Ibrahim Card Med J 2019; 9 (1&2): 42-48

ORIGINAL ARTICLE

Perception About the Use of Over-the-Counter Antibiotics Among Patients Attending Outpatient Department of a Tertiary Care Hospital of Bangladesh

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ABSTRACT

Background & objective: Antibiotics are considered among the most commonly sold drug classes in the developing countries. The irrational and overuse of antibiotics result not only in the emergence of resistant bacterial strains but also adverse reactions and economic burden on national health system. This study was carried out with the focus to assess the awareness, attitude and practice of patients visiting Outpatient Department (OPD) of Bangladesh Institute of Research & Development in Endocrine & Metabolism (BIRDEM) General Hospital. towards antibiotic usage and development of its resistance

Methods: This cross-sectional study was done in the OPD of BIRDEM General Hospital from June 2017 to July 2017. Patients presented at OPD were selected by convenient sampling. The total number of respondents was 100. A semi-structured questionnaire was used to collect information from the respondents. Data were analyzed using statistical package for social sciences (SPSS) version 20.0 and descriptive statistics were used to analyze the data.

Results: Of all the participants who took part in the study, 46% had no knowledge and 36% were unaware of ill-effects of antibiotic resistance. Over half (54%) of the patients showed confusion between antibiotic and antiviral drugs. Investigating patients' practice about antibiotics revealed that 50% patients used to take incomplete antibiotic course and 30% patients shared their antibiotics with other sick family members. During emergencies, 16% patients used the previously left-over antibiotics without seeing the expiry date. Nearly half (46%) of the patients had a practice of taking previously prescribed antibiotic again for the similar nature of illness without consulting a doctor, 6% patients sought antibiotics prescription whenever they consult a doctor.

Conclusion: Although the results of this study cannot be generalized to all adult Bangladeshi, indiscriminate use of antibiotic and unawareness of antibiotic resistance and poor attitude towards the antibiotic usage can be a concern for antibiotic resistance in Bangladesh. It highlights the need of educational interventions to increase awareness of people about the consequences of antibiotic misuse and also to develop healthy attitude to practice antibiotic usage.

Keywords: Antibiotic usage, antibiotic resistance, health education

INTRODUCTION

Antibiotics have been pivotal in treating and preventing common infections, but their overuse and misuse have contributed to an alarming increase in antibiotic resistance worldwide. Antibiotic resistance has been a low-priority area in most developing and many developed countries. The irrational and overuse of antibiotics results not only in the emergence of resistant bacterial strains but also imposes an economic burden on national health system.[1] Several studies have shown that antibiotic-resistant infections are associated with increased morbidity

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and mortality as compared with antibiotic-susceptible infections.[1] The World Health Report 2007 stressed antibiotic resistance as one of the major threats to public health security in the 21st century.[1] There are cross-sectional studies on the people's perception about antibiotic use;[2,3] however, very few studies have assessed the patients' level of awareness about antibiotic uses as a contributing factor for development of antibiotic resistance.[4,5]

In developing countries like Bangladesh, where most of the people is not health conscious, particularly about antibiotic use and resistance, educational intervention to raise their awareness on the issue is essential. Thus, the present study was aimed at assessing the patients' awareness, attitude and practice towards antibiotic usage in Bangladesh could be useful to plan for educational intervention.

METHODS:

This was an observational study, carried out in Outpatient Department (OPD) of Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, Dhaka over a period of two months from June 2017 to July 2017. Adult people aged ≥18 years attending at OPD who had used antibiotic within last one year were the study population. Participants who were in medical, paramedical profession or who had their relatives in such profession or person who were unaware about the term "Antibiotic" were excluded. Based on the predefined eligibility criteria, a total of 100 respondents of both sexes (82 males and 18 females) participated in the study. A structured questionnaire, both in English and Bangla, was given to the respondents. Ethical approval for the study was obtained from Ethical Approval Committee of Bangladesh Diabetic Association (BADAS) prior to commencing data collection.

A total of 14 variables were included in the questionnaire; 8 of them were set to assess the patients' awareness about antibiotic resistance and its adverse effects on public health. Another 6 questions were set to assess the attitude and practice of the respondents about antibiotics. Data were analyzed with the help of SPSS (Statistical Package for Social Sciences) version 20.0. The test statistics used to analyze the data were descriptive statistics only.

