



Research Article

A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE OF ANTIBIOTIC USAGE AMONG PHARMACY STUDENTS IN COLLEGE OF PHARMACY, SRI RAMACHANDRA MEDICAL COLLEGE AND RESEARCH INSTITUTE (DU): AN DESCRIPTIVE ANALYSIS

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ABSTRACT

Aim and Objectives: To assess the knowledge, attitude and practice (KAP) of antibiotic usage among pharmacy students of various program in Faculty of Pharmacy, Sri Ramachandra Medical College and Research Institute (DU) by using KAP questionnaire. **Methodology:** It's a descriptive analysis conducted in 310 students for the period of 4 months. Students from various courses from pharmacy discipline were included in this study. Who are not willing to participate or not return the questionnaire within a time period were excluded. After getting written informed consent, then the pharmacy Student's knowledge, attitude and practice (KAP) were assessed using validated questionnaire. This questionnaire was got permission from the author. It consists of total of 15 questions. For Knowledge domain contain four questions, which are open ended questions. For attitude and practice domains have rated response of five point likert scale. **Results:** About 61 % of the pharmacy students agreed that bacteria are not the reason to cause common cold and flu, the response obtained in our study is significantly high. Whereas 53 % of the students agreed that consulting a doctor before starting an antibiotic is an important / integral part in the therapy. Unexpectedly, 22 % students concurred that antibiotics are safe drugs can use commonly. **Conclusion:** The overall result depicts that the pharmacy students have fair knowledge, attitude and practice on use of antibiotics in various circumstances. The Key findings of this study are to establish future interventions to improve appropriate use of antibiotics.

Keywords: Antibiotic, Resistance, Knowledge, attitude, Practice and pharmacy students

INTRODUCTION

In modern medicine, antibiotics are most frequently prescribed medications. Eight decades ago, antibiotics were discovered and from then a revolution in management, treatment, outcome of infectious disease was developed.¹ Understanding the antibiotics success and failure requires natural history understanding. Inappropriate usage of antibiotics is one of the reasons to develop a bacterial resistance.² Antibiotics are one of the most commonly prescribed, sold and used drugs worldwide. Antibiotic resistance is one of the wide threats to global health because of an increase of antibiotic resistance.³ India tops in the irrational and indiscriminate use of antimicrobials.⁴ Being the country with high infectious disease burden antibiotics are the most widely and frequently prescribed drugs accounting for the alarming increase in AMR.⁵ The irrational prescription practices by clinicians are mainly governed by the "more drug better doctor" beliefs of patients. A critical zone was featured by numerous analysts with respect to the insufficient preparing of medicinal services experts in them under graduation in a zone of anti-infection use and obstruction.⁶ Competence in comprehension of resistance pattern is an important manual for devise antibiotic rules and coordinating the anti-microbial practices toward a correct way. In perspective on this, numerous investigations have accentuated on reexamining the educational modules of health care professionals to advance a suitable utilization of anti-infection agents.⁷ Recently, WHO has additionally characterized the job of undergrad preparing in judicious endorsing.⁸ The job of drug

specialists is unequivocal in this war against anti-microbial opposition. They are seen as an increasingly educated and creative health professional to proficient to aid contamination control battle. All the more essentially, network drug specialists are honored to be called as a Gateway Practitioner. They have the noteworthy chance to depict a renowned job of advancing general wellbeing by their dynamic interest in antibiotic stewardship program. The real goal of this examination was to evaluate the learning, frame of mind and practice (KAP) of Pharmacy students concerning the antibiotic use and resistance.

MATERIAL AND METHODS

It's a descriptive analysis conducted in 310 students for the period of 4 months from various courses in pharmacy discipline were included in this study. 167 students excluded by reason of not willing to participate and not return the questionnaire within a time period. After getting written informed consent, the pharmacy Student's knowledge, attitude and practice (KAP) were assessed by using validated KAP questionnaire. The prior permission was obtained from the corresponding author for the use of this questionnaire in this study. It consists of 15 questions with three domains namely Knowledge, attitude and practice. For Knowledge domain contain four questions, which are open ended queries. Were attitude having five queries and practice domain consist of six queries which are rated response of five-point likert scale.

