ORIGINAL RESEARCH

Self-Medication Practices among Undergraduate University Students in Northeast Ethiopia

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Background: Inappropriate self-medication is a public-health problem worldwide. Major problems associated with self-medication include wastage of resources, increased resistance of pathogens, and adverse drug reactions.

Objective: The aim of this study was to assess self-medication practices and associated factors among undergraduate Wollo University students in Northeast Ethiopia.

Methods: A cross-sectional study was conducted among 341 undergraduate university students using a pretested and self-administered questionnaire from January to February 2019. Simple random sampling was used to select study participants. Data were collected using the self-administered questionnaire and analyzed with SPSS version 20. Multiple logistic regression was employed in data analysis, with $P<0.05$ considered statistically significant.

Results: The prevalence of self-medication in this study was 64.98%. Mildness of disease (57, 34.13%) and dissatisfaction with health-care services, (44, 26.34%) were the main reasons for self-medication practice. The most common types of diseases for self-medication were headache (80, 47.9%), gastrointestinal infections (74, 44.31%), and respiratory tract infections (48, 28.74%). Analgesics (94, 56.28%) and antibiotics (60, 35.9%) were the leading classes of medicine used in self-medication. Multivariate regression analysis indicated that agriculture students (AOR 0.163, 95% CI 0.049–0.545) were 84% less likely to practice self-medication than medicine and health-science students.

Conclusion: This study revealed that self-medication practices are common among study participants and significantly associated with their field of study. Awareness promotion on the risk of inappropriate self-medication for university students is highly recommended.

Keywords: self-medication practices, undergraduate university students, Ethiopia

Background

Self-medication is the use of medications without prior medical consultation on indication, dosage, or duration of treatment.[1] Proper use of self-medication can benefit the individual's health and is recognized by the WHO as part of self-care. It can help treat minor ailments that do not require medical consultation. Even though self-medication is a useful tool to treat minor ailments, improper self-medication practice may lead to adverse drug reactions, inappropriate selection of medications, risk of double medication and harmful interactions, risks of dependence and abuse, over- and under dosing of medicines, and antimicrobial resistance due to irrational use of antibiotics.[2,3] Nowadays, drug resistance is becoming a worldwide problem, mainly in developing countries as a result of the use of antibiotics without

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prescription. In many developing countries, antibiotics and potentially lifesaving medicines are easily available, and every pharmacy sells without prescription.[4]

Numerous studies have been conducted in different countries investigating self-medication practices among university students. High self-medication prevalence was reported among university students in Bangladesh (88%),[5] Jordan (86.7%),[6] Saudi Arabia (86%),[7] and Egypt (52.7%).[8] Similarly, a study conducted among students of Gadjah Mada University, Indonesia[9] and Jiangsu University, China[10] revealed that self-medication with antibiotics was practiced by 49% and 47.9% of the respondents, respectively. In Ethiopia, the prevalence of self-medication among university students across studies has been 32.7%–70.8%.[11–13]

According to previous studies, the most common reason reported for self-medication was previous experience, to save money and time, minor illness, seeking quick relief, suggestions from relatives/friends, personal convenience, ease of drug acquisiton, unsatisfied with service given and impoliteness of health-care practitioners.[11–15] Similarly, the most common medical conditions that led students to self-medicate were cough and headache, followed by cold and fever. Other medical conditions mentioned by different studies have been sore throat, running nose, eye problems, diarrhea, malaria, gastrointestinal disorders, infection, skin problems, and dysmenorrhea.[11,13,16,17] Antibiotics, analgesics, antipyretics, antacids, vitamins, cough remedies, eye drops, antihistamines, antimicrobials, and anti-inflammatory drugs are commonly used classes in self-medication.[8,11-13,18,19]

Inappropriate self-medication is a public-health problem worldwide.[20] In developing countries, most illnesses are treated by self-medication, bringing much public and professional concern about irrational use of medicines. Despite the negative consequences of self-medication and its high spread, studies are limited in this area. Investigating self-medication among university students is important, as they constitute a segment of society that is highly educated and more inclined to provide information about medications to the community.[11] As such, this study was carried out to assess self-medication practices and associated factors among undergraduate Wollo University students in Northeast Ethiopia.

