

# Prevalence and Practices of Self-medication With Antibiotics Among Nursing Students at a Training Institution in Western Uganda

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## Research Article

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# Abstract

**Background:** Self-medication is one of the leading causes of inappropriate antibiotic use practices. This leads to antimicrobial resistance which results into anti-microbial related deaths. The aim of the study was to determine the self-medication practices and their prevalence among nursing students at certificate and diploma level at a health training institution in south western Uganda.

**Methods:** A descriptive cross-sectional study design was used. Data was collected using self-administered questionnaires among certificate and diploma nursing students. A total of 358 nursing students participated in the study.

**Results:** More than half of the nursing students, 85.7% (307) reported to have practiced self-medication. It was also noted that 91.5 % (237) and 69.5% (66) of certificate nursing students diploma nursing students respectively practiced self-medication. Most students, 50.8% (182) based their choice of the antibiotic to use on own experience with the antibiotic used before. Also 39.9% (143) students reported to have been getting their antibiotics mainly from the community pharmacist and 31.4% (112) from drug shop. The most commonly used antibiotics for self-medication included amoxyl and metronidazole. Change of dosage during course of treatment and switching of antibiotics during course of treatment were some of the self-medication was reported.

**Conclusion:** Self-medication practices are very common among nursing students. It is a major public health problem as it is associated with inappropriate antibiotic use practices, antimicrobial resistance and related deaths.

## Introduction

Antibiotic use is an emerging prominent medical and public health concern of the 21st century (Broom et al., 2016). Antibiotics are prescribed to humans for treatment and prophylaxis of infections and are mostly used in outpatients (80% to 90%) (Bisht et al., 2016). There was a 65% increase in antibiotic global consumption between 2000 and 2015 (Klein et al., 2018). The World Health Organization Global Action Plan on Antimicrobial Resistance highlighted the importance of optimal use of antimicrobial medicines in human and animal health, specifically aiming to reduce consumption of antimicrobials, particularly antibiotics among humans and animals (WHO 2015).

Self-medication, and unregulated sales of medicines, have all been accredited to lead to overuse of antibiotics and inappropriate antibiotic use hence resistance of several antibiotics (Bala et al., 2020). Self-medication is believed to be economical, reduce waiting time for the physician and at the same time save life in acute conditions but on the other hand can also result in serious health hazards such as adverse drug reactions, drug dependence and increased resistance (Ehigiator et al., 2021). Self-medication is a global phenomenon whose prevalence is also on the rise especially in this (COVID-19) pandemic error due to the increasing popularity of home-based management of asymptomatic and mild cases (Kaggwa et al., 2021). In South East Asia, the average prevalence of the practice of self-medication

was found to range from 7.3% to 85.59% with an average overall prevalence of 42.64% (Nepal & Bhatta, 2018) . Forty studies from 19 countries in Africa showed that the average prevalence of self-medication practices in Africa ranged from 12.1% to 93.9% with median prevalence of 55.7%. The prevalence varied according to the different regions of Africa. West Africa had the highest prevalence of 70.1%, followed by north Africa with 48.1% while the prevalence for eastern Africa was found to be 47.1% (Yeika et al., 2021). In northern Uganda the prevalence of self-medication practices with antibiotics was found to be 75.5% (Ocan et al., 2014) and among different students belonging to different departments in Islamic university, the overall prevalence of self-medication practices was found to be 69.4%(Babatunde et al., 2020). Also Among medical students at Mbarara university of science and technology, the prevalence was found to be 66.7% (Niwandinda et al., 2020) Self-medication practices include taking traditional medications without proper medical advice, using old prescription or unused drugs from friends and family (Krishna et al., 2021)

