

SELF-MEDICATION OF ANTIBIOTICS AMONG MEDICAL COLLEGE STUDENTS OF CHATTOGRAM

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Abstract

Background: The study was conducted to observe the prevalence of practice regarding self medication of antibiotics among medical students. **Materials and methods:** This was a cross-sectional, questionnaire-based study which was conducted among the preclinical phase, paraclinical phase and and clinical phase of medical students of four Medical College and Hospital in Chattogram. Total 120 students of four medical colleges participated in the study. **Results:** Total 120 undergraduates participated in the study. Among them 48(40%) were male and 72 (60%) were female. The prevalence of self-medication among the medical students was 90(75%) whereas 30(25%) mentioned that they didn't follow or encouraged self-medication. The most important indication for antibiotic self-medication was cough and cold (60%) diarrhea (40%) then sore throat and dental infection (10%). The most common class of antibiotic self-medicated was Metronidazole (60%) followed by Azithromycin (53.33%) Amoxycillin 24(16%) and Erythromycin 20 (16.66%). **Conclusions:** This questionnaire based study revealed the higher prevalence of self-medication of antibiotics among the undergraduate especially in preclinical phase. The major and important reason for misuse of antibiotics is lack of proper knowledge on antibiotic resistance. It

is important to spread the information and knowledge about antibiotic misuse by self-medication and its consequent effects. Hence, incorporation of chapter in rational use of antibiotics becomes necessary and restrict the curriculum not only in Pharmacology undergraduate medical study but also should be included in the school books that can emphasizes more on the disadvantages of self medication of antibiotic.

Key words

Self medication; Antibiotic; Medical students.

Introduction

Most of the common health ailments are treated by general population themselves without medical supervision, which, in general is termed as self-medication. Self medication is a behavioral response of human beings in which, an individual uses drugs to treat self-diagnosed minor symptoms or disorders having the potential to do good as well as harm as it involves use of drugs¹. Self-medication is an essential part of self-care, which also includes non-drug self-treatment, social support in illness, and first aid in everyday life². Self-medication can help prevent and treat diseases, if it is administered appropriately and logically and is beneficial economically as taken without medical consultation and also time saving³. But self-medication is not always safe, as there may be wrong diagnosis, delays in seeking medical advice when needed, severe infrequent adverse reactions, dangerous drug interactions, incorrect manner of administration, incorrect dose and duration of treatment, incorrect choice of therapy, masking of a severe disease, and risk of dependence and abuse⁴. Self-medication practice should be based on authentic medical information otherwise irrational use of drugs can cause wastage of resources, increased resistance of pathogens, and can lead to serious health hazards such as adverse drug reaction and prolonged morbidity. In developing countries, self-medication is a common practice as it provides a low-cost alternative for people who cannot afford

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the high cost of clinical service and also as many drugs are dispensed over the counter without prescription^{1,5}. In many countries, OTC drugs are selected by a regulatory agency to ensure that they are ingredients that are safe and effective when used without a physician's care. But antibiotic is not included in OTC drug list of any country of the world. In Bangladesh, the prevalence of self medication is thought to be high, usually attributed to the fact that most drugs can be obtained from the pharmacies without prescription, so easily available and also for poor regulatory control for selling of these drugs⁶. A major problem with self-medication with antimicrobials is the emergence resistance. Antimicrobials resistance is a current problem world-wide particularly in developing countries, where antibiotics are often available without a prescription⁷. Self-medication with antimicrobials has the potential to harm society large, as well as the individual patient. Policy makers should be concerned if the spectrum of drugs available without a prescription includes antibiotics⁸. In Bangladesh antibiotics are widely used self medicated drug. There is already enough evidence of growing resistance to antimicrobials in Bangladesh resulting from misuse of antibiotics. Because the misuse and abuse of antibiotics is a major cause of antimicrobial resistance, research is needed to evaluate the specific antibiotic usage patterns that are prevalent in developing countries so that interventions can be developed and implemented⁹. Therefore, ideally, antibiotics need to be regulated via prescription-only sales. Legally, the sale of antibiotics is regulated on a 'sold on prescription only' basis and this needs to be put into effect in reality as well. So for implementation of such policies and carrying out general awareness programs, information should be available about how common the use of self-medicated antibiotics among those who should create awareness in the society against antibiotic resistance. Medical students are not eligible to take or suggest other to take antibiotic and it is illegal to prescribe antibiotic during their undergraduate years despite their knowledge about the pathophysiology and therapeutics¹⁰. Recent studies have shown self-medication to be common among medical students and the incidence was high in medical colleges of South India (92%) Karachi (76%) and Egypt (55%)¹⁰⁻¹³.

