

## Antibiotic use among Medical students in a tertiary care hospital: a cross-sectional study

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### Abstract

**Introduction:** Antimicrobial resistance is an urgent and serious global health problem demanding considerable attention from healthcare professionals all over the world.

**Objective:** To evaluate knowledge and attitude regarding antibiotic resistance as well as the practice of self medication of antibiotics among second year medical students.

**Material and Methods:** This was a cross-sectional questionnaire based study conducted by the staff of the Department of Pharmacology at Dr B R Ambedkar Medical College, Bangalore during April- May 2018. 70 second year MBBS students participated in this study.

**Results:** 92.8% (n = 65) of respondents agreed that antibiotic resistance is an important and serious public health issue in the hospital. 31.42% (n = 22) were of the opinion that antibiotic abuse was the main cause for bacterial resistance. 30% (n=21) never preferred to take antibiotics for cough and sore throat. The number of respondents who completed the full course of treatment with antibiotics were 55.7% (n=39).

**Conclusion:** In our study, most of the students had good knowledge and aware of the problem of antimicrobial resistance, but still used antibiotics for self medication. This shows inadequate adherence to antibiotic policies among the study population warranting periodic training and the need for an effective antibiotic stewardship in medical colleges.

**Keywords:** Antibiotics, Self medication, Antibiotic resistance, Knowledge, Practice.

### Introduction

Antibiotics are one of the most commonly prescribed drugs and often misused. It has been estimated that up to a third of hospitalized patients receive a course of antibiotics and they can account for up to 40% of the hospital's drug budget.<sup>1</sup>

Antimicrobial resistance is an urgent and serious global health problem demanding considerable attention from healthcare professionals all over the world. Rational use of antibiotics has to be emphasized as injudicious use can adversely affect the patient, cause emergence of resistance and increase the cost of healthcare.

Self medication involves acquiring medicines without a prescription, resubmitting old prescriptions to purchase medicines, sharing medicines with relatives or members of one's social circle or using leftover medicines stored at home.<sup>2</sup>

A study conducted at All India Institute of Medical Sciences, New Delhi observed that self-medication was considerably high among undergraduate medical and paramedical students in India and it increased with medical knowledge.<sup>3</sup>

There is a paucity of literature on the prevalence of self-medication among medical students and their attitude towards the same. The present study was hence conducted to assess the prevalence of self-medication with antibiotics among the second year undergraduate students of Dr B R Ambedkar Medical College, Bangalore and their perception and attitude regarding antibiotic resistance.

An early education and adequate training of undergraduate students of medicine, pharmacy and nursing about rational antibiotic prescribing, dispensing and usage respectively may be significantly effective in minimizing antibiotic resistance.<sup>4</sup>

### Materials and Methods

This was a cross-sectional questionnaire based study conducted among second year medical students of Dr B R Ambedkar Medical College, Bangalore during April- May 2018. It was done to assess the knowledge, attitude and practice regarding antibiotic use and resistance. The study was approved by the Institutional Ethics Committee.

A pre-validated questionnaire prepared after a review of similar studies<sup>5,6</sup> and scrutinized by subject experts has been used. It consists of 19 questions divided into three parts: first- Knowledge about antibiotic use and AMR as true/false response; second- attitude on antibiotic abuse and its influence recorded on five point Likert scale ranging from strongly agree to strongly disagree; third- self reported practices with regard to their antibiotic usage using Likert scale ranging from always to never.

The results obtained were expressed in proportions.

### Results

70 students were assessed regarding their knowledge, attitude and practice of antibiotic usage and resistance, out of which 44.2% (n= 31) were males and 55.7% (n= 39) were females.

