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Original Article

Prevalence of self medication practice with antibiotics among the students of some educational institutions of Dhaka and Gazipur district

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ABSTRACT: This study was conducted to determine the prevalence and pattern of self medication practice with antibiotics among the students of some educational institutions in Dhaka and Gazipur district. A descriptive cross-sectional questionnaire-based survey was performed among different departments of biological science and other than biological science discipline of different educational institutions. A total of 256 students participated in the study from Dhaka and Gazipur area and of them 215(83.99%) gave their positive consent for self medication with antibiotics during the past 1 year. Fever was found as the main indication for self-medication (50.6%) and Azithromycin (34.4%) was the most self - prescribed antibiotic. The prevalence of the practice was high among the university students of age group 18-24 years. The overall study concluded that there is an alarming situation in self medication practice among the students of different educational institutions located in Dhaka and Gazipur district.

KEYWORDS: Self medication, Antibiotic, Prescription, Students

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INTRODUCTION

Self medication is a major form of self-care and considered as primary public health resource in health care system[1,2]. It encompasses the taking of any medicines with therapeutic intent by people on their own initiative for self-diagnosed ailment or the remittent or continued use of a self prescribed drug for chronic or recurrent disease[3-16].The drugs are analgesics, antimalarials , antibiotics and cough syrups ,among others which are prone to self-medication[3]. Some medicines are also called Over the Counter (OTC) drug, which are available without a Doctor's recommendation through pharmacies in supermarkets and convenience stores[1]. Antibiotics or antibacterial drugs are the most commonly used and abused antimicrobial agents in the management of bacterial infections globally[17].The determinants of self-medication with antibiotics in developing countries include over-the-counter sale of antibiotics, the cost of medical consultation, low satisfaction with medical practitioners and misconceptions regarding the efficacy of antibiotics[18,19]. The self-medication with antibiotics can cause significant adverse effects such as resistant microorganisms, treatment failures, drug toxicity, increase in treatment cost, prolonged hospitalization periods and increase in morbidity[6].In recent years, the taking of non-prescribed antibiotics is

a major world-wide public health problem[13]. It is estimated that without professional advice, more than 50% of antibiotics are globally bought privately from pharmacies or street vendors in the informal sector[20].This irrational use of antibiotics through self-medication causes the broaden of antimicrobial resistance worldwide [4,14]. Such resistance of the microorganisms will definitely lead to treatment failure to some extent and put in danger of patient's life. The practice of self-medication exists not only in the developing countries but also in the developed countries[7]. The prevalence has been reported to be 3% in northern Europe as compared to the 4-75% in Asia[11]. A previous study carried out in Karachi, Pakistan, revealed the frequency of self-medication (as a whole) among university students to be as high as 80.4%.Among non-medical students the frequency was 83.3% while for those in medical school, 77.7%[5]. Research is conducted in different parts of the world such as the United States[22], the United Kingdom[23], Spain[9,24], Germany[25], France[26], Mexico[27] ,Singapore[28], Turkey[29], Jordan[30], Kuwait[31], Egypt[32] and Sudan[33] vary in their findings of the percentage of patients who practice self-medication, with prevalence rates that range from about 13% to 92% . One study conducted in Kisumu City, Western Kenya and Kenyatta National Hospital showed that 74% and 53.5% of patients had practiced self – medication with antibiotics respectively[34].The overall aim of the study was to describe the self-medication practices with antibiotic among students of different educational institutions attending Dhaka and Gazipur city in Bangladesh.

MATERIALS AND METHODS

Study design

This was an observational cross-sectional study to examine the university students' opinions and attitudes on self-medication with antibiotics. A questionnaire survey was performed from1st March to 15th August 2016 among university students in Dhaka and Gazipur city. The universities included Primeasia University, Banani, Dhaka 1213, Dhaka University of Engineering & Technology or DUET located at Gazipur, Tejgaon College in Dhaka city located at Farmgate and Tongi Government college at Tongi Upazila , Gazipur , Dhaka , Bangladesh.

Sample Size Determination

A total of two hundred fifty six (256) self-administered questionnaires were distributed to students from different level of biological and other than biological science discipline using a random sampling system.

Data collection procedure

A convenient sampling method was used to complete the required sample size. Students were approached in the areas specified by the respective university managements. Consent, both verbal and written, was taken from the students. The structured questionnaire was then filled up by the students and returned back to us.