In a study carried out in northern Uganda, 68.2% of the respondents would recommend self-medication to another sick person suffering from the same condition as they themselves self-medicated (Ocan et al., 2014). Another study reported that, 0.9% of the patients were using left over medications from old prescription and 0.5% unused drugs from friends and family (Nabaweesi et al., 2021) . Self-medication practices also vary according to medical condition and these include; self-medication for stress, anxiety, depression and psychological trauma, self-medication for pain, fever, cough and other minor symptoms and self-medication for medical conditions. Some of the conditions self-medicated for using antibiotics include fevers, common cold , bacterial pharyngitis ,urinary infection, toothache, sore throat , pain and skin infections (Tomas et al., 2017) With the increased practice of self-medication , there is an increased risk of inappropriate antibiotic use (Xu et al., 2019). A study carried out in northern Uganda reported that the most commonly consumed drug was coartem (27.3%) and antibiotics included amoxicillin, metronidazole, and cotrimoxazole (Ocan et al., 2014). In a study carried out among students enrolled at Mbarara University of science and technology most commonly self-medicated drugs included antibiotics (Niwandinda et al., 2020).

Nursing students are at risk of self-medication and this is attributed to the fact that they have more access to these drugs during their professional training (Ehigiator et al., 2021). This puts their life at risk of antimicrobial resistance hence antimicrobial resistance related deaths and yet they are supposed to be the future nurses in health care (Ehigiator et al., 2021) . However, there is still scarcity of information about how nursing students at Mayanja memorial medical training institute access and use the drugs

Therefore, this study aimed to examine the prevalence and practices of self-medication with antibiotics among nursing students at Mayanja memorial medical training institute.

## **Methods**

### **Study design**

This study was a descriptive cross-sectional study employing quantitative approach and was carried out in August 2022

**Study setting:** The study was carried out at a certificate and diploma awarding Nurses training institute. The institute is located in Mbarara city, south western Uganda. The institute offers nursing training at certificate and Diploma levels. It was chosen because it is one of the institutions that offers a program in nursing science at both certificate and diploma level and one of the institutions with a high population of nursing students with over 800 Nursing students. The institute has a training hospital, which also serves as the private hospital. The institute is located next to the city center with access to pharmacies and drug shops. The institute is also near a drug shop about 10km from the school where students can easily access medicines too.

**Study population;** Nursing students offering certificate and diploma in nursing at Mayanja memorial medical training institute

### **Eligibility criteria**

### **Inclusion criteria**

Nursing students at Mayanja memorial medical training institute who consent

### **Exclusion criteria**

The study excluded Nursing students at Mayanja memorial medical training institute who were not at the institute at the time of data collection

**Sampling method:** The study utilized purposive sampling to recruit participants since it purposively recruited nursing students .

**Sample size:** 358 students.

The sample size was obtained using Cochran's formula

$$n = \frac{Z^2 (pq)}{e^2}$$

WHERE Z =the normal distribution value at 95% confidence interval

P = the proportion of the prevalence students at Mayanja memorial medical institute practicing self-medication which will be assumed to be 66.7%

$$q=1-p$$

E = margin of error (5%)

e= margin of error (5%)

$$n = \frac{1.96^2 * 0.667 * 0.333}{0.05^2}$$
$$= 341.30464704 \text{ students}$$

By adding 5% error to cater for non-response rate, and the sample size was 358 students

## Data collection tools

A self-administered questionnaire was used during data collection. The questionnaire had two sections; section A for the socio-demographic characteristics and section B for the prevalence and practices of self-medication. The questionnaire was adopted from journals.plos.org and was in English language since the study participants were literate.

## Data collection procedure

The study participants were put in a private room, assigned a code and informed consent was obtained from each study participant. The researcher then gave a self-administered questionnaire to each study participant. They were given a period of 15-20 minutes to fill the questionnaires. The questionnaires were then collected by the research team and kept under lock and key.

## Data management procedure

The questionnaires were checked for completeness by the researchers, coded, cleaned and double data entry was done to ensure accuracy of data. The data was stored on a laptop with a password known to the research team members only.

