Antibiotics Self-Medication Practice Among Medical Students

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ABSTRACT

Background: Self-medication of antibiotics is common among healthcare students due to their knowledge of pharmacology of antibiotics, which produces a false sense of confidence in self-diagnosis of disease conditions. Hence, this study was conducted to assess the practice of self-medication with antibiotics among medical students.

Methods: This questionnaire based descriptive, cross-sectional study was conducted in Nepal Medical College Teaching Hospital, Attarkhel, Kathmandu from September 2019 to February 2020 on the Bachelor of Medicine and Bachelor of Surgery students.

Results: Out of 405 students, 214 (52.8%) students had practiced antibiotics self-medication. The most commonly self-medicated antibiotics were azithromycin 126(58.9%), amoxicillin 67(31.3%), metronidazole 35(16.4%) and ciprofloxacin 14(6.5%) that were most commonly used for sore throat 93(43.5%), fever 82(38.3%), common cold 59(27.6%) and cough 43(20.1%). The common sources for self-medication were previous prescription 66 (30.8%), followed by own pharmacological knowledge 58 (27.1%). The most common reasons for practicing antibiotics self-medication were stated as previous experience of same illness 165 (77.1%), doctor's advice not deemed necessary 21 (9.8%) and save time 14 (6.6%). Large number of students agreed that antibiotics self-medication was not an acceptable practice 308(76.1%) and can lead to antimicrobial resistance 363(89.6%).

Conclusions: More than half of the respondent medical students had practiced antibiotics self-medication. Sore throat was the commonest cause for it while the most commonly self-medicated antibiotic was azithromycin. Self-medication with antibiotics in medical students is concerning because they are future prescribers of antibiotics; who are supposed to promote rational use of antibiotics.

Keywords: Antibiotics; antimicrobial resistance; awareness; medial students; self-medication

INTRODUCTION

Self-medication with antibiotics is the acquisition and self-administering of antibiotics for treating a perceived infection, and their intermittent or continued use for chronic or recurrent diseases without the advice of a qualified health professional.[1] Worldwide, more than half of total antibiotics sold are purchased by consumers without a prescription.[2] Similarly, more than two-thirds of antibiotics available in low and middle income countries are used for self-medication.[1]

Self-medication of antibiotics is a rising global concern because the irrational use of antibiotics is responsible for adverse outcomes like emergence of resistant microorganisms, treatment failures, increase in treatment expenses, prolonged hospitalization stay and increased morbidity. [3,4]

Self-medication is a common practice among healthcare workers and students, including medical students, dental students and nursing students.[5-9] Healthcare students are more likely to practice self-medication of antibiotics due to their knowledge of pharmacology of antibiotics from their initial years of education. Hence, this study was conducted to assess the practice of self-medication with antibiotics among medical students.

METHODS

This descriptive, cross-sectional study was conducted in Nepal Medical College Teaching Hospital (NMCTH), Attarkhel, Kathmandu from September 2019 to February 2020. The Bachelor of Medicine and Bachelor of Surgery (MBBS) students from first, second, third and fourth year students were included in the study. Ethical approval was obtained from the Institutional Review Committee of NMCTH for this study beforehand. A self-administered

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questionnaire was distributed at the end of their lecture classes. All the students were approached and students willing to participate were included in the study. Students were briefed on the aim of the study. Informed consent was taken from the students and were assured about anonymity and confidentiality of the information collected. The first and second years are considered as preclinical phase and third year and fourth years are considered as clinical phase of medical study.

Questionnaire for the study was developed by the researchers based on previous studies and was modified according to needs.[5-11] Questionnaire contained questions related to demographic information of the participants, information on the antibiotics used, indication for use, the information source about the antibiotic, reasons for self-administration etc. The collected data was analyzed by using SPSS software version 16.00. Frequencies have been expressed in percentage. Chi-square test was used to find the association among the variables and *p*-value <0.05 was considered as statistically significant.