Study tool

It consisted of a structured questionnaire prepared in English which was adapted from various similar studies conducted previously[50].The questionnaire was in two parts. The number of questions about 25 in this studies, first part contained questions on demographic information of the respondents .The second part contained questions on socio-economic variables about self - medication such as how many times the respondents were treated with antibiotic for the last one year ,reasons for self-prescription of antibiotics, complaints for self-medication, considerable factors when selecting antibiotic, source of information regarding the antibiotics, types of antibiotics and the health condition that guided the respondents to use antibiotic without prescription.

Statistical analysis and data entry

The data collected were entered into MS Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 18.0 (SPSS Inc) .

Inclusion and exclusion criteria

All the students who were intending to participate in this study and those who took self-medication during the last 1 year were included. The students who either had a doctor in their family or had submitted incompletely filled questionnaires were expelled from the study.

RESULTS AND DISCUSSION

Demographic factors and self-prescription

Two hundred fifty six (256) students of biological and other than biological science departments from Dhaka and Gazipur in Bangladesh were participated in this study. Table 1 shows the result of demographic variables of the participants, relationship of four demographic factors (location, gender, age, department) with the condition of self-medication of antibiotics was examined. Demographics of the study participants are summarized in the representing table1.

Table 1: Demographic characteristics of the study population (n=256).

Location	Frequency	Percentage (%)
Dhaka	167	65.2 %
Other City	89	34.8 %
Gender		
Male	189	73.8 %
Female	67	26.2 %
Age (Years)		
18 - 24	193	74.6 %
25 - 30	61	23.8 %
> 30	2	0.8 %
Department		
Biological Science	194	75.8 %
Non-Biological Science	62	24.2%
Monthly expense (BDT)		
< 10000	133	52 %
10000-20000	91	35.5 %
> 20000	32	12.5 %

The location of the study were Dhaka and Gazipur district. Respondents from Dhaka was 65.2% while that of Gazipur was 34.8%.Study respondents were more likely to be males who are 73.8% while the remaining 26.2% were females. Maximum participants belong to the age group of 18-24 and the prevalence of self -medication was high among this group [Table2].

Table 2: Self medicated participants in different age groups (n=215)

Age group	Self medicated Participants (Frequency)	Self medicated Participants (Percentage)
18 - 24	165	76%
25 - 30	48	22%
> 30	2	0.93%

The percentage proportion of students of biological science and other than biological science departments were 75.8% and 24.2% respectively. Table1 also shows the information about their household monthly expense, where maximum participants were from below expense group.

Prevalence of self medication

Our study found out of the total 256 observed encounters, 215 (83.98%) respondents had practiced self-medication with antibiotics whereas 41(16.02%) had not involved in self-medication in the last one years.

Table 3 Represent the association between self medication with antibiotic and respondents characteristics. Male participants had higher proportion of self-prescribed antibiotics (78.14%) compared to their female counterparts (21.86%). On the other hand, among non-self medicated participants, the rate of male respondents were 51.22% while female respondents were 48.78%.Another findings Table 3 represents that the percentage of biological science and other than biological science respondents were 73.49% and 26.51% respectively in the self-medicated encounters (n=215).On the other hand , among non-self medicated participants(n=41) the rate of biological science and non-biological science respondents were 87.8% and 12.2% respectively.

Table 3: Association of the study population of self medication (n=215) with respondents characteristics

Respondents characteristics	Self medication Frequency(%)	Non-self medication Frequency(%)
Male	168 **(78.14 %)**	21 **(51.22 %)**
Female	47 **(21.86 %)**	20 **(48.78 %)**
Biological Science	158 **(73.49 %)**	36 **(87.80 %)**
Non-Biological Science	57 **(26.51 %)**	5 **(12.20%)**

Participants of self medication group have reported for 11 different diseases [Table 4].

Table 4: Common indications for self medications (n=215)

Illness	Frequency	Percentage (%)
Cough	25	11.6
Diarrhea	38	17.6
Eye discomfort	8	3.7
Fever	109	50.6
Flu or common cold	31	14.4
Runny nose and nasal congestion	13	6.04
Skin wounds	23	10.6
Sore throat	6	2.7
Teeth Discomfort	17	7.9
Urinary infection	14	6.5
Vomiting	7	3.2

Fever was the most common symptom for use of self-prescribed antibiotics. Moreover, respiratory diseases such as cough, sore throat, flu or common cold, runny nose and nasal congestion were reported to be the most frequent illness where antibiotics were taken without any prescription while other diseases such as diarrhea, eye discomfort, skin wounds ,teeth discomfort, urinary tract infection ,vomiting were among the least common illness.

