

**A QUESTIONNAIRE BASED SURVEY ON THE KNOWLEDGE,
ATTITUDE AND PRACTICES ABOUT ANTIBIOTIC USAGE AND
RESISTANCE AMONG THE SECOND YEAR MEDICAL STUDENTS
OF A TEACHING TERTIARY CARE HOSPITAL**

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ABSTRACT

Background: Antibiotics are the most commonly prescribed medications and the one often misused too. The threat of antibiotic resistance is increasing rapidly and needs immediate addressal. Practitioners have a pivotal role in combating antibiotic resistance by promoting awareness and also through their safe and rational prescribing. Examining the knowledge, attitude and practices of medical students regarding antibiotic resistance can assist in planning and devising an effective and tailored educational tool for them. **Methods:** A cross-sectional, questionnaire based survey was conducted among the second year medical students of a teaching hospital about the knowledge on antibiotic resistance, medical practices and their

attitude regarding antibiotic usage. Simple descriptive statistics was used to generate frequencies, percentage and proportions. **RESULTS:** Response rate was 100%. All the participants have agreed that antibiotic resistance is a major public health problem. Ninety six percent of participants agree that indiscriminate use of antibiotics leads to antibiotic resistance and about ninety two percent of them are aware of the fact that antibiotics shouldn't be taken for all the cases of common cold and cough. **CONCLUSION:** Our study revealed that most of the students were aware of the antimicrobial resistance, its usage and consequences, however responses related to their practices were quite varied, hence further

educational interventions are needed to improve their attitude and practices towards antibiotic usage.

KEYWORDS: antibiotic resistance, usage, medical students.

INTRODUCTION

Antimicrobial drugs are the greatest contribution of the 20th century to therapeutics. These are most commonly used and misused drugs.^[1] Injudicious use of these drugs has led to antibiotic resistance and has become a global health problem. In 2011 WHO has set a theme of world health day as “combat Antimicrobial Resistance: No action today, No cure tomorrow”, so as to create seriousness and awareness about antibiotic abuse and WHO has also stressed importance of undergraduate training.^[2] One of the important causes for antibiotic resistance being irrational prescription, which includes unnecessary and over prescription, self-medication without doctor consultation and incomplete treatments, among these role of prescribers is considered vital. Mahajan *et al.*, emphasized the fact that undergraduates who are future prescribers should be targeted about rational antibiotic prescription and under graduation is the crucial period where importance of these issues should be stressed thereby in future they can adopt safe medication practices through their rational prescribing and also promote patient awareness on antibiotics.^[3] There are so many interventions which will target the hospitals and practitioners to reduce antibiotic resistance and one among them is the educational campaign.⁴ Prior to that, knowing students perception and knowledge about antibiotic resistance is also important so as to plan effective educational tool for them. Hence the present study was undertaken among second year medical students in order to assess their knowledge and attitude concerning antibiotic resistance and various practices related to antibiotic usage.

MATERIAL AND METHODS

This was a Cross-sectional Questionnaire based study, conducted in the Department of Pharmacology of SSIMS & RC, Davangere, Karnataka among the exam going second year MBBS undergraduate students. The questionnaire which we used was developed by modifying the earlier ones which were used by wester *et al.*,^[5] Eng *et al.*,^[6] and others.^[3,7] Prior to this study the questionnaire was validated by subject experts for its content and relevance. Institutional ethics committee approval was taken prior to the study. The questionnaire [table-1] was distributed to the students in one of their pharmacology classes. Informed consent was taken from the participants, to utilize the data for research purposes. The questionnaire had 3

parts in which first part included questions to assess knowledge about antibiotics using true / false option, second part had questions about attitude and third part about medical practices and they were assessed using options like agree/disagree/ uncertain. simple descriptive statistics was used to generate frequencies, percentages and proportions.

