

Knowledge and Awareness Regarding Antibiotic Use and Resistance among Hospital Admitted Patients in DMCH

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Abstract: ***Background:** Antibiotic resistance imposes a threat to global human health including Bangladesh. To overcome these problems, current status of public's knowledge and awareness regarding antibiotic use and resistance needs to be assessed first. Therefore, this study aimed to explore the existing knowledge and awareness regarding antibiotic use and resistance among hospital admitted patient. **Methods:** This cross-sectional observational study was conducted in the indoors Department of Medicine, Dhaka Medical College Hospital (DMCH) for six-month period following approval of this protocol. People aged >18 years, admitted in medicine department were approached for inclusion in the study. Written informed consent was taken from the subject and ethical issues were ensured. A preformed semi-structured questionnaire was used to collect data from the respondents meeting inclusion criteria. Total 100 samples were interviewed for data collection and data were analyzed by computer with the help of SPSS 21. **Results:** Among 100 patients, maximum (39%) were in 18-29 years age group. Mean age was 29±5.4 SD (years) with male predominance (58% vs. 42%). Most of the respondents (31%) completed HSC, 20% had passed primary, 18% had passed SSC and 9% had completed graduation or above. Rate of antibiotic use in lifetime about 94%. Usually choice of antibiotic was directed by physician 47.40% (n=45) followed by village doctor (20%) and by others. Knowledge regarding antibiotics had no homogenous pattern. Of all, 37% believed that antibiotic can work against virus, 45%-believed common cold is caused by bacteria and 40% believed cold is caused by virus. However, almost half of the respondent knows that it can cause side effects and antibiotic should be stopped during appearance of any side effects. On the other hand, 64% patients had knowledge about antibiotic resistance rests 36 patients had not familiarity with antibiotic resistance. **Conclusion:** Knowledge about use of antibiotics are not homogenous but more than two thirds of the patients had knowledge regarding resistance of antibiotics. However, further larger multicentre studies are recommended.*

Keywords: Antibiotic, resistance, human health, awareness, knowledge

1.Introduction

Since the discovery of the first antibiotic penicillin by Sir Alexander Fleming in 1928 (1), millions of lives have been saved who could have died due to untreated infections. Over next 60 years the world has seen the development of several different groups of antibiotics. But the pace of invention and discovery of novel antibiotics slowed down gradually. (2) Soon after widespread application of antibiotics to treat infectious diseases started, the phenomenon of resistance had emerged. First antibiotic resistance was observed in 1942. (2) Since then organisms have been developing resistance to different groups of newer antibiotic drugs. Eventually, resistance has been seen to nearly all antibiotics that have been developed. (3) Use of antibiotic mostly focused on to treat infectious disease. But with the time being trends of rising of resistance makes bad headache to health professional and poses a threat to global health. (4) Several factors were identified for antibiotic resistance including overuse, inadequate intake by patients, missing the complete dose schedule, inappropriate and invariably prescribing antibiotics by village doctors and/or other health professionals. (5, 6) Knowledge of mass population about the resistance and attitude towards the use of antibiotics are important determining factors for antibiotic intake. Studies have shown that public expectations contribute to inappropriate prescribing. (7, 8) Therefore the study was

designed to explore the existing knowledge and awareness regarding antibiotic use and resistance among hospital admitted patient.

2.Objectives

To describe the condition of knowledge and awareness regarding antibiotic use and resistance among hospital admitted patient in a tertiary care teaching general hospital, Bangladesh.

3.Literature Survey

Antibiotics have played a major role since the 20th century on reducing the morbidity and mortality associated with common infectious diseases and have therefore had an important impact on health care and human longevity. (9) It is one of the most commonly used medications globally and are of enormous importance to global health. (10, 11) Irrational use of these agents is associated with allergic reactions, toxicities, super infection and more importantly the development of antimicrobial resistance. (12, 13) Antibiotic resistance can be defined as the ability of a microorganism to survive and resist exposure to antimicrobial drugs, threatening the effectiveness of successful treatment of infection. (14) It results in the therapeutic failure of standard treatment, and longer duration of treatment, leading to an increased risk

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in the spread of infections. (15, 16) It is a recognized public health issue at the local, national and global levels. (17) World Health Organization (WHO) in 2011, set World Health Day theme as-Combat Antimicrobial Resistance: No Action Today, No Cure Tomorrow. (18, 19) The causes of antibiotic resistance are often postulated to its misuse and abuse. (20) It is closely related to the knowledge, attitudes and behavior of the population, as well as the antibiotic prescribing behavior of the healthcare professionals, all these contributing to the increase of antibiotic resistance. (21, 22) As the problem of development of antibiotic resistance has overtaken the speed with which newer antibiotics are coming to the market, there is dire necessity to assess the public awareness and attitude towards antibiotic use and misuse. (23) In a similar study done in Bangladesh by Yesmin, Gieltshen and Islam found that 86.1% of the total respondents knew that indiscriminate use of antibiotics leads to certain harm to the body, while the majority, almost 97.5% have never heard of the term antibiotics resistance. There appears to be statistically significant relationship between the level of education and higher income group with that of Knowledge, Attitude and Practice on antibiotics usage. (24) The rapid emergence of resistant bacteria is occurring worldwide, endangering the efficacy of antibiotics, which have transformed medicine and saved millions of lives. Many decades after the first patients were treated with antibiotics; bacterial infections have again become a threat. The antibiotic resistance crisis has been attributed to the overuse and misuse of these medications. Judicious use of antibiotics is the only solution for which awareness is required at the level of health care providers and patients.