Table 5: Types of antibiotic used by the respondents for self-medication (n=215)

Various antibiotic	Frequency	Percentage (%)
Amoxicillin	59	27.4
Ampicillin	10	4.7
Azithromycin	74	34.4
Cefixime	38	17.7
Ceftriaxone	8	3.7
Cefuroxime	23	10.7
Ciprofloxacin	72	33.5
Co-amoxiclav	9	4.2
Gentamicin	7	3.3
Metronidazole	46	21.4
Tetracycline	19	8.8

Table 5 displays the frequency of self-medicated antibiotics which were used as self prescribed antibiotics among students of different educational institutions in Dhaka and Gazipur. The vast majority of non-prescribed antibiotics were systemic antibiotics such as Azithromycin, Ciprofloxacin, and Amoxicillin. This study indicated that Azithromycin was the most commonly used self-prescribed antibiotic (34.4%) followed by Ciprofloxacin claimed to be the second most position (33.5%) and Amoxicillin was in the third position (27.4%). Other

antibiotics such as Cefixime (17.7%), Cefuroxime(10.7%), Tetracyclin (8.8%), Metronidazole (21.4%), Ceftriaxone (3.7%), Gentamicin (3.3%) also found as self prescribed medication among the study population.
The participants were required to give information on the sources of self medication with antibiotic, such as drug selection and treatment regimen. The survey results indicated that the participants relied mainly on their previous experience with the medication, and previous doctor's prescription and also on pharmacist's advice. They also relied on family members' opinion. To a lesser extent, they made use of the information available by drug directions, advice from other medical stuff, as shown in table 6.

Table 6: Sources of information for self medication with antibiotic (n = 215)

Source	Frequency	Percentage (%)
Recommendations by community pharmacist	20	9.3 %
Opinion of family members	20	9.3 %
My own experience	65	30.2 %
Previous doctor's prescription	91	42.3 %
Informed from other medical stuff	11	5.1 %
Informed from checking instructions inside the packet	8	3.7 %

It should be noted that the medical stuffs were not prescribers in this case.

