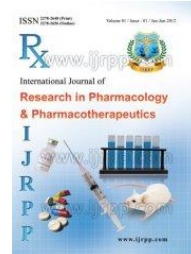




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Research article

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### A questionnaire based survey on antibiotic usage and resistance among second professional medical students in a tertiary care centre

Samina Farhat<sup>1</sup>, \*Mohammad Younis Bhat<sup>2</sup>, Zahid Mohd. Rather<sup>3</sup>

<sup>1</sup>Associate Professor and Head, Department of Pharmacology, Government Medical College, Srinagar (J&K) – 190010, India

<sup>2</sup>Senior Resident, Department of Pharmacology, Government Medical College, Srinagar (J&K) – 190010, India

<sup>3</sup>Senior Resident, Department of Surgery, Government Medical College, Srinagar (J&K) – 190010, India

\*Corresponding author: Mohammad Younis Bhat

#### ABSTRACT

##### BACKGROUND

Antibiotics are among the most commonly prescribed medications which serve a very useful therapeutic purpose in eradicating pathogens; however they are very often misused. Health science students who are future physicians are expected to have appropriate knowledge and attitude towards the growing menace of antibiotic resistance (ABR) for which the present study was done.

##### METHODS

A cross-sectional, questionnaire based survey was conducted among second professional medical students in June 2015 about knowledge, attitude and perception using a 'Likert scale' and analyzed by using simple descriptive statistics involving frequencies, percentages and proportions.

##### RESULTS

Of the 69 students, 66 filled and returned the questionnaire. All the respondents agreed that indiscriminate and injudicious use of antibiotics leads to emergence of resistance and they are less likely to work in future if taken too often. However responses in other questions were quite varied and divided.

##### CONCLUSIONS

Our study revealed the most of the student were aware of the issues related to antimicrobial usage like resistance and its consequences and further educational interventions are necessary to improve their understanding as well as their attitude towards antibiotic use.

**KEY WORDS:** Knowledge, attitude, antibiotic resistance, Likert scale, perception.

#### INTRODUCTION

Antimicrobial agents are some of the most widely, and often injudiciously used therapeutic drugs

worldwide<sup>1</sup> resulting in antibiotic resistance which is a rapidly increasing global problem with a strong impact on morbidity and mortality.<sup>2,3,4</sup> Among other

factors, the indiscriminate use of antibiotics has contributed to the progressive loss of bacterial sensitivity to antibiotics and spreading of resistant strains of bacteria, the clinical effectiveness of antibiotics depends partially on their correct use, depending on patients, physicians and retailers. Patient factors relating to incorrect antibiotic use include self-medication, sharing medication with other people, not taking of full course of treatment and keeping part of the course for another occasion.<sup>5,6</sup> In recent years, an increasing number of researchers have focused their attention on antibiotic misuse and follow with interest the knowledge, attitude and practice (KAP) towards antibiotic use of public<sup>7,8,9,10,11</sup> and it has been greatly emphasized that adequate training should be provided for the undergraduate medical, pharmacy and nursing students regarding the proper prescribing, dispensing and the usage of antibiotics respectively in order to promote the judicious use of antibiotics.<sup>12</sup> One of the approaches which is commonly suggested is to undertake instructional and educational campaigns among the general population<sup>13</sup> as well as among health care personnel<sup>14</sup> about antibiotic resistance, its dangerous consequences and regarding steps which can limit its development and spread.<sup>15,16</sup> So this study was undertaken among second year undergraduate medical students, in order to assess their knowledge and attitude concerning antibiotic resistance and various other practices related to antibiotic use which can assist in planning and devising an effective and tailored educational intervention for them.

## MATERIAL AND METHODS

This cross-sectional, questionnaire based survey was undertaken in the Department of Pharmacology of Government Medical College Srinagar among examination going second year MBBS undergraduate students after approval of the institutional ethical committee and taking informed consent from them.