RESULTS

Out of 451 students, 405 (89.8%) students participated in the study. The mean age of the students was 21.59±1.48 years. Among the participating students, 214 (52.8%) students had practiced self-medication with antibiotics. Those who had practiced self-medication with antibiotics, 127 (59.3%) were males and 87 (40.7%) were female students; while 125 (58.4%) were in preclinical phase and 89 (41.6%) were in clinical phase.

The sources for self-medication were stated as previous prescription 66 (30.8%), followed by own pharmacological knowledge 58 (27.1%), advice from family 29 (13.6), advice from seniors 16 (7.5%), advice from colleagues 5(2.3%) and previous leftover antibiotics 2 (0.9%). The most common reasons for practicing antibiotics self-medication were stated as previous experience of same illness 165 (77.1%), doctor's advice not deemed necessary for common illness 21 (9.8%) and to save time 14 (6.6%) (Table 1).

Table 1. Reasons of self-medication with antibiotics by students (n=214).

S.N.	Reason	Number	Percentage
1.	Previous experience of same illness	165	77.1
2.	Doctor advise not deemed necessary for common illness	21	9.8
3.	To save time	14	6.6
4.	To avoid crowd at outpatient department	11	5.1
5.	To save money	2	0.9
6.	Privacy	1	0.5

The common indications for self-medicated antibiotics were sore throat 93 (43.5%), followed by fever 82 (38.3%), common cold 59 (27.6%), cough 43(20.1%) and diarrhea 34 (15.9%) (Table 2). Azithromycin was the most commonly self-medicated antibiotics 126 (58.9%) by students followed by amoxicillin 67 (31.3%), metronidazole 35 (16.4%) and ciprofloxacin 14 (6.5%) as shown in Table 3.

Table 2. Indications for self-medication with antibiotics by students (n=214).

Indications	Number*	Percentage*
Sore throat	93	43.5
Fever	82	38.3
Common cold	59	27.6
Cough	43	20.1
Diarrhea	34	15.9
Toothache	9	4.2
Acne	4	1.9
Burning micturition	2	0.9
Wound/skin injury	2	0.9
Others (abdominal pain, sole ulcer, boil, abscess)	4	1.9

Due to multiple options chosen, the sum of percentage is more than hundred

Table 3. Antibiotics self-medicated by the medical students (n=214).

Antibiotic	Number*	Percentage*
Azithromycin	126	58.9
Amoxicillin	67	31.3
Metronidazole	35	16.4
Ciprofloxacin	14	6.5
Cefixime	6	2.8
Doxycycline	5	2.3
Tinidazole	5	2.3
Norfloxacin	3	1.4
Cotrimoxazole	2	0.9
Nitrofurantoin	2	0.9
Mupirocin	2	0.9
Others (Ampicillin, Ofloxacin, Flucloxacillin)	3	1.4

Due to multiple options chosen, the sum of percentage is more than hundred

Regarding duration of use of antibiotics, 117 (54.7%) students stopped the self-medicated antibiotics after completion of its course, 42 (19.6%) stopped them after disappearance of symptoms, 26 (12.2%) stopped them after full recovery, 21 (9%) stopped them after few days and 8 (3.7%) stopped the antibiotics after using them till the drug lasted.

Regarding effectiveness of the self-medicated antibiotics, 190 (88.8%) students' said that their illnesses were resolved, 18 (8.4%) students said that antibiotics did not resolve their illness and 6 (2.8%) students were not sure. Out of 18 students who said that illness did not resolve, 13 (72.2%) visited a physician, 3 (16.7%) changed the antibiotics by themselves and 2 (11.1%) consulted with a pharmacist.

Twenty three 23 (10.7%) students had experienced adverse effects. They were nausea/ vomiting 10 (43.5%), metallic taste 6 (26.1%), gastritis 4 (17.4%), diarrhea 3 (13%), dizziness 3 (13%) and allergy 1 (4.3%). Out of 214 students, 165 (40.7%) students said that they felt confident in treating common infectious conditions, 81 (20%) students were not confident and 159 (39.3%) students were not sure.

Out of 405 participating students, 308 (76.1%) students responded that self-medication with antibiotic is not acceptable practice and 363 (89.6%) students were aware that use of antibiotics without bacterial infection cause burden of antimicrobial resistance (Table 4).