Therefore, this study designed to provides the prevalence of self-medication with antibiotics among Pre, Para and Clinical phases of MBBS undergraduate students of Medical College in Chittagong, who are the future conductor to play an important role for prevention of antibiotic resistance as a resistance fighter. In Bangladesh Medical and Dental Council (BMDC) curriculum, study of uses antibiotic with it's adverse effect and resistance including awareness against resistance is taught in paraclinical sector (4th year, 2nd term) under the subject Pharmacology and Therapeutics and also in Microbiology. This study was done on pre, para and clinical phase of medical college students which reflect antibiotic study outcome and also reflect the overall situation and contributing factor of rapidly growing antibiotic resistance and inspire to formulate intervention to improve this situation in different level of health care facilities.

Materials and methods

This is a descriptive, cross sectional and questionnaire based study. The study was conducted in 4 Medical Colleges (Southern Medical College and Hospital (SMCH) Chattagram International Medical College (CIMC) Chattagram Maa-O-Shishu Hospital Medical College (CMOSHMC) and BGC Trust Medical College (BGCTMC). Pre, Para and Clinical part of MBBS students of four participating centers were taken as study population with purposive sampling technique. Sample size was One hundred and twenty (120). Thirty (30) students taken from each Medical College and each phase consist of 40 students. The study was conducted from July 2017 to December 2017.

Researchers attended immediately after the end of a lecture class (Pre/para/clinical) where information about the study was informed. Informed consent, both verbal and written, were provided. 10 students from each 3 phase (Pre/para/clinical) who gave consent were chosen purposively from each Medical College (Four Medical College) ie, total 120 students. The questionnaire then filled up by the students and returned back. During collection of each questionnaire it was checked whether all answers were ticked or not. If incomplete, instructed that student to complete it. After collection of questionnaire from each medical college, data were compiled and analyzed.

In this study, self-medication is defined as use of any antibiotic in the past 6 months, with one's own accord, which was not prescribed by a Physician. A time period of 6 months is chosen to eliminate recall bias amongst those who had used antibiotics and were likely to recall it in this adequate time period, with those who had not used antibiotics and would also clearly remember not having used them.

Ethical Committee approval was obtained from the Institutional Review Board of International Medical College, Chittagong prior commencement of the study.

Data was analyzed and presented as counts and percentages. Simple statistical method (Bar diagram) was used to calculate the data and finally expressed in percentages. Microsoft Office Excel is one of most widely used application to calculate and present data. This study used Microsoft Office Excel 2010 to calculate and present the data. Chi-square test of association was conducted for association of factors between self-medicated antibiotic users and non-users by SPSS 21.