RESULTS:

A total of 100 questionnaires were distributed;all of whom completed the questionnaire. The mean age of the participants was 35.8±11.9 years (Fig 1). Majority (82%) of the participants was male with male-to-female ratio being roughly 4:1. Educational level of the participants varied from high school (58%) to graduate and above (42%). Questions are set to assess patients, awareness about antibiotic usage and development of its resistance (Table 1). Of all the participants who took part in the study, only 42 had heard about antibiotic resistance. Nearly half (46%) of the participants was not aware about the seriousness of the issue and 12% participants did not know about antibiotic resistance.

More than half of the participants (54%) knew about development of bacterial resistance to antibiotics and that could be fatal to themselves and even to their family members. About three quarters (72%) agreed that, usage of antimicrobials without doctor's advice is harmful. While 26% participants believed that, self-medication or taking medication on advice of medical shopkeeper, any non-medical person (Relatives/Friends/Neighbors) or even by seeing advertisement on Internet/ Television/ Newspapers are not harmful.

Nearly half (46%) of the participants was aware about basic difference between antibiotic and antiviral drugs and their usage. Less than one quarter (20%) participants believed that, there is no such difference between usage of antibiotics and antivirals. More than one-third (34%) of the participants did not know about the development of resistance due to misuse of antibiotic in place of antivirals without doctor's advice. More than three-quarters (76%) of the participants believed that, promiscuous use of antimicrobials is harmful

while 22% participants felt such use to be safe and 2% were not aware about the consequences of indiscriminate use of antibiotics.

Fifty percent participants agreed that, they stop taking prescribed antibiotics when start feeling better; among them 30% stop antibiotic frequently, 14% sometimes and 6% stop antibiotic very rarely. Another 50% participants complete the full regimen prescribed by the doctor (Table 2). Nearly one-third (30%) of participants have a habit of sharing their antibiotics with a sick family member. While 70% participants do not practice sharing of their antibiotics with anyone. Sixteen percent of participants keep antibiotic stock at home and use it without seeing the expiry date during emergencies, while 84% participants check for the expiry date and discard the left over antibiotics.

Nearly half (46%) participants used to take previously prescribed antibiotics again for the similar nature of diseases subsequently without consulting a doctor, while 54% participants would like to consult a doctor before taking any antibiotic even for the similar illness. Only 6% participants would like to consult another doctor to prescribe antibiotic if the former disagreed to do so. Majority (94%) of the participants disagreed to have such expectations from the doctor during consultation. More than one-third (36%) participants admitted that they gave antibiotic to their children for common cold, while 64% participants said they usually used cough remedies instead of antibiotics.

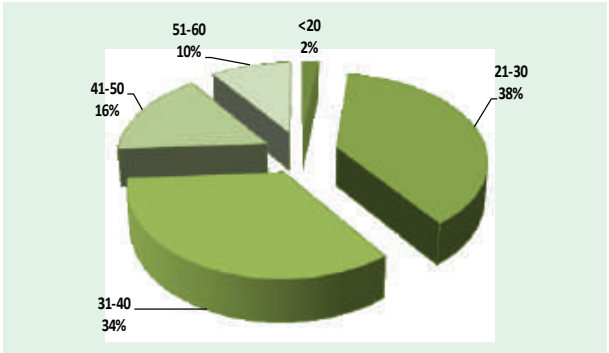

Fig: 1 Distribution of patients by their age

Table I. Questions to assess patient's awareness about antibiotic usage & development of its resistance (n=100)

Questions & Response	Frequency	Percentage
A.1 Heard about antibiotic resistance.		
Yes	42	42.0
No	46	46.0
Don't know	12	12.0
A.2 Antibiotic resistance could be fatal to me or my family.		
Yes	54	54.0
No	36	36.0
Don't know	10	10.0
A.3 Antibiotic self-medication is harmful.		
Yes	72	72.0
No	26	26.0
Don't know	2	2.0
A.4 Usage of antibiotic by advice of non-medical relative is harmful.		
Yes	72	72.0
No	26	26.0
Don't know	2	2.0
A.5 Usage of antibiotic by seeing advertisement on Internet/ Media/Newspapers is harmful.		
Yes	66	66.0
No	30	30.0
Don't know	4	4.0
A.6 Usage of antibiotic by advice of Medical Shopkeeper is harmful.		
Yes	66	66.0
No	32	32.0
Don't know	2	2.0
A.7 Using antibiotics for viral infections can increase its resistance.		
Yes	46	46.0
No	20	20.0
Don't know	34	34.0
A.8 Indiscriminate use of antibiotic can cause more harm than good		
Yes	76	76.0
No	22	22.0
Don't know	2	2.0