Table 1: Questionnaire

Part 1: Knowledge Questions

Q.No	Questions (Reply with True/ False)
1.	Antibiotic Resistance is a serious Global public health issue
2.	Indiscriminate use of antibiotics leads to emergence of antibiotic resistance
3.	Antibiotics should be taken for all the cases of common cold and cough
4.	The effectiveness of a treatment is reduced if full course of antibiotic is not completed
5.	Antibiotic treatment should be stopped once the symptoms are improved

Part 2: Attitude Questions

Q.No	Questions (Reply with Agree, Disagree, Uncertain)
1.	Antibiotics are the safe drugs, hence can be commonly used
2.	Skipping one or two doses doesnot contribute to the development of resistance
3.	Antibiotic prescription should be based on culture and sensitivity report
4.	Antibiotics are the first drug of choice in case of common cold to prevent emergence of resistance
5.	Knowledge on rational use of antibiotics is essential for doctors, nurses, prescribers

Part 3: Medical Practice Questions

Q.No	Questions (Reply with Yes/ No/ Uncertain)
1.	The doctor prescribes a course of antibiotic for you. After taking 2-3 doses you start feeling better
a.	Do you stop taking further treatment ?
b.	Do you save the remaining antibiotics for next time ?
c.	Do you discard the remaining, leftover medication ?
d.	Do you give the left over antibiotics to your friend/roommate if they get sick ?
e.	Do you complete the full course of treatment ?
2.	Do you consult a doctor before starting a antibiotic ?
3.	Do you prefer to take an antibiotic when you have cough and sore throat ?

RESULTS

The response rate was 100%. About 96 students who were present in the class have all participated in the study and the results are tabulated as percentages in table 2.

Table 2: Questionnaire**Part 1: Knowledge Questions**

Q.No	Questions	True N (%)	False N (%)
1.	Antibiotic Resistance is a serious Global public health issue	96 (100%)	0
2.	Indiscriminate use of antibiotics leads to emergence of antibiotic resistance	93 (96.8%)	3 (3.1%)
3.	Antibiotics should be taken for all the cases of common cold and cough	7 (7.29%)	89 (92.7%)
4.	The effectiveness of a treatment is reduced if full course of antibiotic is not completed	93 (96.8%)	3 (3.1%)
5.	Antibiotic treatment should be stopped once the symptoms are improved	1 (1.04%)	95 (98.9%)

Part 2: Attitude Questions

Q.No	Questions	Agree	Disagree	Uncertain
1.	Antibiotics are the safe drugs, hence can be commonly used	16(16.6%)	59(61.5%)	21(21.87%)
2.	Skipping one or two doses doesnot contribute to the development of resistance	7(7.29%)	69(71.87%)	20(20.83%)
3.	Antibiotic prescription should be based on culture and sensitivity report	78(81.25%)	6(6.25%)	12(12.5%)
4.	Antibiotics are the first drug of choice in case of common cold to prevent emergence of resistance	12(12.5%)	72(75%)	12(12.5%)
5.	Knowledge on rational use of antibiotics is essential for doctors, nurses, prescribers	93(96.8%)	3(3.1%)	0

Part 3: Medical Practice Questions

Q.No	Questions	Yes	No	Uncertain
1.	The doctor prescribes a course of antibiotic for you. After taking 2-3 doses you start feeling better			
a.	Do you stop taking further treatment ?	8(8.3%)	85(88.54%)	2(2.08%)
b.	Do you save the remaining antibiotics for next time ?	7(7.29%)	89(92.7%)	0
c.	Do you discard the remaining, leftover medication ?	23(23.95%)	62(64.58%)	11(11.45%)
d.	Do you give the left over antibiotics to your friend/roommate if they get sick ?	12(12.5%)	80(83.33%)	4(4.16%)
e.	Do you complete the full course of treatment ?	84(87.5%)	10(10.75%)	2(2.08%)
2.	Do you consult a doctor before starting a antibiotic ?	85(88.5%)	4(4.16%)	7(7.29%)
3.	Do you prefer to take an antibiotic when you have cough and sore throat ?	39(40.62%)	44(45.83%)	13(13.54%)

In our survey involving 96 students, all the participants(100%) agreed that antibiotic resistance is a serious Global public health issue. Ninety three students (96.8%) were aware

of the fact that indiscriminate use of the antibiotics can lead to emergence of antibiotic resistance. A majority, 89 students (92.7%) believed that antibiotic shouldn't be taken for all the cases of common cold and cough. About 95 students (98.9%) know the fact that antibiotics shouldn't be stopped once symptoms improve.