92.8% (n = 65) of respondents agreed that antibiotic resistance is an important and serious public health issue in the hospital. 77.14% (n=54) were aware that bacteria are not responsible for causing common cold and 80% (n = 56) of the participants knew that indiscriminate use of antibiotics can lead to bacterial resistance. (Table 1)

82.85% (n = 58) of the respondents were aware that injudicious use of antibiotics can increase adverse effects. 44.2% (n = 31) of participants strongly agreed that rational use of antibiotics has to be emphasized. 31.42% (n = 22)

**Table 1:** Knowledge regarding antibiotic use

K1	Indiscriminate and injudicious use of antibiotics can lead to	True (%)	False (%)
a	Ineffective treatment	84.28	15.71
b	Increased adverse effects	82.85	17.14
c	Emergence of bacterial resistance	80	20
d	Exacerbation of illness	70	30
e	Additional burden of medical cost to the patient	91.42	8.57
K2	Bacteria cause common cold and influenza	22.85	77.14
K3	If taken too often, antibiotics are less likely to work in the future	84.28	15.71
K4	Antibiotic resistance is an important and serious global health issue	92.85	7.14

**Table 2:** Practice regarding antibiotic usage

		Always n (%)	Sometimes n (%)	Never 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?	6 (8.5)	39(55.71)	25(35.71)
b	Do you save the remaining antibiotics for the next time you get sick?	15(21.4)	26(37.14)	29(41.42)
c	Do you discard the leftover medications?	12(17.14)	34(48.57)	24(42.85)
d	Do you give the leftover antibiotics to your friends if they get sick?	7(10.0)	33(47.14)	30(42.85)
e	Do you complete the full course of antibiotics?	39(55.71)	27(38.57)	4(5.71)
P2	Do you consult a doctor before starting an antibiotic?	50(71.42)	18(25.71)	2(2.85)
P3	Do you check the expiry date of the antibiotic before using it?	56(80.0)	12(17.14)	2(2.85)
P4	Do you prefer to take an antibiotic when you have cough and sore throat?	11(15.71)	38(54.28)	21(30)

were of the opinion that antibiotic abuse was the main cause for bacterial resistance.

30% (n=21) never preferred to take antibiotics for cough and sore throat. The number of respondents who completed the full course of treatment with antibiotics were 55.7% (n=39). (Table 2)

## Discussion

Self medication among medical students is more common because they have better knowledge about diseases and greater access to medicine.<sup>7</sup>

Antibiotics are the most commonly used medicines in self-medication. This leads to adverse drug reactions, drug interactions, masking the correct diagnosis, and development of added infections. If they have chosen the wrong antibiotic or incorrect dosage, it can lead to drug resistance.<sup>8,9</sup>

92.8% (n = 65) of respondents agreed that antibiotic resistance is an important and serious public health issue in the hospital. 77.14% (n=54) were aware that bacteria are not responsible for causing common cold and influenza.

44.2% (n = 31) of participants strongly agreed that rational use of antibiotics has to be emphasized. 31.42% (n

= 22) were of the opinion that antibiotic abuse was the main cause for bacterial resistance.

Though 77.14% of the students knew that common cold is a viral illness, 54.28% (n= 38) preferred to take antibiotics for cough and sore throat. Various studies have similarly reported that more than 60% of their participants believed that antibiotics should be prescribed for viral illnesses.<sup>6,10</sup>

Previous studies have shown high rates of self medication amongst medical students with respect to antibiotics.<sup>10,11</sup> The number of respondents who completed the full course of treatment with antibiotics were 55.7% (n=39). A similar study done in South India reported that 33% of the medical students were also not likely to finish the antibiotic course once started.<sup>12</sup>

There is a need to curb the progressing antimicrobial resistance. This could be achieved by organizing regular educational campaigns among the general population as well as among the health care personnel about antibiotic resistance.

Antibiotics are available as over the counter drugs which is a major threat to the public health. There is a need for further education of consumers, pharmacists, students of health care sector and practitioners regarding rational prescribing and completion of full course of antibiotics. The

principles of protocol development for antibiotic use in health care facilities should form an integral part of undergraduate teaching.

The limitations of this study were small sample size and non inclusion of dental, nursing and physiotherapy students.

### Conclusion

In our study, most of the students had good knowledge and were aware of the problem of antimicrobial resistance, but still used antibiotics for self-medication. This shows inadequate adherence to antibiotic policies among the study population warranting periodic training and the need for an effective antibiotic stewardship in medical colleges.

### Conflict of interest

None.

### Source of funding

None.

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