RESULTS

Table 1: Assessment of Knowledge of antibiotic usage among in pharmacy students

S. No	Knowledge questionnaire	Response from B.Pharmacy students in %		Response from M.Pharmacy students in %		Response from Pharm.D students in %	
		Correct (%)	Incorrect (%)	Correct (%)	Incorrect (%)	Correct (%)	Incorrect (%)
K1.Indiscriminate use of antibiotics can lead to							
a)	Ineffective treatment	40	60	79	21	84	16
b)	Increased adverse effect	41	59	85	15	75	25
c)	Exacerbation or prolongation of illness	37	63	69	31	79	21
d)	Emergence of bacterial resistance	31	69	84	16	80	20
e)	Additional burden of medical cost to the patient	29	71	80	20	82	18
K2.	If taken too often, antibiotics are less likely to work in the future	22	78	87	13	85	15
K3.	Bacteria are germs that cause common cold and flu	74	26	25	75	25	75
K4.	Antibiotic resistance is: An important and serious public health issue						
a)	Facing the world	46	54	90	10	91	9
b)	In our country	32	68	89	11	92	8
c)	In our hospital	48	52	88	12	89	11

Table 2: Assessment of attitude of antibiotic usage among in pharmacy students

S.no	Attitude Questionnaire for Pharmacy Students	Response from B.Pharmacy students in %					Response from M.Pharmacy students in %					Response from Pharm.D students in %				
		SA	A	UD	D	SD	SA	A	UD	D	SD	SA	A	UD	D	SD
1.	When I have a cold, I should take antibiotics to prevent getting a more serious illness	23	27	15	17	18	12	16	22	24	26	12	14	20	24	30
2.	When I get fever, antibiotics help me to get better more quickly	14	22	25	18	21	21	20	25	18	16	25	20	19	17	19
3.	Whenever I take an antibiotic, I contribute to the development of antibiotic resistance	20	25	15	22	18	14	17	29	18	22	14	17	31	18	20
4.	Skiping one or two doses does not contribute to the development of antibiotic resistance	21	24	25	16	14	16	15	19	20	30	14	15	17	20	34
5.	Antibiotics are safe drugs; hence they can be commonly used	17	26	27	18	12	14	20	18	23	25	8	12	22	27	31

Table 3: Assessment of practice of antibiotic usage among in pharmacy students

S. No	Practice Domain	Response from B.Pharmacy students in %					Response from M.Pharmacy students in %					Response from Pharm.D students in %				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
P1	The doctor prescribes a course of antibiotic for you															
a)	Do you stop taking the further treatment?	19	21	25	20	15	10	17	20	23	30	12	15	18	20	35
b)	Do you save the remaining antibiotics for the next time you get sick?	20	20	21	26	13	11	15	21	25	28	11	16	17	23	33
c)	Do you discard the remaining, left over medication?	12	21	23	19	25	25	21	14	28	12	31	25	18	14	12
d)	Do you give the left over antibiotics to your friend / roommate if they get sick?	13	27	19	24	17	10	14	17	28	31	11	10	12	26	41
e)	Do you complete the full course of treatment?	25	20	21	19	15	30	23	20	17	10	35	20	18	15	12
P2	Do you consult a doctor before starting an antibiotic?	11	29	25	19	16	34	26	15	14	11	29	25	19	17	10
P3	Do you check the expiry date of the antibiotics before using it?	10	30	29	21	10%	30	21	16	14	19	34	22	19	15	10
P4	Do you prefer to take an antibiotic when you have cough and sore throat?	21	27	19	18	15	24	19	31	16	10	21	14	37	10	18

Table 4: Assessment of overall knowledge about antibiotic usage in pharmacy students

S.no	Antibiotic Knowledge in pharmacy students	Response in %	
		Correct (%)	Incorrect (%)
K1.	Indiscriminate use of antibiotics can lead to		
a)	Ineffective treatment	84	16
b)	Increased adverse effect	66	36
c)	Exacerbation or prolongation of illness	55	45
d)	Emergence of bacterial resistance	56	44
e)	Additional burden of medical cost to the patient	63	39
K2.	If taken too often, antibiotics are less likely to work in the future	64	38
K3.	Bacteria are germs that cause common cold and flu	39	61
K4.	Antibiotic resistance is: An important and serious public health issue		
a)	Facing the world	60	40
b)	In our country	70	32
c)	In our hospital	82	18