Table II. Patients' antibiotic behavior related to antimicrobial resistance. (n=100)

Response & Questions	Frequency	Percentage
B.1 Stop taking prescribed antibiotics when feeling better.		
never do	5	5.0
very rarely	6	6.0
Sometimes	14	14.0
Frequently	30	30.0
B.2. Share antibiotics with sick family members.		
never do	70	70.0
very rarely	2	2.0
Sometimes	8	8.0
Frequently	20	20.0
B.3. Take antibiotic without seeing the expiry date.		
never do	84	84.0
very rarely	4	4.0
Sometimes	6	6.0
Frequently	6	6.0
B.4. Take previously prescribed antibiotic again for the similar incidence.		
never do	54	54.0
very rarely	6	6.0
Sometimes	14	14.0
Frequently	26	26.0
B.5. Consult another doctor to prescribe antibiotic if first doctor disagreed to do so.		
never do	94	94.0
very rarely	6	6.0
Sometimes	0	0.0
Frequently	0	0.0
B.6. Use antibiotic for child suffering from common cold		
never do	64	64.0
very rarely	4	4.0
sometimes	12	12.0
Frequently	20	20.0

DISCUSSION:

Antimicrobial resistance is one of the most serious public health threats of the twenty-first century. Globally, about 700,000 people die due to AMR-related illnesses every year. It is estimated that by 2050 these deaths will reach 10 million, costing US$100 trillion.[6] The development of antimicrobial and antibacterial resistance related to misuse of antibiotics and irrationalized use of non-prescription antibiotics has become a major public health problem. This is one of the very few cross-sectional studies in Bangladesh that attempted to identify & examine the perceptions of antibiotics in the general population.

Over-the-counter medication with antibiotics by general population is high in low income countries like Srilanka, Vutan, Africa, Pakistan, India, Nizeria etc. This finding is in agreement with a similar studies which showed that the commonest groups of medication prone to self-medication include antimalarials and antibiotics.[7] Though awareness programs are carried out by WHO, 58% (46% don't know and 12% don't understand) participants seeking primary care in BIRDEM General Hospital, Dhaka, were found to have no knowledge that antibiotic resistance is a major threat, while only 9% of Chinese people were unaware of "antibiotic resistance" term.[3] These variations may be attributed to the patient's level of awareness, education, standard of living, economy of the country, and also to the non-calibration of the sample size.

The level of knowledge about the consequence of antibiotic resistance was found to be 54% among the participants. On the contrary, high level of knowledge (80.7%) in this regard was found in the study done by Andre et al.[8] Nearly one-third (36%) of the participants of this survey did not agree that, antibiotic resistance is a life-threatening problem which is almost consistent with the findings of Vanden et al[9] who showed that 42% of the participants were unaware about the possible health dangers of antibiotic resistance. In a descriptive study in Hong Kong in which patients were asked how much they knew about the therapeutic and side-effects of the medications they used, 69% knew at least some of the therapeutic effects while 31% did not know any of the therapeutic effects, so rendering themselves at risk from inappropriate use of drugs.[3] Furthermore, the vast majority (93%) of the patients were totally unaware of the possibility of side-effects in that study. Such unawareness and misguided beliefs could be potential danger to public health.

In the present study, 72% participants agreed that usage of antimicrobials without doctor's prescription or by any other ways is harmful. Similar level of awareness (70%) was also found among the students of Portugal.[5] In our study, a significant number of participants believed that, self-medication or taking medication by advice of non-medical person is not harmful. Among them 26% think that taking antibiotic by advice of non-medical person (Relatives/Friends/ Neighbors) are not harmful, while this number from medical shopkeeper was 32%. Over half (51.8%) of Jordanians used antibiotics on advice of their relatives.[10] Alghanim[11] showed that the commonest source of information was the private sector pharmacy salesmen (including pharmacists), reported by about three-quarters of the respondents (74.0%). This was followed by respondents' experiences or knowledge from previous episodes (50.8%). Health staff was the least common source of information (9.6%). In a study of United Arab Emirates prevalence of antibiotic use with and without a prescription was high (40%). The pharmacy was the main source, where the majority (>90%) obtained antibiotics.[12]

