

Original Research Article

Self-medication with antibiotics among youths from Myanmar

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ABSTRACT

Background: Self-medication with antibiotics becomes a public health concern in both developed and developing countries. It is a risk factor for antibiotic resistance, one of the biggest threats to global health, food security, and development today. The prevalence of self-medication with antibiotics varies across the countries, and such studies are still limited in Myanmar. Therefore, we aimed at describing the prevalence of and the factors facilitating self-medication with antibiotics in Myanmar.

Methods: This cross-sectional study included face-to-face interviewing of 360 youths randomly selected from 6 townships of Mandalay city, Myanmar.

Results: In this study, 36.67% of the youths self-medicated with antibiotics in the six months before the survey. The most common antibiotic used for self-medication was amoxicillin (70.94%). Runny nose (35.61%), cough (26.52%), and fever (25.76%) were the most typical symptoms for which antibiotics were taken. The main factor facilitating self-medication with antibiotics was easy accessibility (86.36%). One-third of youths selected antibiotics based on the advice of drugstore's sellers. Most of the youths bought antibiotics at nearby drugstores. About two-thirds of youths stopped taking antibiotics after taking them one or two days, regardless of the outcome.

Conclusions: The prevalence of self-medication with antibiotics was high among Myanmar youths. Law enforcement and regulations for inappropriate use of antibiotics is an urgent need to alleviate the consequences of self-medication with antibiotics. Awareness-raising and educational program targeting both drugstore owners and the public through various channels is necessary to reduce the inappropriate use of antibiotics.

Keywords: Antibiotics, Myanmar, Self-medication with antibiotics, Youths

INTRODUCTION

Self-medication is using drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent diseases or symptoms (WHO, 2013). It includes obtaining medication without being prescribed by doctors and taking medicines based on relatives' and friends' opinions. Due to the broader increase in drugs available without a prescription, self-medication is higher in developing countries than in developed countries.¹ Self-medication can have potential dangers such as masking of severe disease, incorrect self-diagnosis, incorrect dosage, wrong manner of administration, dangerous drug-drug interactions, and risk of dependence and abuse.²

Particularly self-medication with antibiotics (SMA) becomes a public health problem in both developed and developing countries.³ SMA has adverse consequences such as antibiotic resistance, masking symptoms of an underlying disease, and dangerous drug interactions leading to high morbidity and mortality. World Health Organization (WHO) estimated that approximately 700,000 annual global deaths attributed to antimicrobial-resistant infection. It was projected to be 10 million deaths by 2050 unless further action was taken for this crisis (WHO, 2019). Specifically, SMA problems are far more severe in developing countries than developed ones because of antibiotics' handy availability without a physician's prescription.

The prevalence of self-medication has sharply increased in developing countries. Studies for SMA have been performed among the general public, university students, and medical professionals in most SEAR countries except Myanmar.³ The prevalence of SMA ranged from 7.3% to 85.59%, with the overall prevalence of 42.64% in SEAR. Mainly SMA was high among youths. According to Gillani et al, 2017, 58.3% of university students practiced self-medication in the preceding six months, and 45% confirmed the use of antibiotics. A China study also showed that 47.8% of youths had self-treated with antibiotics.⁴

Previous studies described that less expensive and easily affordable in terms of time and money, assured feeling of not requiring a visit to the physician, suggestions from others, and prior experiences of treating a similar illness were the main reasons behind the practice of SMA.⁵⁻⁷ Nearby drugstores and leftover drugs were the leading sources for SMA. Drugstore owners, friends, family, and relatives commonly suggested self-medicated antibiotics.³ Moreover, an abrupt stoppage of the antibiotic course after the disappearance of symptoms was the most improper behaviour in developing countries.⁸ Rey et al, 2018 stated that SMA and self-medication length were based on cultural beliefs despite awareness about risks.⁹

Although antibiotics are prescription-only medicine in Myanmar, most antibiotics are still available at pharmaceutical stores over the counter. People can buy antibiotics at pharmaceutical stores without being prescribed by doctors. Health care cost is an essential factor for their self-medication practice.¹⁰ Besides, people generally perceived the staff from drugstores has higher health knowledge than themselves. Moreover, because of familiarity with some frequently advertised drugs, people usually take those drugs first in a time of sickness. Going to the clinic is the last option for them.¹¹

In many countries, self-medication with antibiotics has been reported high among youths. Youths are more vulnerable to the practice of self-medication with antibiotics due to their low perception of risk associated with the use of drugs, insufficient knowledge of drugs, easy access to the internet, more comprehensive media coverage on the related health issue, and peer pressure.¹² They may know certain antibiotics and how these antibiotics can be used in certain diseases. Most of them cannot know the correct dosage, correct course, and side effects of antibiotics' improper use. This incorrect or insufficient knowledge can probably lead them to misuse antibiotics and contribute to antibiotic resistance.