Table 4. Perception and awareness about antibiotic self-medication.		
Parameters	Number	Percentage
Perception about anitbiotics self-medication		
Good practice	13	3.2
Acceptable practice	84	20.7
Not acceptable practice	308	76.1
Awareness about antibiotic misuse		
Aware	363	89.6
Not aware	11	2.7
Not sure	31	7.7

DISCUSSION

This study was conducted to assess the status of antibiotics self-medication among the medical students. In our study, more than half of the students (52.8%) had self-medicated with antibiotics, which is low when compared to the studies in India by Mir et al 80.89% and Pal et al 71.1%.[6,8] The variation in prevalence of self-medication practice could be due to different social determinants of health, tradition, culture, education, economic status and developmental status.

The frequency of antibiotics self-medication was significantly higher (p<0.001) in preclinical phase than clinical phase students. The findings are similar to findings by Nair A et al as self- medication with antibiotic is more common in preclinical phase.[12] Medical students learn about the drugs and their use in their preclinical years but these preclinical students do not have applied pharmacological knowledge and are not familiar with the clinical settings and patients. During clinical phase, they get clinical exposure and become aware of harms of inappropriate antibiotic use and antimicrobial resistance. Apart from this, easy access to physicians during clinical phase could also have led to lesser use of antibiotics self-medication among them.

The most common reason for antibiotics self-medication was stated as experience of similar illness (77.1%) in the past by the participants. Other studies have also reported previous experience as one of the common reasons for self-medication.[7,9] While, it may sound logical to self-medicate during similar symptoms, it is actually evidence of incomplete knowledge of etiopathology of diseases and pharmacological basis of treatment among students. Various diseases may present with similar symptoms and the causative organism of the same disease may be viral, bacterial, fungal or immunological in origin.

Sore throat, fever, common cold and cough were found as the commonest indications in our study for antibiotics self-medication by medical students. Similar reasons for self-medication have been reported by Rathis et al, Jamhour et al, and Fadare et al, while gastrointestinal infections were found as the common condition for antibiotic self-medication in study by Olayemi et al.[9,10,13,14]

Azithromycin was the most commonly self-medicated antibiotics (58.9%). Other commonly self-medicated antibiotics were amoxicillin (31.3%), metronidazole (16.4%) and ciprofloxacin (6.5%). These findings are in accordance with the findings of Nair et al.[12] These four antibiotics have been reported as the most commonly self-medicated antibiotics in other studies by Pal et al and Fadare et al as well.[8,12] Azithromycin, Amoxicillin, Metronidazole and Ciprofloxacin have therapeutic use against a wide range of bacterial infections in various organ systems of our body ranging from respiratory to genito-urinary system, which have led to their common use during antibiotic self-medication by these medical students.

However, large number of students agreed that self-medication of antibiotics was not an acceptable practice (76.1%) and can result in antimicrobial resistance (89.6%). Despite this awareness, the students indulged in antibiotics self-medication due to their self-perception of adequate pharmaco-therapeutic knowledge, experience of similar symptoms in the past, to avoid crowd in the hospital and to save time. This is an alarming sign as inappropriate use of antibiotics is being practiced by the medical students who themselves should be working against it. The hazards of misuse of antibiotics and emergence of antimicrobial resistance should be emphasized more during pharmacological and clinico-therapeutical teaching of these medical students.

This study was based on self-administered questionnaire about antibiotic self-medication in the past. Hence, recall bias among the participants cannot be completely denied. The absence of a comparison group of students from some other field of study is also another limitation of our study.

CONCLUSIONS

In our study, more than half of the participants had practiced antibiotics self-medication. The self-medicated antibiotics were most commonly used for sore throat, fever, common cold and cough. Azithromycin, amoxicillin, metronidazole and ciprofloxacin were the most commonly self-medicated antibiotics. The most prevalent reason for practicing antibiotics self-medication was stated as previous experience of same illness. Their practice towards self-medication of antibiotics can greatly impact the future of antibiotic related issues especially antimicrobial resistance.

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