Results

Table I : Distribution of demographic factors among medical students of Chittagong

	Students using self medication		Students not using self medication		
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Gender					
Male	36 (48)	75%	12 (48)	25%	p value= 1
Female	54 (72)	75%	18 (72)	25%	not significant
Total	90		30		<.05
Phases					
Preclinical					
(1 st /2 nd year)	32 (40)	80%	08 (40)	20%	p value=.224824,
Para clinical (4 th)	28 (40)	70%	12 (40)	30%	not significant
Clinical (5 th year)	25 (40)	62.50%	15 (40)	37.50%	<.05
Institutions					
SMC	20(30)	66.66%	10(30)	33.33%	p value=.844487
CIMC	23(30)	76.66%	07(30)	23.33%	not significant
CMOSHMC	22 (30)	73.33%	08(30)	26.66%	<.05
BGCTMC	21(30)	70%	09(30)	30%	

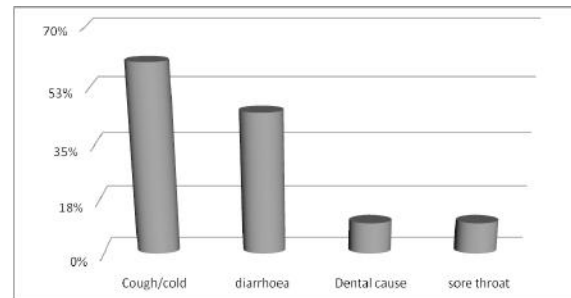


Fig 1: Distribution of indication of self medication of antibiotic

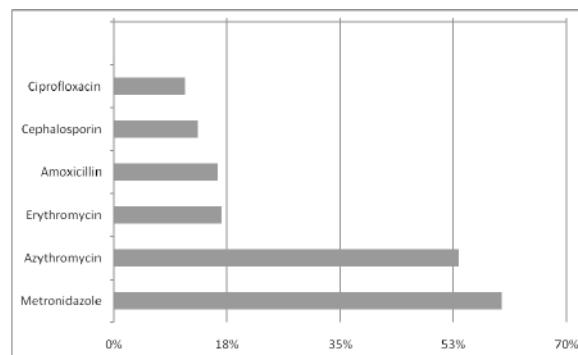


Fig 2 : Type of self medicated antibiotic used by the students (Multiple response)

Table II : Respondents source of information regarding antibiotics selection: (n=120)

Source of information*	Frequency	Percentage
Text book	74	61.66%
Senior/friends/relatives	53	44.16%
Previous prescription of same disease	39	32.50%

*Multiple responses

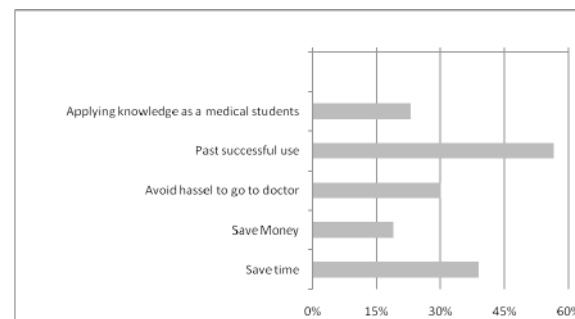


Fig 3: Reasons for self medication (*Multiple response)

A total 120 undergraduate medical students were participated in the study out of which 48(40%) were male and 72 (60%) were female. The prevalence of self-medication of antibiotic among the medical students was 90 (75%), whereas 30 students (25%) said that they don't follow or do not encourage self-medication. 32 (80%) preclinical, 28(70%) para clinical and 18(45%) clinical students use self medication. Prevalance is the highest among preclinical students as percentage. But there was no statistical significance for frequency of self-medication in relation to sex, different phase and different medical college (Table I).

The most important indication for antibiotic self-medication was cough and cold (60%) followed by diarrhoea (45%) dental infection (10%) and sore throat (10%) (Fig 1).

The most common antibiotic used for self-medication purposes was Metronidazole which was used by 72 (60%) study participants followed by Azythromycin 64 (53.33%) Amoxycillin 24(16%) and Erythromycin 20 (16.66%) . 3rd and 4th generation cephalosporin and ciprofloxacin were used by 13% and 11% of the sample population respectively and other antibiotics were amongst the less frequently used antibiotics. The frequency of use of each antibiotic is depicted in fig 2.

Most (61.66%) of the participants selected antibiotics based on medical knowledge obtained through text books followed by information obtained from seniors/friends/relatives (44.16%) and 33.16% followed previous prescription of same disease (Table II).