Table 5: Assessment of overall attitude about antibiotic usage in pharmacy students

S. No	Attitude	Response in %				
		SA	A	UD	D	SD
A1.	When I have a cold, I should take antibiotics to prevent getting a more serious illness	24	20	21	23	12
A2.	When I get fever, antibiotics help me to get better more quickly	24	18	22	20	16
A3.	Whenever I take an antibiotic, I contribute to the development of antibiotic resistance	20	16	24	22	18
A4.	Skipping one or two doses does not contribute to the development of antibiotic resistance	18	22	20	17	20
A5.	Antibiotics are safe drugs; hence they can be commonly used	22	20	21	19	23

Table 6: Assessment of overall practice about antibiotic usage in pharmacy students

S. No	Antibiotic practice of overall Pharmacy Students	Response in %				
		1	2	3	4	5
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?	19	20	19	21	21
b)	Do you save the remaining antibiotic for the next time you get sick?	12	17	12	13	46
c)	Do you discard the remaining , leftover medication?	17	20	21	23	17
d)	Do you give the leftover antibiotics to your friend/roommate if they get sick?	10	9	11	12	58
e)	Do you complete the full course of treatment?	34	16	20	17	13
P2.	Do you consult a doctor before starting an antibiotic?	53	17	10	9	11
P3.	Do you check the expiry date of the antibiotic before using it?	60	8	12	11	9
P4.	Do you prefer to taken an antibiotic when you have cough and sore throat?	13	17	37	15	18

DISCUSSION

In our study, we surveyed pharmacy students from various programs (B. Pharmacy, Pharm. D and M. Pharmacy students) in our college to evaluate the knowledge, attitude and practice towards optimum usage of antibiotics with the aid of questionnaire. The sample size of our study is about 310 students.

This is the first study that has been conducted in examining the antibiotic usage among of various programmers of Pharmacy colleges in our medical college and research institute. Among various programme Pharm.D students significantly scored higher in knowledge, attitude and practice than other programs in our pharmacy college.

In our study the chief reason for antibiotics use was due to the sore throat (37 %) followed by common cold (57 %) which was found to be higher than study performed in Albina Fejza *et al.*

Our study provides useful information on knowledge, attitude and practice of pharmacy students in accordance with antibiotic resistance and usage, which may be utilized to plan appropriate educational intervention that pave way for improving the prescribing and use of antimicrobials. The response obtained in our study for the survey question "Antibiotic resistance is an

important and serious public health issue in our hospital (82 %) is found to be contrary to the study carried out in padmanadha *et al.*

About 61 % of the pharmacy students agreed that bacteria are not the reason to cause common cold and flu, the response obtained in our study is significantly higher than study carried out by Albina fejza *et al.* For about 53 % of the respondents agreed that consulting a doctor before starting an antibiotic is an important / integral part in the therapy, but in Afzal khan *et al* the majority 90 % and about 70 % in Padmanabha *et al* of respondents agreed that consulting a doctor before administration of antibiotic is an important part in the therapy.

22 % participants concurred that antibiotics are safe drugs so they can be commonly used, similar results were obtained by the respondents participated in the study padmanabha T.S *et al.* Indiscriminate use of antibiotics leads to various injudicious and inappropriate consequences such as ineffective treatment, increased adverse effect, Exacerbation or prolongation of illness, Additional burden of medical cost to the patient and ultimately Emergence of bacterial resistance, for about 64.8 % of the respondents in our study adhered to this fact and answered the survey question on knowledge adequately. The similar survey was carried among medical undergraduates in Padmanabha *et al* study. The response obtained was found to be significantly higher

than our study (79.27 %). The results for the above survey question on knowledge was similar in a study carried out by Wester CW *et al*, the final results depict that about 97 % of the physicians concurred that Indiscriminate use of antibiotics ultimately leads to the emergence of bacterial resistance. The survey results obtained for the study done among medical undergraduates in Padmanabha *et al* secured significantly high than the response obtained to the question "If antibiotics are taken too often then they are less likely to work in the future" (87.68 % vs 64 %).