### Quality control and rigor

The research team pretested the data collection tool among 5 nursing students at MUST to ensure that the data needed for the study was all included. Consistency was maintained by using the same questionnaire on all participants to ensure that similar data is collected

# Data analysis

Data was analyzed by the research team using computer software-SPSS version 20. Descriptive statistics such as percentages were used, relationships between variables were identified and the results were presented in tables and pie charts

## Ethical considerations

The research team observed research ethics in data collection. Topical approval from Mbarara University of science and technology Faculty ethics committee (MUST-FEC) was sought and an introductory letter was obtained from the head of nursing department MUST

Administrative clearance was sought from the chairman research committee at Mayanja memorial training institute (Appendix I).

.Privacy, confidentiality and dignity of the study participants was considered during the research. Codes were used instead of participant's names. An informed consent form was designed for each respondent to ensure voluntarism and acceptability to participate in the study before being given the questionnaire. The written informed consent form clearly explained the purpose and objectives of the study. Data was collected from 5pm to 6pm for 3 days

## Results

### Introduction

This chapter shows data collected from the nursing students at Mayanja memorial medical training institute in this study; it includes socio-demographic data, self-medication prevalence and practices of self-medication with antibiotics.

### **SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS**

The socio-demographic variables included age, gender and level of education (Table1). Out of the 358 participants, 168 were females and 190 were males. With regard to the level of education, it was found out that 259(72.3%) were offering certificate in nursing while 99 (27.7%) were offering diploma in nursing at Mayanja memorial technical institute. Of the study participants, 269 (75.1%) were aged under 24 years, 70(19.6%) were aged 25-30 years, 16(4.5%) were aged 31-35 years and 3(0.8%) above 36 years. The minimum age was 19 years and maximum 39 years. The mean age was  $23.37 \pm 3.471$  years

### **Table 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF NURSING STUDENTS AT MAYANJA MEMORIAL MEDICAL TRAINING INSTITUTE**

Characteristic		Frequency	Percentage
		N=358	(%)
Gender	Female	168	46.9
	Male	190	53.1
Level of education	Certificate	259	72.3
	Diploma	99	27.7
Age groups	Under 24	269	75.1
	25-30	70	19.6
	31-35	16	4.5
	36 and above	3	0.8

Source; primary research data

Among the participants, there were more females offering certificate in nursing 143(55.2%) compared to 116 (44.8%) who were males. There were 25 (25.3%) females offering the diploma in nursing compared to 74(74.7%) who were males.

Table 2 shows that there were more certificate in nursing student participants than the diploma in nursing student participants in the study. We also found out that, 237 (91.5%) of the certificate nursing students practiced self-medication and that 69.5% of the diploma nursing students at the institute practiced self-medication.

**Table 2: THE PERCENTAGE OF FEMALES AND MALES AND PREVALENCE OF SELF-MEDICATION AT THE DIFFERENT LEVELS OF EDUCATION**

Characteristic		GENDER	
		FEMALE	MALE
EDUCATION	CERTIFICATE (n)%	143(55.2%)	116 (44.8%)
	DIPLOMA (n)%	25(25.3%)	74 (74.7%)

Source; primary research data

Of the 358 participants, the prevalence of self-medication with antibiotics was 307 (85.7 %) while the 51 (14.2%) students did not self-medicate with antibiotics as shown in figure1

It was also noted that of all the participants who self-medicated 156 (92.9%) were females and 151 (79.5%) were males. Among the students who had never practiced self-medication, 12(7.1%) were females while 39(20.5%) were males as shown in **table3 below**. It was also noted that 91.5 % (237) of certificate nursing students and 69.5% (66) of diploma nursing students practiced self-medication as shown in **table 4 below**

**Table 3: A CROSS TABLE SHOWING THE PREVALENCE OF THE PRACTICE OF SELF MEDICATION AMONGST BOTH THE FEMALE AND MALE NURSING STUDENTS AT MAYANJA MEMORIAL MEDICAL TRAINING INSTITUTE**

SELF MEDICATION			NO	YES
GENDER	FEMALE	Count (%)	12(7.1%)	156(92.9%)
	MALE	Count (%)	39(20.5%)	151(79.5%)