Methods
Study Design and Study Area
A descriptive cross-sectional study was conducted from January to February 2019 among undergraduate students of Wollo University, northeast Ethiopia. The university has Dessie and Kombolcha campuses. This study was conducted in Dessie campus, located in Dessie town, 401 km far from the capital city of Ethiopia, Addis Ababa. There are six colleges in Dessie campus and five (i.e, medicine and health science, natural and computational science, social science and humanity, business and economics, and agriculture) were included in this study. There was a total of 7,330 regular undergraduate students during the study.

Source and Study Population
All regular undergraduate students at Wollo University, Dessie campus were the source population, whereas students in randomly selected colleges were the study population.

Sample-Size Determination
Sample size was determined using a single population–proportion formula with an assumption of the prevalence of self-medication at the University of Gondar of 32%,[11] with confidence level of 95%, margin of error of 5%, and nonresponse rate of 10%:

$$n = (Z_{\alpha/2})^2 \times p(1-p)/(d)^2 = (1.96)^2 0.32(1-0.32)/(0.05)^2$$
$$= 334.4$$

With the 10% nonresponse rate, 368 students were included in the study and the respondents were selected using random sampling.

Sampling Procedure
The study was conducted in five colleges of Wollo University, Dessie campus. Colleges and departments were selected using convenience sampling. Stratified Random sampling was then used to select the departments to be sampled from a list of the departments in five colleges. Twelve departments (pharmacy, public health officer, environmental health, statistics, biology, management, accounting, marketing, cooperative, law, anthropology, and history) were selected and proportional allocation was done according to the size of each department. Simple random sampling was employed to select study participants.

Measurement of Variables
Self-Medication
We assessed the use of medications without prior medical consultation on indications, dosage, and duration of treatment.[1]

Data-Collection Procedures

The questionnaire had items regarding sociodemographic characteristics and self-medication practices of the respondents. The questionnaire was translated to Amharic and back-translated into English, and a pilot study was done in 5% of the sample to ensure the validity of the data-collection instruments. Data were collected by six trained postgraduate pharmacy students using pretested self-administered structured questionnaires adapted from previously published articles[11,21-23] and modified to achieve objectives.

Data Processing and Analysis

Data collected were checked for completeness and entered into SPSS version 23 for further analysis. Descriptive statistical analyses, such as frequencies and percentages, were computed and are presented using tables. Both bivariate and multivariate logistic regression was fitted to identify factors associated with self-medication. Variables with $P<0.2$ on bivariate analysis were fitted to the multivariate logistic regression. On multivariate analysis, $P<0.05$ was considered statistically significant.

Ethical Considerations

This study was conducted in accordance with the ethical guidelines of the Declaration of Helsinki and ethically approved by the College of Medicine and Health Sciences Research Ethics Review Committee at Wollo University, Ethiopia (protocol WU/Phar/258/11). Written informed consent was obtained from each participant before the questionnaires were distributed. The data gathered were anonymous, and study participation was entirely voluntary.

Results
Sociodemographic Characteristics of Respondents

Of the initial 368 study participants, 341 completed the questionnaire, for a response rate of 92.6%. Of the respondents, 197 (60.1%) were males. A majority of respondents (200, 58.6%) were aged 18–21 years. Three quarters of respondents (264, 77.41%) were Orthodox (Table 1).

Self-Medication Practices

Among 341 study participants, 257 (75.36%) reported illness in the last year. Of these, a majority (167, 64.98%) had practiced self-medication. Mildness of the illness (57, 34.13%), dissatisfaction with health-care services (44,

Table 1 Sociodemographic Characteristics of Study Participants (n=341)

Variables	n	%
Sex		
Male	197	60.1
Female	131	39.99
Age, years		
18–21	200	58.65
>21	141	41.34
Field of study		
Medicine and health sciences	81	23.8
Natural science	55	16.1
Business and economics	92	27
Social science	71	20.8
Agriculture	42	12.3
Year of study		
First	119	34.9
Second	101	29.62
Third	90	26.39
Fourth	19	5.57
Fifth	12	3.52
Monthly income, ETB		
≤100	34	12.8
101–499	87	32.8
≥500	144	54.3

26.34%) and familiarity with medicines and ailments (20, 11.97%) were the main reasons for self-medication practices. Of those who practiced self-medication, 93 (55.68%) did not remember the name of the drug (Table 2).