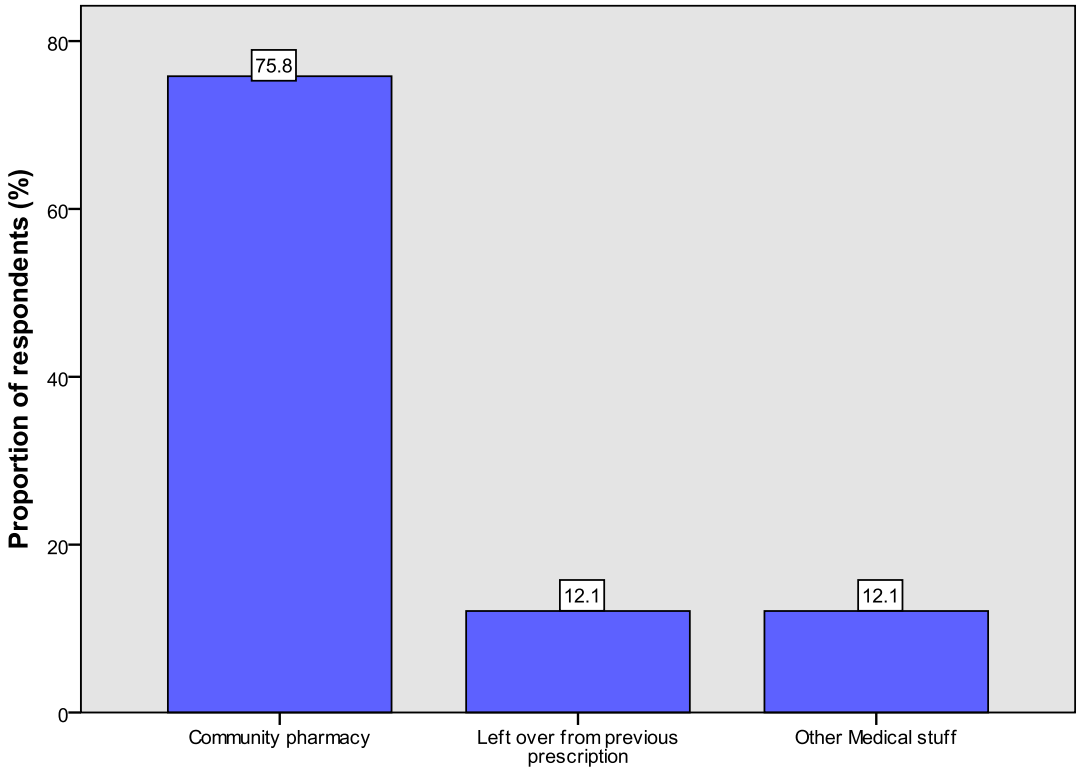

Figure 1: Sources of obtaining antibiotics without prescription

Figure 1 shows the graphical representation of sources. Majority of the respondents (75.8%) who practiced self-medication obtained the medicines from various community pharmacies, 12.1 % used the left over from previous prescription and 12.1% from other medical stuff as shown in figure 1.
The reasons for choosing to self-medication with antibiotics are indicated in table 7.

Table 7: Reasons for Self-medication with antibiotics (n=215)

Reasons of self medication	Frequency	Percentage (%)
Convenient	7	3.3 %
Cost Saving	19	8.8 %
Lack of near health care center	8	3.7 %
Lack of trust in prescribing doctors	16	7.4 %
Previous experience of similar symptoms	121	56.3 %
Self Knowledge	44	20.5 %

Previous experience of similar symptoms is the major reason for self-prescribed drugs (56.3%) which is followed by self knowledge (20.5%). Other reasons such as cost savings (8.8%), Lack of trust in prescribing doctors (7.4%) got lesser proportion.

Table 8: Frequency of checking literature supplied with the antibiotic package.

Discipline	Yes (Frequency)	Yes (%)	No (Frequency)	No (%)
Biological Science	138	87.34%	20	12.66%
Non-Biological Science	45	78.95%	12	21.05%

It shows, 87.34% students of biological science checked the instructions come within package insert, whereas students from other discipline it was (78.95%).

Table 9: Change of antibiotic dosage deliberately during the course of self medication.

Discipline	Yes (Frequency)	Yes (%)	No (Frequency)	No (%)
Biological Science	76	48.10	82	51.89%
Non-Biological Science	40	70.18	17	29.82%

Slightly over half of the participants (51.89%) of biological science admitted that they never changed the dosage of antibiotics during the course of treatment. Also 29.82% of respondents of other than biological science reported that they never change the dosage of antibiotics. But 48.10 % of Biological science participants and 70.18% of other than biological science discipline defendants changed the dosage of antibiotics deliberately during the course of self-treatment.

Table 10: Time period of antibiotics as self-medication. (n=215)

Time period of using antibiotic	Frequency	Percentage
3 days	55	25.58 %
5 days	57	26.51 %
7 days	31	14.42 %
As long as we are not feeling well	37	17.21 %
Not sure	35	16.28 %

Most of the respondents considered self medication for 5 days (26.5%) and 3 days (25.58%) and rest are not sure about the use of antibiotic as self-medication.

Table 11: Frequency of complications generated by long term use of self-medicated antibiotic (n=215)

Lead to complication	Respondents(Frequency)	Respondents (%)
Yes	125	58.1%
No	90	41.9%

Table 11 gives the information about the complication of self medication. Out of the total 215 participants 58.1% faced various complications with self - medication where as 41.9% reported not to feel any complications as shown the result in table 11.

Table12: The importance of a prescription among participated self practitioners (n=215)

Prescription required	Respondents(Frequency)	Respondents (%)
Yes	142	66.0 %
No	73	34.0 %

Table12 represents an overall view of the importance of a doctor mediated prescription by our self medicated participants. 66% respondents felt that, it was required while 34.0% did not feel any requirement of the prescription.