Although voluminous literature exists for SMA, SMA practices vary across the countries, and the SMA studies are still limited in Myanmar. To fill this research gap, we aimed to determine the prevalence of SMA among youths and identify SMA factors and assess the source and utilization pattern of antibiotics among youths in Mandalay city. This study will provide baseline data for

policymakers in targeting to reduce inappropriate use of antibiotics in Myanmar.

METHODS

This cross-sectional study was conducted among 360 youths aged between 18 to 24 years, living in 6 townships of Mandalay City, Myanmar, from July to October 2020. Mandalay city is the third capital of Myanmar, and it is located in central Myanmar. There are a total of 6 townships in the city. We randomly chose one ward from each township, and then 60 youths from each township were randomly selected. A structured questionnaire was developed based on a previous study done in Southern China.⁴ The developed questionnaire was pre-tested with 20 youths from one urban township in Mandalay, without including it in the study. The internal consistency reliability of the questionnaire was acceptably high (Cronbach's $\alpha=0.98$). The questionnaire included five components: socio-demographic characteristics of youths, proportion of SMA among youths, SMA factors, source of antibiotics for self-medication, and utilization pattern of antibiotics for self-medication. We obtained written informed consent from the participants before the face-to-face interviews. We used Epi Data version 3.1 software and Stata version 14 for data entry and data analysis.

RESULTS

Table 1 shows that the mean age of participants was 21 ± 0.11 years. Over 30% of the youths were educated up to high school level, and 64.72% were employees.

Table 1: Socio-demographic characteristics of the respondents (n=360).

Variables	Frequency (%)
Age groups (in years)	
18-20	142 (39.4)
21-24	218 (60.6)
Mean \pm SD	21 \pm 0.11
Sex	
Male	148 (41.11)
Female	212 (58.89)
Level of education	
Primary school level	58 (16.11)
Middle school level	88 (24.44)
High school level	123 (34.17)
University level	91 (25.28)
Occupation	
Dependent	94 (26.1)
Manual worker	33 (9.17)
Employee	233 (64.72)

SD = Standard deviation

In Table 2, the prevalence of SMA was 36.67%. Among 132 participants who self-medicated with antibiotics, 93.94% can tell the name of antibiotics taken in the past six months.

Table 2: Prevalence of SMA and the factors related to SMA.

Variables	Frequency (%)
Prevalence of SMA	
Yes	132 (36.67)
No	228 (63.33)
Names of antibiotics taken	
Amoxicillin	88 (70.94)
Penicillin	17 (13.71)
Amoxicillin, penicillin	11 (8.87)
Flumox	2 (1.61)
Metronidazole	2 (1.61)
Amoxicillin, ampiclox	1 (0.81)
Ampiclox	1 (0.81)
Ampicillin	1 (0.81)
Metronidazole, neomycin	1 (0.81)
No of times of SMA in the past 6 months	
Just one time	40 (30.3)
Two-three times	64 (48.48)
More than three times	28 (21.21)
Complaint/symptoms for SMA*	
Runny nose	47 (35.61)
Nasal congestion	11 (8.33)
Cough	35 (26.52)
Sore throat	16 (12.12)
Fever	34 (25.76)
Aches and pain	18 (13.64)
Diarrhea	4 (3.03)
Skin wounds	16 (12.12)
Dysuria	1 (0.76)
Others	45 (34.09)
Reasons for SMA*	
Cost saving	10 (7.58)
Easy accessibility	114 (86.36)
Unwillingness to consult a doctor	21 (15.91)
Others	6 (4.55)
Information for SMA*	
Recommendation by drugstore's seller	51 (38.64)
Opinion of family member who is not a doctor	31 (23.48)
Opinion of friend who is not a doctor	5 (3.79)
His/her own experience	31 (23.48)
Previous doctor's prescription	13 (9.85)
Others	3 (2.27)
Consideration for SMA*	
Whole packets	39(31.7)
Separated capsules/tablets	84(68.92)
Brand of antibiotics	7 (5.3)
Price of antibiotics	1 (0.76)
Others	1 (0.76)

* Multiple responses

The most common antibiotic used for self-medication was amoxicillin (70.94%), followed by penicillin (13.71%). In the six months before the survey, 48.48% self-medicated

for two-three times, 21.21% took more than three times, and 30.3% took just one time. In this study, runny nose (35.61%), cough (26.52%), and fever (25.76%) were the commonest complaints or symptoms for which antibiotics were taken. The main factor facilitating SMA was "easy accessibility" (86.36%) followed by "unwillingness to consult a doctor" (15.91%) and "cost saving" (7.58%). The participants selected antibiotics for self-medication based on the advice of the drugstore's seller (38.64%), on the opinion of the family member who is not a doctor (23.48%), and on his/her own experience (23.48%). Moreover, 68.92% purchased antibiotics as separated capsules/tablets, and only 31.7 % purchased whole packets of antibiotics for self-medication.