However, the attitude of the study participants with regards to antibiotic use and resistance was very casual and lax. About 69 (71.87%) of them believe that skipping one or two doses of antibiotics will contribute to development of resistance, while 16 (16%) of them still strongly agree that antibiotics are safe drugs and can be commonly used. About 78 (81.25%) of them were of the opinion that antibiotic prescription should be based on culture and sensitivity report and majority, 93 (96.8%) of them agree that knowledge on rational use of antibiotics is essential for doctors, nurses, prescribers. About 12 (12.5%) of them thought that antibiotics should be the first drug of choice to prevent emergence of resistance.

Responses regarding medical practice questions were diverse. Majority of them 84 (87.5%) completed full course of antibiotic treatment and most of them 85 (88.5%) consulted the doctor before taking antibiotics. But still 39 (40%) of them prefer taking antibiotic for cough and sore throat.

DISCUSSION

In our study majority of the students has a good knowledge about the antibiotics, while the responses with their attitude towards the antimicrobial usage were satisfactory and medical practices were little varied. Almost all the participants believe that antibiotic resistance is a serious and global problem and is due to the indiscriminate antimicrobial use, and these results are consistent with similar study done by Mahajan M *et al.*^[3] Antibiotics have been taken as over the counter drugs and there is no restriction on this.^[8] Previous studies have reported the self medication of antibiotics among medical students (about 35%),^[7] but this was not the case with our participants where majority (88%) of them consulted doctor before starting medication and most of them completed full course of treatment. Various studies done previously showed that more than 60% of their participants believed that antibiotics should be prescribed for viral illnesses,^[9] this type of belief can lead to more of antibiotic usage leading to bacterial resistance, while about 92% of our participants are knowledgeable that antibiotics shouldn't be taken for all cases of common cold but on the contrary when it comes to self practices 40% of them prefer taking antibiotics for simple sore throat and cough. So lack of knowledge about disease etiology can lead to inappropriate antibiotic usage

which in turn increases bacterial resistance.^[3] Hence appropriate education on microbes causing diseases should also be instituted for them. Education campaign should also change the behaviour towards medical practices along with imparting knowledge.^[7] 64% of our participants had attitude of preserving the remaining medications, so this shows that there are high chances of using same medication for next time and incompleteness of treatment.

A common misconception among prescribers is they believe that it is effective to treat colonization than infection or in using broad spectrum antibiotics and also believe that this can prevent the development of antibiotic resistance.^[10] hence the students should be thought about these issues and their responsibility once they become prescribers.

In a survey done by Minen et al, most of the students have anticipated that strong knowledge regarding antibiotics will be important for them in their medical carrier. Also they insisted need for continuing education on antimicrobial prescribing and the feedback. And reported that there is no clear source of information about antibiotic usage.^[11] so apart from teaching about antibiotic prescribing , principles of protocol development for antibiotic use in health care facilities should also form an important part of undergraduate teaching.^[12]

CONCLUSION

There is a need for more education regarding antibiotic resistance with more emphasis on the behaviour of medical students towards antibiotic usage and rules of antibiotic prescribing rather than knowledge alone. Our study has thrown some light on knowledge, attitude and practices of second year medical students regarding antibiotic usage and resistance which help us in planning effective undergraduate curriculum.

LIMITATIONS

Limitations include small sample size involving only second year medical students and that too from single teaching hospital and the data provided is of local interest. Further research needed among students of different teaching hospitals and other areas of antibiotic prescribing, from private prescribers and from general population too.

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