**Gender:** M / F

**Resident:** Jammu / Kashmir / Ladakh [CITY / VILLAGE]

Data was collected through structured, validated questionnaire which was developed by modifying the earlier one's which were used by Wester CW et al<sup>17</sup>, Eng JV et al<sup>15</sup> and others<sup>13,18,19,20</sup> and validated by subject experts for its contents and relevance. The questionnaire was distributed to the students during one of their classes and asked to complete the questionnaire anonymously. The questionnaire included questions pertaining to demographic data, questions in first part to assess knowledge about antibiotics, using true or false option, second part addresses questions about medical practice and the third part addresses attitude questions which were assessed by using 'Likert scale'. The possible answers always, usually, were considered as a 'yes' while never considered as 'no' and sometimes as uncertain. Similarly possible answers, 'strongly agree' and 'somewhat agree' considered as 'positive' while somewhat disagree and strongly disagree as 'negative' answers. Finally, participants were asked an open ended question to provide solution for growing problem of antibiotic resistance. Simple descriptive statistics was used to generate frequencies, percentage and proportions.

## RESULTS

Out of total 69 enrolled students, 66 participated and successfully completed the questionnaire having a mean age of 21 years with male and female comprising 34 and 32 respectively. Majority of them were from Kashmir (57), rest from Jammu and Ladakh province with most of them from rural areas. The response rate was 100% among students who participated in survey and tabulated as percentage in tables 1, 2, 3, 4. Out of 66 students, 100% (n=66) were aware that indiscriminate and injudicious use of antibiotics leads to emergence of resistance and antibiotics are less likely to work in future in taken too often. However the participants differed in opining about other questions as depicted in tables.

**Table – 1**

Q. No.	Knowledge Questions	True	False
(A)	Indiscriminate and injudicious use of antibiotics leads to emergence of the growing problem of resistance.	66	0
(B)	If taken too often antibiotics are less likely to work in future.	66	0
(C)	Antibiotics speed up the recovery of common cold and cough.	18 (27.2%)	48 (72.7%)
(D)	Antibiotic treatment should be stopped as soon as the patient feels better.	17 (25.7%)	49 (74.2%)
(E)	Remaining antibiotic doses can be saved for use on other occasions.	21 (31.8%)	45 (68.1%)
(F)	Antibiotic efficacy is better if it is newer and more costly.	5 (7.5%)	61 (92.4%)

**Table – 2**

Q. No.	Medical Practice Questions	Always	Usually	Some-times	Never
A.	The doctor prescribes a course of antibiotics for you. After taking 2-3 doses you start feeling better.				
I.	Do you stop taking the further treatment?	0	14 (21.2%)	24 (36.3%)	28 (42.4%)
II.	Do you save the remaining antibiotics for the next time?	4 (6%)	7 (10.6%)	21 (31.8%)	34 (51.5%)
III.	Do you discard the remaining, left over medication?	6 (9%)	9 (15.1%)	20 (30.3%)	30 (45.4%)
IV.	Do you give left over antibiotics to your friend/roommate if they get sick?	6 (9%)	13 (19.6%)	17 (25.7%)	30 (45.4%)
V.	Do you complete the full course of treatment?	40 (60.6%)	10 (15.1%)	10 (15.1%)	6 (9%)
B.	Do you consult a doctor before start an antibiotic?	25 (37.8%)	16 (24.2%)	18 (27.2%)	7 (10.6%)
C.	Do you prefer to take an antibiotic when you have cough and sore throat?	8 (12.2%)	16 (24.2%)	30 (45.4%)	12 (18.1%)

**Table – 3**

Q. No.	Attitude Questions	SA	SWA	UD	SWD	SD
A.	Skipping one or two doses does not contribute to the development of antibiotic resistance.	0 (0%)	6 (9.0%)	5 (7.5%)	20 (30.3%)	35 (53.0%)
B.	Antibiotic resistance is an important and serious public health issue facing the world.	41 (62.1%)	13 (19.6%)	3 (4.5%)	6 (9.0%)	3 (4.5%)
C.	There is abuse of antibiotics at present among common people.	33 (50.0%)	17 (25.7%)	4 (6.0%)	8 (12.1%)	4 (6.0%)
D.	There is a need to establish a course on “rational use on antibiotics”.	17 (25.7%)	35 (53.0%)	3 (4.5%)	8 (12.1%)	3 (4.5%)
E.	Giving consideration to the manufacturing company makes difference in the treatment when using antibiotics.	33 (50.0%)	19 (28.7%)	0 (0%)	8 (12.1%)	6 (9.0%)
F.	Culture reports should guide antibiotic prescription pattern.	45 (68.1%)	15 (22.7%)	6 (9.0%)	0 (0%)	0 (0%)
G.	There should be ‘antibiotic stewardship’ or ‘antibiotic policy’ in hospital setting.	36 (54.5%)	15 (22.7%)	4 (6.0%)	7 (10.6%)	4 (6.0%)