Indications and Drug Classes Used for Self-Medication

Common illnesses reported in this study were headache (80, 47.9%), gastrointestinal infections (74, 44.31%) and respiratory tract infections (48, 28.74%). The most common drug classes used in self-medication were analgesics (94, 56.28%) and antibiotics (60, 35.9%) (Table 3).

Source of Drugs for Self-Medication Practices

A majority of respondents accessed drugs from pharmacies (98, 58.68%). Left-over medications (42, 25.14%), suggestions from family/friends (18, 10.77%), previous prescriptions for similar diseases (7, 4.19%), and "others" (5, 2.99%) were also mentioned as drug sources for self-medication practices.

Table 2 Self-medication Practices Among Study Participants

Variables	n	%
Illness in the last year		
Yes	257	75.36
No	84	24.63
Practiced self-medication in the last year		
Yes	167	64.98
No	90	35.01
Remember name of drug		
Yes	74	44.31
No	93	55.68
Reasons for self-medication		
Mildness of the illness	57	34.13
Dissatisfaction with health-care service	44	26.34
Familiarity with medicines and ailments	20	11.97
Sufficient knowledge about medications	16	9.58
Needed quick relief	16	9.58
To save money	9	5.38
To save time	5	2.99
Other	5	2.99

Table 3 Indications and Drug Classes Used for Self-Medication Among Study Participants (n=167)

Variables	n	%
Illness		
Headache	80	47.9
GI infection	74	44.31
Respiratory tract infection	48	28.74
Pain	16	9.58
Malaria	12	7.1
Skin disease	6	3.59
Eye disease	6	3.59
others	4	2.39
Class of medicines		
Analgesics	94	56.28
Antibiotics	60	35.9
GIT drugs	22	13.1
Antimalarial drugs	12	7.18
Anthelmintic drugs	11	6.58
Anti-inflammatory drugs	7	4.19
Supplements	7	4.19

Factors Associated with Self-Medication Practices

On logistic regression analysis, self-medication was the dependent variable and sociodemographic characteristics were independent variables. Binary logistic regression followed by multiple logistic regression was carried out to identify independent predictors for self-medication. On binary logistic regression analysis, field of study, year of study, and monthly income were associated with self-medication practices. In addition, the results of multivariate logistic regression analysis revealed that field of study was significantly associated with self-medication practices. Agriculture students (AOR 0.163, 95% CI 0.049–0.545) were 84% less likely to practice self-medication than medicine and health-science students (Table 4).

Discussion

Several studies have revealed that self-medication practices are common and prevalence varies throughout the world. This study was designed to assess self-medication practices and associated factors among undergraduate university students in Northeast Ethiopia. According to this study, the prevalence of self-medication in the last year was 64.98%. Similar findings have been reported in studies conducted among university students in Uganda (63.5%),[24] Kolkata, India (65%),[25] and Pakistan (66.2%).[26] Our finding was higher than studies done among university students in Gondar, Ethiopia (38.5%)[12] and Mekelle, Ethiopia (43.24%).[27] However, it was lower than studies done in Eritrea (79.2%),[21] Nigeria (81.8%),[23] Pakistan (99%),[28] Palestine (98%),[29] south India (78.6%),[30] Serbia (79.9%),[31] and Jordan (96.8%).[32] This variation may be due to differences in educational background and socio-economic characteristics of study participants, clinical exposure, and variations in recall periods used.

In the present study, mildness of the disease (34.13%), dissatisfaction with health-care services (26.34%), and familiarity with medicines and ailments (11.97%) were the main reasons for self-medication practice. This result is similar to studies conducted among university students in North India,[33] Bangladesh,[5] Brazil,[34] Nigeria,[14] and Ethiopia.[13] Treatment on the basis of previous experience may result in misdiagnosis and incorrect choice of drugs, since diseases may share similar symptoms.

Headache (47.9%) was the most commonly reported illness that led to self-medication, and comparable findings have been reported by previous studies.[27,31,32,35-41] Analgesics (56.28%) were the most commonly used category of medicines, comparable to previous reports.[11,23,24] This could be due to most respondents believing analgesics to be atoxic drugs that can be used at any time, irrespective of the dosage. Analgesics are over-the-counter drugs, i.e., sold without prescriptions.

