

Original Article

Knowledge, Awareness and Perception of Antibiotics Resistance among under graduates Paramedical students of Bangladesh

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ABSTRACT

Background and Objectives: Antibiotic resistance has become a global public health concern. Thus, the objectives of this study was to determine the overall knowledge of drugs and explore the level of awareness of antibiotic resistance among students studying at Jahangir-Nagar University, Bangladesh.

Material and Methods: The total period of sample collection was from June 2018 to October 2018 and the participants (was N=100). This descriptive cross-sectional study used a questionnaire that consisted of fifteen close ended questions and specific questions were on background (gender, age, education) characteristics. Descriptive statistics (frequency, distribution, mean and standard deviation) was used to describe the data. The data collected from the 100 students studying in bachelor (paramedical) and analyzed by

statistical tools (SPSS V.22) by drawing tables and graphs.

Results: Overall, 100 female students (age from 19 to 24 years) were interviewed and the response rate was 100%. Out of total respondents, around 86% of the sample stated that antibiotics are appropriate for bacterial infections and 34% of the students had agreed antibiotic can cure viral infections. 74% of the respondents hadn't expected antibiotics when they had enough with cold, fever, cough and sore throat. Some had taken without prescription. Almost above 90% of the students stop taking those drugs when symptoms decrease and do not take full dose. About 91% respondent agreed to the need of more education about antibiotic resistance.

Conclusion: It is important to generate more awareness around this issue among all. It would be advisable to introduce a specific course and training on antibiotics in core curriculum of students.

Key Words: Awareness, Antibiotic resistance, Cross Sectional, Female Students

INTRODUCTION

Antibiotics are antimicrobial drugs that are used to treat and prevent bacterial illnesses. Antibiotics can either kill or inhibit bacteria's growth. Hundreds of people had died every year due to infectious diseases like cholera, small pox, plague, tuberculosis and other diseases all over the world, when antibiotics were not available [1]. Antibiotics have played a vital role not only in the treatment but also in the prevention of many diseases caused by

various microorganisms since their introduction as medicine in the 1940s [2]. To address these problems, the World Health Organization has suggested minimizing unnecessary use of antibiotics, and completing full course of medicine [3]. Antibiotic resistant organisms are known as superbugs. These are not only a laboratory concern but have become a global threat responsible for high death tolls and life-threatening infections [4]. Consequences of these infections are aggravated enormously in volatile situations such as civil unrest, violence, famine and natural disaster.

World Health Organization (WHO) has warned that a post-antibiotic era will result in frequent infections and small injuries may result in death if, failed to act against antibiotic resistance [5]. More than 63,000 patients from the United States of America (USA) die every year from hospital-acquired bacterial infections [6]. Every year, an estimated 25,000 patients die due to multiple drug resistance (MDR) bacterial infections in Europe [7]. Many countries are facing the burden of nosocomial *Staphylococcus aureus* infections as waves of clonal dissemination. Methicillin-resistant *Staphylococcus aureus* (MRSA) strains are rapidly spreading globally [8]. Estimated costs due to multidrug-resistant bacterial infection might result in extra healthcare costs and productivity losses [7].

It has been a standard practice for most of the pharmaceutical companies to distribute antibiotics that may no longer be effective or lacking regulatory approval [9]. There is clear evidence that patients historically treated with antibiotics are more likely to have antibiotic resistance [10]. Further, re-administration of antibiotics from the initial cycle accelerates resistance mechanisms [11]. Antibiotics encourage selective pressure for bacteria to evolve when administered

frequently or irrationally. Individuals and states play a role in the evolution of antibiotic resistance [10]. Antibiotics are essential for treating bacterial infections, but their misuse is the leading cause of antibiotic resistance. Antibiotic resistance is on the rise globally, posing a threat to public health, necessitating the proper use of antibiotics [12]. Patients must receive medications that are appropriate for their clinical needs for an adequate period of time in order to make rational drug use possible. Antibiotic use patterns must be understood in order to find a positive solution to the problems of antibiotic resistance caused by the numerous antibiotics available; this is especially important in developing countries where the cost of health care is a major concern [13]. Resistance to an antibiotic develops in no time and hence, is a big matter of concern [14]. With the improvement of technology, more people are now aware of the ill-effects caused by resistance to the available drugs, however, very few take pro-active steps to curb the resistance by not over using the antibiotics [15].

The current study is one method of educating students by demonstrating the evolution and likely future of antibiotic resistance, as well as existing regulatory measures to address the antibiotic resistance crisis. Thus, the objective was designed to find out overall knowledge of drugs and explore the level of awareness of antibiotic resistance among students.

MATERIALS AND METHODS

This descriptive cross-sectional study was carried out from June 2018 to October 2018 for 5 months and total number of under graduates (UG) participants (females) involved was 100. Survey was under taken in the Jahangirnagar University, Savar, Dhaka, Bangladesh. Written consent was taken from all the participants. No question was found

with error in data collection and hence all the questions were used for data analysis.

A standard questionnaire that consisted of fifteen close ended questions were used and specific questions were on background (Gender, Age, Education) characteristics and section wise questions regarding patient satisfaction with services; the options given for rating were Yes, No and No idea. Descriptive statistics (frequency, distribution, mean and standard deviation) was used to describe the data. The data collected from the 100 students was analyzed by statistical tools (SPSS V.22) by drawing tables and graphs.

RESULTS

Out of total 100 female students, the age of the participants ranges from 20-24 years and maximum respondents were of age 20 years.