The prevalence of self-medication with antibiotics, as previously identified, is much higher in developing countries than developed countries[4]. Our study focused among biological and other non-biological departments of some educational institutions of Dhaka and Gazipur .Our results showed that the prevalence of self-medication among two hundred fifty six participants (256) was 83.98% (215) which is very high .Other studies shows the prevalence of self-medication with antibiotics in Al Wazarat Health Center in Riyadh was 78.7%[22], In Eastern Province of Saudi Arabia, the prevalence of self-prescribed antibiotic was 80.0%[35]. In UAE study showed that the prevalence of self-prescribed antibiotics was 68.4%[36], while two studies from Sudan and Yemen have reported 79.5%[37] and 78.0%[38] prevalence rate of self-medication of antibiotics, respectively. The other studies done in Northern Nigeria with a findings of prevalence rate of 56.9%[39], in Sierra leone 68.9%[41],in Ghana 70%[42],in Uganda 65.1%[43],in India 62.67%[44]. Prevalence of self-medication among the respondents, males had a large percentage (73.8%) than the females (26.2%) found in this study .The similar findings are shown in a research done in Riyadh, Saudi Arabia[22]. Age group of 18-24 years was the most vulnerable period for taking antibiotics found in our research. On another study done in Southwestern Nigeria $\geq$ 45 ages participants were more high [2] than other age groups. Students of other than biological science got higher self medication practice (91.94%) compared to biological science background students (81.44%) found in our studies. Also the study was done in Nigeria which showed that self medication was rather higher among medical students[40].By comparison some studies done in Pakistan[45] and Iran[46] did not show significant differences in self medication between medical and non-medical students.

Our study found out the commonest antibiotics used as self medication was Azithromycin, (34.4%) and Ciprofloxacin (33.5%). Another study done in Mymensingh Sadar Area, Bangladesh Ciprofloxacin was the major using antibiotic[49]. In other researches done in, Kenya[12], Saudi Arabia[22], Pakistan[4] have shown Amoxicillin, Ciprofloxacin and Penicillin got the higher position in case of consumption without prescriptions. Fever (50.6%) was the principal reason for self medication with antibiotics in our current study. Findings of other previous study done in Qom State, Iran[3], Riyadh, Saudi Arabia[22] respiratory infection was the principal reason for self medication. Another study done in Karachi, Pakistan[4] found out sleep problems was the main reason for antibiotic self medication. Majority of respondents (75.8%) got the antibiotics from a community pharmacy. This was consistent with a research done in Sudan and Kenya which showed that 68.8%[34] and 81%[47] respectively got the drugs from a community pharmacy. Another study done in India had similar results with 79.5% of respondents obtaining the drugs from chemists[48]. All of these studies showed that majority of the respondents obtained their antibiotics from community pharmacies rather than from other medical stuff, friends and shops. Our study found that majority of the respondents (60.5%) completed their course of antibiotic. On the other hand, previous study done in Qom State, Iran[3] 37.1% of respondents completed the course of antibiotic therapy.

Although antibiotics are available only on prescription in Bangladesh, the results of this study showed that the practice of self-medication among educated people is alarmingly high as 34% participants do not feel any need of a prescription. A great number of students are unconscious to the deleterious side effects of self-medication which they either take by themselves or suggest to others. The study revealed that previous experience and self knowledge were the key reasons to self-medicate with antibiotics. Fever was the most common symptom predisposing to self-medication and Ciprofloxacin and Azithromycin were the two top most antibiotics used as self-medication. In the context of increasing antibiotic resistance these results could be helpful for designing the awareness programs regarding the risks of self prescribed antibiotics. Our findings emphasize the need for planning interventions to promote the judicious use of antibiotics. As there is

unrestricted availability of prescription medicines, health authorities need to practice a firm control over pharmacies and other drug shops in Bangladesh. There is an urgent need for governmental agencies to frame and implement laws to limit the purchase of prescription only drugs.

There are few limitations in our study. This study is limited to self-medication practices with antibiotics only. It did not extend to other categories of medications. Moreover, this study focuses only on the antibiotics use of a few private university students. The overall countrywide scenario does not focus here.

RECOMMENDATIONS FROM THIS STUDY

- Health education interventions on self-medication with antibiotics practices should target people of all ages, sex and community at large.
- To decrease self medication with antibiotics Government should emphasize on reducing access in obtaining antibiotics without prescription.
- Community pharmacies should ensure no antibiotics are sold over the counter without prescription. The community pharmacies should play a great role in reducing the prevalence of self medication with antibiotics.

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