4. Materials and Methods

This cross-sectional observational study was conducted in the indoors Department of Medicine, Dhaka Medical College Hospital (DMCH) for six-month period following

approval of this protocol. People aged >18 years, admitted in medicine department were approached for inclusion in the study. Sampling method was purposive convenient sampling. Written informed consent was taken from the subject and ethical issues were ensured. A preformed semi-structured questionnaire was used to collect data from the respondents meeting inclusion criteria. Total 100 samples were interviewed for data collection and data were analyzed by computer with the help of SPSS 21.

5. Result

In this study total 100 respondent were included. Mean age was 29 ± 5.4 SD (years). Among the respondent maximum (39%) were in 18-29 years age group. Twenty one percent patients were in 30-39 years age group. Sixteen percent in 40-49 years and rest 24% aged ≥ 50 years. Among the study respondents 58% were male and 42% were female. Most of our respondents (31%) were HSC passed. Twenty two percent were primary passed, 18% were SSC passed and 9% were graduates. Among our 100 patients 27 were businessman, 25 were housewife, 13 were Government employee, 10 were farmer and 9 were private employee. Fourteen percent had other occupation and 12 were found unemployed. Out of 100 patients 46 patients had monthly income <10000 BDT. Forty-one patients had monthly income 10000-20000 BDT whereas only 13 patients had monthly income >20000 BDT. Among the study respondents 69% were married, 27% were unmarried and rests 4% were widower/widow. Among 100 patients 94 patients use antibiotic for at least one time in their life. Only 6 patients had no history of taking antibiotic in their entire life. Among the 94 patients who had taken antibiotic previously 45 (47.40%) patients have taken it by the advice of Doctor, 20 (20%) were taken it by the advice of village practitioner, 7 (7.40%) were taken it by the advice of relatives, 16 (16.80%) were taken it by pharmacist and 8 (8.40%) were taken it by their own will.

Table 1: Consultant for taking antibiotic (n=94)

Took Consultation from	Number	
	(%)	
Doctor	45	(47.40)
Village practitioner	20	(20.00)
Relative	07	(07.40)
Pharmacist	16	(16.80)
Self	08	(08.40)

Among the 94 patients who used antibiotic 78 patients received antibiotic for more than one times but less than 10 times, 10 patients received antibiotic for only one time and rest 6 patients received antibiotic for more than 10 times.

Only 5 patients out of 100 had experience of taking healthcare related train whereas 95 patients had no training regarding medical related topics. The study we

tried to evaluate the patients' thought about antibiotic use. Among our 100 patients 37 believed that antibiotic can work against virus. Forty-five patients believed common cold is caused by bacteria and 40 believed cold is caused by virus. Thirty-five patients agreed to get antibiotic from relative or friends, 51 thought it was ok to get antibiotic from village practitioner and 54 had no problem getting antibiotic from pharmacist. The other results are shown below.

Table 2: Awareness about antibiotic use-1 (n=100)

Question	Agree	Disagree	Don't know
It is better to keep left-over antibiotic in house so that those can be used later	47	37	16
It is good to get antibiotic from relatives or friends without going to a doctor	35	55	10
It is good to get antibiotic from Village Practitioners without going to a doctor	51	38	11
It is better to get antibiotic from Pharmacists/Chemists without going to a doctor	54	30	16
Antibiotic works against virus	37	51	12
Colds are caused by Bacteria	45	44	11
Colds are caused by Virus	40	41	19
Quick relief from cold can be achieved by taking antibiotic	56	34	10
If there is cough for more than one week you often need antibiotic to get rid of the cough	44	41	15
It's appropriate to use antibiotics when you have a sore throat because otherwise you might catch something serious	59	22	19
It's appropriate to use antibiotics when you have a tonsillitis because otherwise you might catch something serious	51	36	13
Different illness needs different antibiotics	37	45	18

Regarding side effects of antibiotic our 49% respondent believed that if there is any side-effect after they take an antibiotic, they should stop taking that antibiotic as soon as possible. Twenty six percent disagreed with this statement and 25% didn't know what to do in that circumstance. Forty five percent respondents agreed with the statement that if there was a skin reaction after they took an antibiotic they should not take that antibiotic again

and 34% disagreed with this. Sixty eight percent of our respondents believed that they can stop taking antibiotic if they feel better after half of the treatment duration with antibiotic. Twenty six percent said they should not stop it and 6% had no idea about what to do. Among our 100 patients 64 patients have knowledge about antibiotic resistance and rests 36 patients were not familiar with antibiotic resistance.