Table-1: Age of female participants

Age in Years	Frequency	Percent
19	20	20.0
20	31	31.0
21	15	15.0
22	15	15.0
23	9	9.0
24	10	10.0
Total	100	100.0

From the table 2, it was revealed that 77% of the participants had heard about antibiotic resistance which means they had good knowledge about antibiotics. And some of the

female students had not known of antibiotic resistance (n=14) and only few female students out of total participants had no idea of antibiotic resistance (n=9).

In response to the question of whether antibiotics can cure bacterial infections, 86 percent of respondents believe that antibiotics can cure bacterial infections, while 10% had no knowledge of antibiotics and only 4% had no idea about the bacterial infections. In response to the question of whether antibiotics can cure viral infections, 34% of respondents agreed, while 48% disagreed and 18% respondents had no idea about the antibiotics curing viral infections. Only 28% of students agreed that antibiotics cure protozoal infections, and 48% had no idea because they had never heard of protozoal infection. In response to the question of whether antibiotics can speed up the recovery of a cold or cough, 74% of respondents agreed that antibiotics can speed up the recovery of a cold or cough because they believe antibiotics are effective against both bacterial and viral infections, with only a few disagreeing. The response to antibiotics with a doctor's prescription revealed that almost all of them (82%) had taken antibiotics with a doctor's prescription, while only 14% had not taken any prescription and the smallest group had no knowledge of the prescription. The students' responses to the need for more

Table-2: Knowledge and Awareness about the antibiotic resistance

Questionnaires					
S.N.	Response	Yes	No	No Idea	Total N=100
1.	Have you heard about antibiotic resistance?	77	14	9	
2.	Can antibiotics cure bacterial infections?	86	4	10	
3.	Can antibiotics cure viral infections?	34	48	18	
4.	Can antibiotics cure protozoal infections?	28	24	48	
5.	Can antibiotics speed up the recovery of cold and cough?	74	11	15	
6.	Do you take antibiotics with the doctor's prescription?	82	14	4	
7.	Do you think antibiotic drug should not take without doctor's prescription?	91	1	8	
8.	Are antibiotics overprescribed by doctors or related professionals	69	22	9	
9.	Do you think it is necessary to get more education about antibiotic resistance?	91	1	8	

antibiotic resistance education revealed that almost all of them believe they need more antibiotic resistance education because they lack knowledge about antibiotic use and resistance and are eager to learn more about these issues.

DISCUSSION

This study aims at assessing the knowledge, perception and awareness of antibiotic resistance among female students of Jahangirnagar University. Our findings showed that the students had a fair good knowledge about the role of antibiotics, their consumption and the related adverse reactions. More than 90% of the respondents answered correctly to all the items administered. Indeed, around one fifth of the respondents were not aware that antimicrobial drugs are not effective against viruses and that antimicrobial drugs can cause secondary infections. Survey performed in US showed how almost all the medical students interviewed were aware that inappropriate use of antimicrobials can harm patients and cause antibiotic resistance [16].

A European multicenter study pointed out that 80% of medical students believed that antibiotic resistance was a problem in their own hospital [17]. The 2013 Eurobarometer report on antibiotic resistance pointed out 48% of the female students believed that antibiotics can kill viruses, while the 40% of the respondents stated that these drugs are effective against cold and flu. Likely around half of the respondent was not aware that antibiotics are not useful for flu, fever, and sore throat [18]. On an international level, a meta-analysis of 24 studies on this topic reported comparable results [19]. Despite the fair good level of knowledge, high rates of incorrect behaviors were noticed. Indeed, more than 15% of respondents declared to

stop taking antibiotics when symptoms improve and to use left-over antibiotics without consulting a doctor. This was due to socio-economic condition in Bangladesh. The response to antibiotics with a doctor's prescription revealed that almost all of them (82%) had taken antibiotics with a doctor's prescription.

The need for more antibiotic resistance education revealed that almost all of the students believe that they need more antibiotic resistance education because they lack knowledge about antibiotic use and resistance and are eager to learn more about these issues. In addition, the Indian paper pointed that about 20% of the students always interrupted the antibiotic course if they start feeling better and give leftovers antibiotics to their friends or roommates [20]. In a study carried out in Jordan, more than 60% of the respondents declared they did not complete the last course of antibiotics [21]. In the general population, a recent Italian survey showed how around 33% of the respondents stated that they had taken an antibiotic without the prescription of a physician [22]. Since, complete knowledge about antibiotic resistance was not known among few students in our study even they did not continued the full course of antibiotic therapy. Lastly, the present study demonstrated how females had a higher probability to use antibiotics only when prescribed by the doctor, showing an increased predisposition to avoid self-medication with antibiotics.

CONCLUSION

The study concluded that there is a lack of confidence in antibiotics, and more education about antibiotics and antibiotic-related issues is required. Students exaggerated the current burden of antibiotic-resistant bacteria and

were unaware of successes in reducing various modes of infection. It would be prudent to include an antibiotics course and training in the core curriculum for paramedical students. The findings of this study may have implications for health services, health care providers, and the creation of knowledge and awareness and will undoubtedly improve the understanding and better use of therapeutic drugs to decrease the antimicrobial resistance.

ACKNOWLEDGEMENTS

We are grateful to all the participants who had participated in the study and also thankful to Jahangirnagar University, Bangladesh for all their support towards completion of this research work.

AUTHOR'S CONTRIBUTION

RCS- Concept and study design, involved in writing 1st, 2nd and 3rd draft of manuscript; **NP-** data collection and interpretation of results, reviewed literatures; **RKY-** had read and approved the final revised manuscript. All the authors have contributed equally.

CONFLICT OF INTEREST: None

SOURCE OF SUPPORT: None

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