Table 4 Factors Associated with Self-Medication Among Respondents (n=257)

Variables	Self-medication		COR (95% CI)	AOR (95% CI)
	Yes	No		
Age, years				
18–21	90	48	1.000	1.000
≥22	77	32	1.296 (0.748–2.247)	
Sex				
Male	99	54	1.088 (0.638–1.855)	
Female	59	35	1.000	1.000
Field of study				
Medicine and health sciences	49	18	1.000	1.000
Natural science	27	16	0.620 (0.273–1.409)	0.820 (0.289–2.328)
Business and economics	44	17	0.951 (0.437–2.070)	1.176 (0.399–3.470)
Social science	38	18	0.776 (0.356, 1.689)	1.125 (0.424, 2.988)
Agriculture	9	21	0.157 (0.061–0.407)*	0.163 (0.049–0.545)**
Year of study				
First	41	37	1.000	1.000
Second	46	25	1.660 (0.859–3.210)*	1.045 (0.438–2.492)
Third	58	23	2.276 (1.181–4.387)*	1.363 (0.543–3.423)
Fourth and above	22	5	3.971 (1.365–11.552)*	1.283 (0.356–4.623)
Monthly income, ETB				
≤100	21	3	3.500 (0.975–12.561)*	3.982 (0.988–16.052)
101–499	44	27	0.815 (0.433–1.533)	0.897 (0.437–1.843)
≥500	68	34	1.000	1.000

Notes: *$P<0.2$ considered significant on bivariate analysis; **$P<0.05$ considered statistically significant on multivariate analysis.
Abbreviations: COR, crude OR; AOR, adjusted OR.

Antibiotics (35.9%) were the second most used drugs in self-medication, which should be considered an alarming problem, as misuse of these drugs is a threat due to development of drug resistance. A high prevalence of self-medication with antibiotics has been reported among health-science students in Arsi, Ethiopia (58%).[13] This is likely due to the respondents being health-science students and recall as well as use of antibiotics could have been increased. In addition, types and rates of self-medication drugs vary with time and area, due to differences in countries' approved over-the-counter drugs, accessibility of the drugs, the country's drug-regulation system, disease, and patient's condition, as well as experiences of health-care providers. Inappropriate use of antimicrobials is known to be common in developing countries, and these can be obtained from pharmacies without prescription despite being prescription-only medicines. This might lead to spread of antibiotic resistance, adverse drug reactions, and treatment failure.[4,12] It is very important to discourage self-medication with antibiotics and thus health-education intervention regarding the risks of inappropriate self-medication with antibiotics is essential.

Most drugs for self-medication were accessed from pharmacies (58.68%), which is relatively similar to previous studies.[21,23,24,27] Easy accessibility of medicines, including those dispensed with a physician's prescription, from pharmacies could be related to the absence of a strong regulatory system in the country. This could lead to an increasing number of individuals practicing self-medication, thus leading to irrational drug use and potential development of drug resistance. In this study, results of multivariate logistic regression analysis indicated that agriculture students were less likely to practice self-medication than medical students. In contrast to this, studies have reported that non–medical students are more likely to practice self-medication.[29] This is likely due to health professionals being familiar with the medications used in the management of their disease conditions.

This study was designed to assess self-medication practices and associated factors among undergraduate university students at Wollo University, Northeast Ethiopia.

However, there were also some limitations to this work. Recall bias is possible, as students were asked about their experience in the past 12 months. The results were also based on self-report and so with the possibility of over- and under reporting. Since this study included students from all departments, they may not have known classification or name of the drug they took. Furthermore, the cross-sectional study design used did not allow for a cause–effect relationship to be concluded from the results of the study.

Conclusion

This study revealed that self-medication practices were common among undergraduate university students in Northeast Ethiopia, and significantly associated with field of study of the respondents. Headache and gastro-intestinal diseases were the most commonly reported conditions in self-medication practices. Mildness of disease and dissatisfaction with health-care services were the main reasons for self-medication practices. Analgesics and antibiotics were the most commonly used classes in self-medication. The use of prescription drugs without prescription should be discouraged and hence health professionals, particularly community pharmacists, should provide health education to raise awareness of the consequences of inappropriate self-medication practices.

Data-Sharing Statement

All data are included within the manuscript.

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Disclosure

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