Like other studies[8,10] 54% participants of our study showed confusion regarding effectiveness of antibiotics against bacteria or viruses, (20% don't know and 34% don't understand the difference between antiviral and antibiotic). In other studies, 27% and 19% of people believed that, intake of antibiotics during common cold made them to feel better more quickly and 32% of them felt that it prevented the occurrence of more serious illness.[10] Around 80% people of Bangladesh live in rural areas and their access to quack or village doctors or traditional healers are quite common, who actually prescribe not only irrational antibiotics, but also the newest regimens, like ceftriaxone or meropenem every now and then. Several factors, like gross dispensing of antibiotics, unethical promotion, self-medication without prescription, irrational use of antibiotics in prescriptions by professionals, animal agricultural antibiotic use are endangering the situation in the country.[13] In the present study, 22% participants believed that the indiscriminate use of antimicrobial drugs is more harmful, whereas nearly 60% of respondents of Penang state believed so.[14] This inconsistent result is probably due to level of education which is much higher in Malaysia than Bangladesh. So improved literacy can change the condition.

Of all the participants who took part in the study, 50% used to practice incomplete antibiotic course when they start feeling better (30% frequently stop, 14% sometimes stop and 6% very rarely stop antibiotic when they feel better). Likewise, about 50% of adults of Changhua were non-compliant.[15] Kardas and colleagues[16] in his systematic review and meta-analysis found an even higher percentage (62.2%) of non-compliance with prescribed antibiotic regimen.[16] A 2015 survey by the WHO in 12 countries across the six WHO regions provides a useful information of the general public's knowledge over the appropriate use of antibiotics. Over a third of the nearly 10,000 survey respondents had taken antibiotics in the past month. Nearly two thirds (64%) mistakenly believed that viral infections such as influenza or colds could be treated with antibiotics, and nearly a third (32%) thought that stopping antibiotics when they felt better rather than completing a course as prescribed was the appropriate behavior.[17] Abasaeed[18] found that self-medication with antibiotics may increase the risk of inappropriate use and the selection of resistant bacteria in Abu Dhabi. Eight hundred sixty questionnaires were completed, with a response rate of 86%, consisting of 66% males and 34% females. These types of irrational and incomplete use of antibiotics might cause antibiotic resistance. Nearly one-third (30%) of the participants of our study reported sharing their antibiotics with other sick family members whereas this antibiotic behavior was only 8% in Hong-Kong population.[19]

Less than one-quarter (16%) participants reported they keep antibiotics in stock and use them without seeing the expiry date during emergencies while 28.5% of Jordanians and 6.6% of Chinese had kept antibiotics at home for emergency.[3,10] Nearly half (46%) had a practice of

taking previously prescribed antibiotic again for the similar illnesses without consulting a doctor. In other studies, 86% and 49% of respondents used left over antibiotics without physician's consultation.[4,20] In a study of rural area of Barabanki showed that the important sources of information for self-medication were previous prescription of doctors (72.6%), friends and neighbors (52.4%) and chemists (38.1%).[21] In developing countries like Bangladesh due to poverty and insufficient knowledge of parents and children themselves perform irrational use of drugs.[22] In our study, only 6% participants asked their doctors to prescribe antibiotic (Injection/ Tablet) for their illnesses, whenever they consult with them. These participants would like to consult another doctor to prescribe antibiotic if their physicians disagreed to do so. In other studies, similar antibiotic behaviors were 15-48%.[17,19,23] In contrast, 87% of respondents of Sweden had higher trust in doctors for not prescribing an antibiotic.[8] Such inconsistent results show the importance of education and indicate the need of educational interventions to create awareness among participants regarding antibiotics and its judicious use.

CONCLUSION:

Motivation of people to understand the different facets of antibiotic and modifying their behavior towards its rational usage is vital in reducing the antibiotic resistance. Although antibiotics are prescription only drugs in Bangladesh, the results of this study express that antibiotic self-medication is rampant in Bangladesh. It is the duty of the government especially Drug Administration Authority of Bangladesh to implement the regulatory controls on the distribution and selling of antibiotics following the guidelines of National Drug Policy-2005.

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