Source; primary research data

**Table 4: ACROSS TABLE SHOWING THE PREVALENCE OF SELF MEDICATION AMONG NURSING STUDENTS AT MAYANJA MEMORIAL MEDICAL TRAINING INSTITUTE AT THE TWO DIFFERENT LEVELS OF EDUCATIONS**

			SELF MEDICATION	
			NO	YES
EDUCATION	CERTIFICATE	Count (%)	22(8.5%)	237(91.5%)
	DIPLOMA	Count (%)	29(30.5%)	66(69.5%)

Source: primary research data

## **SELF MEDICATION PRACTICES AMONG NURSING STUDENTS**

Of the 307 nursing students who practiced self-medication, 58 (16.2%) students had self-medicated once last year, 103(28.8%) twice, 32 (8.9%) thrice, 42(11.7%) four times, 13(3.6%) five times and 59(16.5%) more than 5 times. Students reported to practice self-medication mostly because it is cost saving 150 (41.9%) and 85(23.7%) because it is convenient for them. Other reasons as to why students self-medicated included lack of trust in prescriptions by doctors 27 (7.6%) and drugs being readily available 2(0.6 %). Other students, 18(5.0%) gave more than one reason as to why they self-medicated. Self-medication practices of these students was mainly based on; 182(50.8%) students' own experience, 43 (12.0%) previous doctor's prescription, 19(5.3%) opinion of family members, 18(5.0%) opinions of friends, 8(2.3%) recommendation from NET citizens and 8(2.3%) advertisements. The students also reported to



have been getting the antibiotics from community pharmacists 143(39.9%), drug shop 112(31.4%), left over from previous prescription 51(14.2%) and online shopping 1(0.3%) as shown in table 5 below

**Table 5: A TABLE SHOWING THE SELF MEDICATION PRACTICES AMONG NURSING STUDENTS AT MAYANJA MEMORIAL MEDICAL TRAINING INSTITUTE**

<b>How many times did you treat yourself with antibiotics in the past 1 year?</b>	1	58	16.2
	2	103	28.8
	3	32	8.9
	4	42	11.7
	5	13	3.6
	More than 5 times	59	16.5
	Missing	51	14.2
<b>What was (were) your self-medication reason( circle more than 1 if applicable)</b>	Cost Saving	150	41.9
	Cost saving and convenience	17	4.7
	Cost saving and lack of trust in prescribing doctor	1	.3
	Convenience	85	23.7
	Lack of trust in prescribing doctor	27	7.6
	Drug readily available	2	0.6
	Missing	51	14.2
<b>Your selection for antibiotics was based on?(tick more than 1 if applicable)</b>	Recommendation by community pharmacists	29	8.1
	opinion of family members	19	5.3
	Opinion of friends	18	5.0
	My own experience	182	50.8
	Recommendation by NET citizens	8	2.3
	Previous doctor's prescription	43	12.0
	Advertisement	8	2.3
	Missing	51	14.2
<b>where do you usually get antibiotics from for self-medication</b>	community pharmacist	143	39.9
	drug shop	112	31.4
	leftover from previous prescription	51	14.2

online shopping/pharmacies	1	.3
Missing	51	14.2

The most common medical complaint for which students used antibiotics was sore throat 40(11.2%), followed by fever 32(8.9%). Other complaints for which students self-medicated for included runny nose, cough, nasal congestion, aches and pain, skin wounds, vomiting and diarrhea as shown in figure2 below.

## **INAPPROPRIATE ANTIBIOTIC USE PRACTICES AS A RESULT OF SELF MEDICATION**

Also, among students who self-medicated, 73 (20.4%) reported to have been always changing dosage of the antibiotic deliberately during the course of medication, 124(34.5%) reported to do it sometimes while 110 (30.7%) reported not to have done it at all. The reason for changing dosage included; improving condition 122(34.1%), worsening condition 21(5.9%), reducing adverse effects 34(9.5%) and drug being insufficient for complete treatment 20(5.6%). Students also reported to have been switching antibiotics during course of self-treatment and these were 112 (31.3%) always switched, 138(38.5%) sometimes switched antibiotics and 57(15.9%) never switched antibiotics and the reasons for switching were; the former antibiotic did not work 96 (26.8%), the former antibiotics ran out 85 (23.7%), the latter was cheaper 24 (6.7%) and to reduce adverse effects 108 (30.2%) as shown in table 6