The primary source of antibiotics was nearby drugstores (93.94%). Leftover from previous prescription (0.76%) and friend who is not a doctor (1.52%) were also the frequent sources of antibiotics for self-medication. Other sources were nearby grocery stores, workplaces, and auxiliary midwives. The majority of youths (62.12%) stopped taking antibiotics after one or two days regardless of the outcome, and 96.97% never switched antibiotics. Only four youths (3.03%) changed antibiotics in the past six months.

Table 3. Source and utilization pattern of antibiotics for self-medication.

Variables	Frequency (%)
Source*	
Nearby drugstore	124 (93.94)
Leftover from previous prescription	1 (0.76)
Friend who is not a doctor	2 (1.52)
Others	9 (6.82)
Stoppage pattern*	
After one or two days regardless of the outcome	82 (62.12)
After symptoms disappeared	40 (30.3)
After antibiotics ran out	5 (3.79)
At the completion of the course	16 (12.12)
After consulting a doctor	2 (1.52)
Switching antibiotics	
Yes, sometimes	4 (3.03)
Never	128 (96.97)

*Multiple responses

DISCUSSION

This study highlighted the proportion of SMA among youths and the factors related to SMA among youths in Myanmar. Our finding of the proportion of SMA among youths was similar to the previous results in Thailand (37.37%) and India (39.4%).^{13,14} However, SMA rates were meagre in developed European countries such as Sweden (2%) and Slovakia (3%).¹⁵ This may be due to the easy availability of non-prescribed antibiotics at nearby drugstores in Myanmar, while antibiotics are strictly regarded as prescription-only medicine in

developed countries. Thelwell et al, reported that antibiotics were sold as an unregulated product to the public in developing countries.¹⁶ This result suggests that laws and regulations in Myanmar should be strictly enforced to reduce inappropriate use of antibiotics.

Regarding the most common antibiotic used for self-medication, this study supported previous research findings in Asia regions that found amoxicillin and other penicillin alike antibiotics as the most used antibiotics for self-medication.^{3,4} Amoxicillin and penicillin are very well-known and widely available antibiotics among Myanmar people. The careless use of those antibiotics leads to antibiotic resistance problems. For instance, Tin et al, stated that the antibiotic susceptibility of penicillin G to staphylococcus species in Myanmar was only 11%.¹⁷ Moreover, the most typical symptoms for antibiotics usage such as the runny nose, cough, fever, headache, and injuries were similar to the China study report where sore throat, fever, cough, runny nose, and nasal congestion as the common complaints of youths for taking antibiotics.⁴

Unlike our finding, previous successful experience, the illness being minor to seek medical attention and intending to get quick relief were the main reasons for SMA in the community of Eastern Africa.¹⁸ This discrepancy probably results from the contextual differences between the communities. For instance, the easy accessibility of non-prescribed antibiotics at nearby drugstores and grocery stores in Myanmar makes people have antibiotics conveniently and cheaply. Another possibility may be poverty, and lack of health insurance system in Myanmar also lead people to nearby stores rather than public and private clinics to treat minor illnesses at a lower cost. Our study also found that cost saving and unwillingness to consult a doctor or physician are other factors facilitating SMA. Also, most of the youths in this study selected antibiotics for self-medication based on the drugstore's seller's advice. Therefore, the drugstore sellers could play an important role in SMA in rationalizing antibiotic use and selling antibiotic sales without a prescription. Our finding suggests to enforce pricing policies and regulations for the antibiotics market and to educate the drugstore sellers and the public for increasing antibiotic awareness.

Like the Indonesian study, the majority of youths stopped taking antibiotics immediately after symptoms disappeared.⁷ It may be possible that a lack of knowledge about the danger of antibiotic resistance might lead the youths to prevent the taking of antibiotics abruptly. Public knowledge is considered a prerequisite for the proper use of antibiotics and limiting antibiotic resistance.¹⁹ Therefore, public awareness of antibiotic resistance among youths should be promoted to reduce the adverse consequences of SMA.

We considered several limitations in this study. First, this study did not include a qualitative approach for exploring the reasons, opinions, and considerations of participants

for SMA. Future qualitative research would be helpful in better understanding of SMA among youths. Second, recall bias might be one of the concerns since the participants had to respond whether they took antibiotics or not during the past six months. Third, the results could not represent all age groups' population since this study was conducted on youths between the ages of 18 and 24 years.

CONCLUSION

To our best knowledge, being the first study of SMA among youths in Myanmar, this finding could help further comprehensive research. This study revealed that the prevalence of SMA was high among Myanmar youths. Convenient availability and accessibility of antibiotics in nearby drug stores and selection of antibiotics based on drugstore sellers' advice were the alarming findings. Appropriate low enforcement and regulations for inappropriate use of antibiotics is an urgent need to alleviate SMA consequences. Awareness-raising and educational program targeting both drugstore owners and the public through various channels is necessary to reduce the inappropriate use of antibiotics. This study's findings will provide baseline data for administrators, public health personnel, and related government authorities in performing activities to reduce the improper use of antibiotics in Myanmar.

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