Table 3: Knowledge about antibiotic resistance among the patients (n=100)

Knowledge about antibiotic resistance	Number	
	(%)	
Yes	64	(64)
No	36	(36)

Among the 64 people who told that they had known about antibiotic resistance; 43 people were agreed to the

statement that antibiotic resistance means decreased effectiveness of antibiotic against organism.

Table 4: Antibiotic resistance means decreased effectiveness of antibiotic against microorganism (n=64)

Antibiotic resistance means decreased effectiveness of antibiotic against microorganism	Number	
	(%)	
Agreed	43	(67.18)
Not Agreed	21	(32.81)

Among our 64 patients who told that they had known about resistance 41 patients agreed with the statement that antibiotic resistance is a problem for Bangladesh, 13 were disagreed with the statement and 10 said they had no knowledge about this. On the other hand, 34 patients were agreed with the statement that antibiotic resistance is a global problem, 22 were disagreed with the statement and 8 patients had said they had no knowledge about this.

respondents aged between 18-29 years. The percentage of patients in 30-39, 40-49, 50-59, 60-69 and >70 years age group was 21%, 16%, 12%, 9% and 3% respectively and 58% of the respondents were male and 42% were female. Among the study cases 20% were illiterate and maximum 31% of the study cases were HSC passed. Twenty seven percentages of the respondents were businessman, 25% were housewife, 13% were government employee, 10% were farmer 9% were private employee and 14% had other profession. In our study 12% patients were found unemployed. Maximum (69%) of the respondents were married, 27% were unmarried and rests 4% were widower/widow. Among the 100 subjects 94 subjects used antibiotic for at least one time in their life. Only 6 patients had no history of taking antibiotic in their entire life. This finding is consistent to the finding of Jain et al (27) as they found 7.2% of their study population didn't take antibiotic ever prior to study. Among their 1372 participants 1273 (92.8%) participants had experience of taking antibiotic for at least one time in their life. Among our 94 antibiotic using patients 45 (47.40%) taken antibiotic by the advice of Doctors, 19 (20%) take

6. Discussion

Penicillin was first invented by Alexander Fleming in 1928 (25). Since then its use in clinical practice saved many lives. But nowadays indiscriminate use of antibiotics is becoming a burning question in health sector. The objective of this study was to describe the condition of knowledge and awareness regarding antibiotic use and resistance among hospital admitted patient in Bangladesh (26). Total 100 patients aged more than 18 years were included into the study. This study was a cross sectional descriptive study that was conducted in Dhaka Medical College Hospital. Maximum (39%) of the

antibiotic by the advice of village practitioner, 16 (16.80%) taken antibiotic by the advice of pharmacist, 7 (7.40%) taken antibiotic by the advice of relative and rests 8 (8.40%) taken antibiotic by their own will. This finding is similar to the finding of Saha et al (2018) (28). Among their 562 respondents 38 (6.8%) had taken antibiotic for single time only. Rests 524 (93.2%) had taken antibiotic for more than one time. Dispensing antibiotic without prescription by pharmacist, availability of the drugs, unusual suggestion by village doctors to take antibiotic and misconception regarding antibiotic use among the patients may be the possible reason for this irrational and frequent use of antibiotic. Chowdhury et al (29) shown that health professionals and compounders, who are not authorized for prescribing antibiotics, are incuriously prescribing antibiotics violating prescription guidelines of antibiotics. This may be a result of aggressive marketing policies of Bangladeshi pharmaceutical companies on the health professionals. It is a matter of great concern that 37% of the patient belief that the antibiotic may work against virus and 47% want to keep the left over antibiotic for future use. Study conducted by Nayak et al also found almost similar attitude among their study respondents (30). Among their study respondents 30.1% respondents belief that antibiotic may effective against viruses and 53.80% respondents kept the left over antibiotics for future use. So, to prevent antibiotic resistance, knowledge about proper use of antibiotic should be disseminated to the mass people. If people become aware about misuse of antibiotic then hazards related to antibiotic will surely decrease. Government may initiate campaign regarding antibiotic use. Making law against dispensing antibiotic without prescription of a registered physician and their implementation is also important to prevent irrational use of antibiotic.

7. Conclusion

In this study, it was shown that a weak knowledge and misconceptions about antibiotic use was prominent among the subjects and there is no homogenous pattern of knowledge regarding antibiotic use. However a large portion of the study subjects had known a little about the bacterial resistance. Further larger cohort study is recommended.

8. Limitation of the Study

In This study Sample size was small, single center study and totally a hospital based. All population are not in same education and socioeconomic status.

9. Recommendations

Further study should be done involving all levels of health care centers like community clinics and primary, secondary and Tertiary level of hospitals. People from various socio-demographical backgrounds should be included and Sample size should be larger.

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