**Table 6: A TABLE SHOWING INAPPROPRIATE ANTIBIOTIC USE PRACTICES (CHANGE OF DOSAGE AND SWITCHING ANTIBIOTICS) THAT CAME ALONG WITH SELF –MEDICATION**

Practice	Scale	Frequency	Percentage (%)
Change dosage of antibiotic deliberately during the course of self-medication	Yes ,always	73	20.4
	Yes sometimes	124	34.6
	Never	110	30.7
Reason for change of antibiotics during the course of self-medication	improving condition	122	34.1
	worsening condition	21	5.9
	to reduce adverse effects	34	9.5
	drug insufficient for complete treatment	20	5.6
Switching antibiotics during the course of antibiotic treatment	yes, always	112	31.3
	yes, sometimes	138	38.5
	Never	57	15.9
Reason for switch antibiotic during course of treatment	the former antibiotics did not work	96	26.8
	the former antibiotics ran out	85	23.7
	the latter one was cheaper	24	6.7
	to reduce adverse effects	45	12.6

SOURCE; primary research data

### **MOST COMMONLY USED ANTIBIOTICS FOR SELF MEDICATION**

Most of commonly used antibiotics for self-medication included amoxyl 128 (35.8%), metronidazole 49 (13.7%), ceftriaxone 38(10.6%), penicillin 10 (2.8%), 1(0.3%), ciprofloxacin 1 (0.3%), ampiclox 67 (18.7%), levofloxacin 5 (1.4%), amoxiclav 8(2.2%). See table 7

**Table 7: A TABLE SHOWING THE ANTIBIOTICS MOST COMMONLY USED FOR SELF MEDICATION AMONG NURSING STUDENTS**

Characteristic		Frequency	Percentage (%)
<b>Antibiotics self-medicated</b>	Amoxyl	128	35.8
	metronidazole	49	13.7
	ceftriaxone	38	10.6
	Penicillin	10	2.8
	doxycycline	1	.3
	ciprofloxacin	1	.3
	Amopiclox	67	18.7
	Levofloxacin	5	1.4
	Amoxiclav	8	2.2
	Missing	51	14.2

Source; primary research data

## Discussion

The study was conducted to determine the prevalence and practices of self-medication among certificate and diploma nursing students.

The study was a cross-sectional study conducted to determine prevalence and practices of self-medication among nursing students at Mayanja memorial medical training institute. The prevalence of self-medication was high at 85.7%. Students offering certificate in nursing practiced more self-medication that is 91.5% compared to 69.5% of students offering diploma in nursing.

The prevalence of self-medication in this study was high at 85.7%. Our findings are in agreement with previous studies which have reported that self-medication to be higher health sciences students (Nepal. G & Bhatta. S, 2018). Similarly, a study carried out among undergraduate students among undergraduate students in a private university in Nigeria, 81.8% prevalence of self-medication (Esan et al., 2018). The prevalence in this study however was higher than 50.7% prevalence among nursing students of Nepal (Sah et al., 2016), 76.8% among nursing dental and midwifery students (Ehigiator et al., 2021), 69.4% among students in Islamic university (Babatunde et al., 2020) and 63.5% among students at Mbarara university of science and technology (Niwandinda et al., 2020). Although previous findings show a relatively lower prevalence compared to the current study, the difference cannot be adequately explained by the variation in levels of education. According to Torres et al., (2018), University students and senior health science were even more likely to self-medicate due false confidence in self-diagnosis. These ambiguous findings show that there are other factors associated with self-medication among students other than level of education which can be addressed enhanced antibiotic use literacy.