Our study got significantly higher response for the survey question "Antibiotic resistance is an important and serious public health issue in our hospital (82 % vs 49 %, 74.64 %) than the similar study conducted among internal medicine physician Wester CW *et al* and the study carried among medical undergraduates Padmanabha *et al*. The study among medical undergraduates got high response rate to the survey question on knowledge "Antibiotic resistance is an important and serious public health issue facing the world and in our country (96.38 % vs 87 %, 60 %) and (96.38 % vs 67%, 70 %) than the study conducted among internal medicine physicians Wester CW *et al* and in our study.

Then on survey question on attitude toward rational use of antibiotics the pharmacy students in our study secured significantly less to the question which is analyzed using five-point response likert scale. For about 37 % of the pharmacy students only answered correctly that "skipping one or two doses will definitely leads to the arousal of antibiotic resistance" and about 42 % of respondents answered correctly for the survey question "usage of antibiotics to treat fever and to get better more quickly "but in the concordant studies carried out among medical undergraduates Padmanabha *et al* and medical students of southern teaching hospital Afzal khan *et al* they scored high response (41.31, 76 %) and (57.24 %, 58 %).

In our study about 24 % pharmacy students got higher response to the survey question on attitude of rational use of antibiotics "whenever I take an antibiotic, I contribute to the development of antibiotic resistance " than the concordant studies carried out among medical undergraduates Padmanabha *et al* and medical students of southern teaching hospital Afzal khan *et al* (22.46 %, 17.5 %) and they also secured both the responses for the question "When I have cold I should take antibiotics to prevent getting a more serious illness "such as higher response of about (45 % vs 43.48 %) when compared to the study carried out among medical undergraduates Padmanabha *et al* and lesser response (45 % vs 56 %) when compared with the study conducted among medical students of southern teaching hospital Afzal khan *et al*.

On analyzing the survey questions on practice of rational use of antibiotics to eradicate the Antimicrobial resistance using five point response likert scale method our student obtained eventually less to the survey questions on practice "Do you stop taking further treatment if 2-3 doses of antibiotics makes you to feel better " and "Do you save the remaining antibiotics for the next time you get sick "and on completion of full course of antibiotic treatment and for checking the expiry date of the antibiotic before usage, when compared to concordant studies carried out among medical undergraduates Padmanabha *et al* and medical students of southern teaching hospital Afzal khan *et al* (24.64 % vs 57 %, 55.6 %) and to the study performed among medical students of southern teaching hospital Afzal khan *et al* (46 % vs 58.8 %) and concordant studies carried out among medical undergraduates Padmanabha *et al* and medical students of southern teaching hospital Afzal khan *et al* (34 % vs 42.75 %, 74.2%) (60 % vs 80.43%, 86.6 %) and they also secured both the

responses for the survey question "Do you discard the remaining, left over medications "and for consulting a doctor before starting of an antibiotic course such as higher response of about (17 % vs 11. 59 %) (53 % vs 39.86 %) when compared with study carried out among medical undergraduates Padmanabha *et al* and lesser and lesser response of about (17 % vs 30 %) (53 % vs 92.8 %) when compared with the similar study performed among medical students of southern teaching hospital Afzal khan *et al*.

Ultimately higher response obtained by the pharmacy students of our study to the survey question on practice "Do you give the left over antibiotics to your friend /roommate if they get sick "(58 % vs 26.09 %, 45.4 %).

Wide learning knowledge between pharmacology and microbiology aids in rational antibiotic prescribing practice towards infection control. In our study pharmacy students were aware and concern about individual patients care and in judicious consequences faced by them due to irrational usage of antimicrobials.

Our study developed an urge towards gaining knowledge and developing the right attitude and practice of antibiotics among pharmacy students. There should be a healthy interaction among pharmacy students as well as with the physician leads to dearth of antimicrobial resistance

CONCLUSION

Antibiotic resistance is a global problem of increasing significant that takes a costly toll on lives and health care economics around the world. The present study shows that knowledge, attitude and practice of antibiotic usage among various pharmacy students in our Medical College and Research Institute show a positive approach in safer use of antibiotics.

The overall this study result shows that pharmacy students have fair knowledge, attitude and practice on use of antibiotics in various circumstances. And also the key findings of this study are to establish future interventions to improve appropriate use of antibiotics. The following measures to be taken like, efficient prescribing, dispensing and administering of antibiotics will be the step ahead to minimize the development of antibiotic resistance.

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