Most of the students (80%) agreed that self medication of antibiotic may produce some adverse effect. About 69% students know that self medication of antibiotic produce antibiotic resistance. Among 90 students who used antibiotic herself/himself, 83 students (92.99%) did not experience any adverse effect. Most of the students (56.66%) mentioned that past successful use of antibiotic of the same disease is the reason to take self medication, followed by save time (39%), avoid hassel of going to doctors (30%) and applying knowledge as a medical students (23%) and save money (19%) are the reason to take self medication (Fig 3). 88% medical students know that self medicated antibiotic increases antibiotic resistance.

Discussion

The prevalence of self-medication in this study was found to be higher (75%), while the other studies conducted in Rajshahi, Bangladesh among layman was 26.69%, in Nigeria among Layman was 24%, in Karachi Pakistan self medicated antibiotic among non medical students was 47.6%. In Ghana among non medical students 70% and in Bangalore India self medication of antibiotic among medical students was shown 81.25%^{6,3,14-16}. So it indicates that self medication of antibiotic is common in medical students. The possible reasons for this difference could be that our study included self-medication with antibiotic among medical students and within the last six months only, whereas the afore mentioned studies did not restrict to the time period for recall and did not done among medical students except the study of Bangalore India, in which prevalence of self medication of antibiotic among medical students is almost similar to that of this study. It is generally expected that self medication practice to be more common in senior medical students as they are exposed to knowledge about diseases and drugs. But in this study prevalence is more among preclinical students (1st/2nd year) and this is probably due to awareness against self medication of antibiotic and its adverse effects is taught in the subject of Pharmacology and Therapeutics which is included in the curriculum in paraclinical phase (4th yea, 2nd term) and that's why self medication is less common in 5th year than 4th year because this study is done during 1st term period of 4th year students who were not still exposed to antibiotic awareness teaching and 5th year medical students as they were already aware about rational use of antibiotic and antibiotic resistance and similar observation made by Sontakke et al and Patil SB et al¹⁷⁻¹⁸. Most common indication for self medication of antibiotic was cold and cough in our study which was similar to observations made in Arab Emirates, Gujrat, West Bengal and southern part of India^{18, 20-22}. It is also worth noting that most of the cold and flu is due to viral where antibiotics are of no use. Most commonly used antibiotic was Metronidazole (60%) in this study which is concomitant with the similar results obtained in the previous study conducted in Rajshahi districts of Bangladesh⁶. 2nd commonly used antibiotic was Azythromycin. In Chittagong most selling antibiotic without prescription is Azythromycin²³.

In this study the three most common reasons for self medication were past successful use, save time and applying knowledge as medical students. All those reasons allude that availability of antibiotic in pharmacy shop as there is no certified pharmacist in the pharmacy shop and use of antibiotic as OTC drug^{6,23}. So this study highly recommended that awareness should raise among medical students about rational use of antibiotic and about antibiotic resistance thorough awareness program yearly. They should know that no antibiotic should be used without valid prescription and should prescribe by registered physician. If medical students are using antibiotic without prescription then laymen cannot be blamed for that.

Conclusion

The prevalence of self medication of antibiotic is high and common among medical students. More studies using larger sample size in all medical college students are needed. Moreover, efforts should stress on interventions including educational programs in the form of lectures, campaigns, workshops, seminars, leaflets not only restrict to medical college also should spread on school and colleges and preparation of antibiotic guideline in all medical college hospitals.

Health authorities should practice more control on pharmacies and also on prescribing of antibiotics by BMDC registered physician.

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Contribution of authors

MA-Conception, acquisition of data, drafting and final approval.

MK-Design, interpretation of data, critical revision of content and final approval.

JF-Analysis, drafting and final approval.

RH-Acquisition of data, analysis, critical revision and final approval.

KP-Design, interpretation of data, drafting and final approval.

Disclosure

All the authors declared no competing interest.

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