicrobial resistance pattern of our teaching hospital and discussing the same in the classrooms may be a useful measure to promote awareness regarding AMR.

An earlier study had shown high rates of self medication (35%) amongst medical students with respect to antibiotics.¹⁴ which was similarly noticed in our study where in 135 respondents (64.29%) always consulted a doctor before starting an antibiotic and 139 (66.19%) of them always completed the full course of prescribed antibiotic.

An important finding which we came across is that 28% (n=59) were not knowledgeable of the fact that bacteria are not responsible for causing cold and flu. Such wrongly held views or

knowledge may lead to inappropriately high rates of antimicrobial consumption which can result in a corresponding increase in AMR.⁵

Similar to previous study, conducted by Khan AKA et al⁷ the participants in the present study also rated mutational and evolutionary changes in the microorganism and lack of restrictions on antibiotic usage as very important causes of AMR. Poor or lack of infection control measures was not considered to be such an important cause, hence knowledge about infection control and the significance of simple measures like hand hygiene in the control of resistance should be greatly stressed and inculcated among the students.⁸

For choosing an appropriate antimicrobial for prescribing, in vitro, antimicrobial sensitivity of the organism, immune status of the patient and drug interactions were considered as important factors deserving consideration by more than 90% of the students while at the same time cost of the antibiotic was considered as important by only 65%. In our country where most of the patients have to spend out of their own pockets, may not afford to complete the full course of the prescribed antimicrobial if the cost is high, which may contribute to AMR. Moreover AMR, a world-wide problem, is particularly pressing in developing countries as the infectious disease burden is high and cost constrains the replacement of older antibiotics with newer, more expensive ones.¹⁵ Hence, educational measures highlighting the importance of cost to the students and prescribers may be undertaken. Future educational interventions may be planned to improve their understanding and perception of antimicrobial resistance as well as their attitude and practices regarding antimicrobial usage.

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