H.	Antibiotics should not be dispensed without a valid prescription.	31 (46.9%)	20 (30.3%)	0 (0%)	10 (15.1%)	5 (7.5%)
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SA=strongly agree; SWA=somewhat agree; UD=undecided; SWD=somewhat disagree; SD=strongly disagree

**Table – 4**

Q4 What according to you is the solution for growing problem of antibiotic resistance?

## DISCUSSION

In 2011, WHO set the theme of World Health Day as “Combat Antimicrobial Resistance: No Action Today, No Cure Tomorrow”.<sup>21</sup> This shows a serious and global problem of antibiotic abuse and there is a growing consensus to urgently develop new strategies for prevention of resistance of bacteria to antibiotics as irrational use of antibiotics has contributed to progressive loss of bacterial sensitivity to antibiotics and spreading of resistant strains of bacteria with substantial clinical and economic impact.<sup>22</sup> In our study, all the students unanimously agreed that indiscriminate and injudicious use of antibiotics leads to national problem of antimicrobial resistance. However the students varied in response to other questions e.g. only 18 (27.2%) of students agreed that antibiotics speed up the recovery of common cold and cough which are different from studies in Turkey<sup>23</sup> and Greece<sup>24</sup> in which common cold was the most common symptom for antibiotic use which indicates that majority of our participants were aware that diseases like influenza and common cold are not of bacterial etiology and hence they did not recommend antimicrobial drugs. Students also differed in responding to other knowledge questions with only 5 (7.5%) and 17 (25.7%) agreeing that antibiotic efficacy is better if it is newer and more costly and treatment with antibiotics should be stopped as soon as patient feels better respectively. About medical practice questions, students again differed in response with majority of them preferring to take an antibiotic for cough and sore throat which are consistent with studies from China<sup>25</sup> and Europe<sup>26</sup> in which sore throat was the most common cause for antibiotic medication use. In attitude questions, participants responded in positive for questions with 81.7% responding in affirmative that antibiotic resistance is an important and serious public health issue which world is facing and 90.8% vouching for culture reports to guide antibiotic prescription pattern. Since there is no restriction on over the

counter (OTC) dispensing of antibiotics without prescriptions, any antibiotic, including higher end ones, can be purchased OTC without prescription.<sup>27,28</sup> Majority of our students 77.2% supported that antibiotics should not be dispensed without a valid prescription. Previous studies have shown high rates of self-medication (35%) among medical students with respect to antibiotics.<sup>16</sup> However this was not case with our participants, as majority of our participants i.e. 41 (62.1%) always preferred to consult a doctor before starting of an antibiotic and most of them (75.7%) always completed the full course of the prescribed treatment. Students also pressed upon the need to establish a course on ‘rationale use of antibiotics’ and need of ‘antibiotic stewardship’ in hospital setting as a measure to prevent resistance and loss of valuable source of antibiotics. In open ended questions for solution to growing problem of antibiotic resistance, majority of participants suggested judicious, careful and rationale use of drugs, use of culture sensitivity reports and the need to create more awareness among masses about antibiotics by using various media. One of the common misperceptions which are held by the prescribers while they treat their patients is that more is better, in treating the colonization rather than the infection or in using broad spectrum antimicrobials. This falsely held belief is considered to be a primary barrier which prevents the development of antibiotic resistance.<sup>29</sup>

## CONCLUSION

Our study provide useful information about the knowledge, attitude, perception and the practices of second year medical students with respect to antibiotic resistance and usage which may be utilized at improving undergraduate curriculum. There is need that students should be made aware of important facts and a sense of responsibility should be nurtured, that as prescribers, they are not only responsible for the benefits and welfare of their patients but also for

the society at large in which press, media and online discussion forums can be handy. Our study also appreciates the need of conducting further such multicentric studies involving wider section of medical professionals to estimate the magnitude of the problem.

### LIMITATIONS

Main limitation of this study is that data provided is of local interest. It is based on convenience sample

which involves only one batch of 2<sup>nd</sup> year medical students from one single teaching hospital.

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