In this study prevalence of self-medication practices was high amongst females where it was found to be 92.9% compared to 79.5% in males. This is similar to the prevalence in some study in Serbia where the prevalence of the self-medication practices among females was also higher (5.6%) than that of men (2.2%) (Katica T et al 2020). This difference can be attributed to fact that females have a higher tendency of health-seeking behavior than male counter parts (Onchonga et al., 2020).

The study also shows the number of times for which the students self-medicated in the last year from once as being the least number of times to more than five times last year. Most of the students 103(28.8%) reported to have self-medicated twice last year. The study also reports major reasons for self-medication as cost saving and convenience. This was different from other studies conducted elsewhere for example in university of Benin where previous experience with illness and minor nature of system were the major reasons (Ehigiator et al., 2021), This may be attributed to the fact that the drug shop was nearer to the school, cheap and conveniently accessed as compared to the hospital for students. Selection of the antibiotic to use by the participants in this study was mainly based on student's own experience and previous doctor's prescription which is the same as the findings by Kasulkar in a study at Rawalpindi medical college (Kasulkar & Gupta, 2015). The participants were mainly getting the antibiotics from community pharmacist, and drug shop which is the same as the previous studies (Kasulkar & Gupta, 2015; Prasetya, 2017). Pharmacists often lack sufficient knowledge about antimicrobial agents yet they are the most preferred source of advice about antimicrobial use (Nepal. G & Bhatta. S, 2018). Therefore, this indicates that empowerment of pharmacists with adequate knowledge can improve rational antibiotic use through giving appropriate advice and minimize selling non-prescribed antibiotics.

Also the findings in this study show that the conditions for which students mostly self-medicated for were cough and sore throat which is consistent with the study carried out by Antoun Jamhour (Jamhour et al., 2017)

The study also shows that there was likely hood of change of drug dosage and switching of antibiotics during the course of treatment. Up to 20.4% of the students reported to always be changing drug dosage and 34.6% would change drug dosage sometimes. This shows that 60% of the students who self-medicated change the drug dosage along course of treatment and the two major reasons as to why students changed antibiotic dosage were; improving condition and reducing adverse effects. A large proportion of students (69.8%) switched antibiotics along the course of treatment and the major reasons were the former antibiotic not working and the former antibiotic running out.

According to this study the most commonly used antibiotic for self-medication were amoxyl, ampclox and metronidazole. In agreement with our findings, a study among undergraduate university students in Rwanda reported that amoxicillin was the mostly used antibiotic for self-medication (Tuyishimire et al., 2019). Reasons for the choice of the antibiotics were out of scope for this study however these may include price, prior knowledge or experience with the antibiotic.

## Conclusion

This study revealed a high prevalence of self-medication practices (85.7%) among the nursing students at Mayanja memorial training institute. Demographic characteristics for example gender and level of education were associated to the prevalence and practices of self-medication. It was also noted that self-medication was associated with improper antibiotic use practices for example change of dosage during course of treatment and switching of antibiotics during the course of treatment.

## RECOMMENDATIONS

More emphasis should be put on teaching the nursing students about proper antibiotic use practices and the dangers of self-medication. Also more research is needed to be done to assess nursing students' knowledge about proper antibiotic use among nursing students to find out if this could be the cause of the highest prevalence of self-medication practices among them

## Declarations

- **Ethics approval and consent to participate**

Topical approval from Mbarara University of Science and Technology Faculty ethics committee (MUST-FEC) was sought, Administrative clearance was sought from the chairman research committee at Mayanja memorial training institute. Privacy, confidentiality and dignity of the study participants was considered during the research. Codes were used instead of participant's names. An informed consent form was designed for each respondent to ensure voluntarism and acceptability to participate in the study before being given the questionnaire.

- **Availability of data and materials**

All data sets used in this study are available on request from the corresponding author

- **Competing interests**

There is no conflict of interest

- **Funding;**

The study was funded by the researchers.

- **Authors' contributions**

All authors stated above have made substantial, direct and intellectual contribution to the work and approved it for publication. SN and JNN conceived the idea, collected data, PM and AA wrote the first draft of this paper, All authors reviewed the final version of the manuscript

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- **Authors' information**

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## References

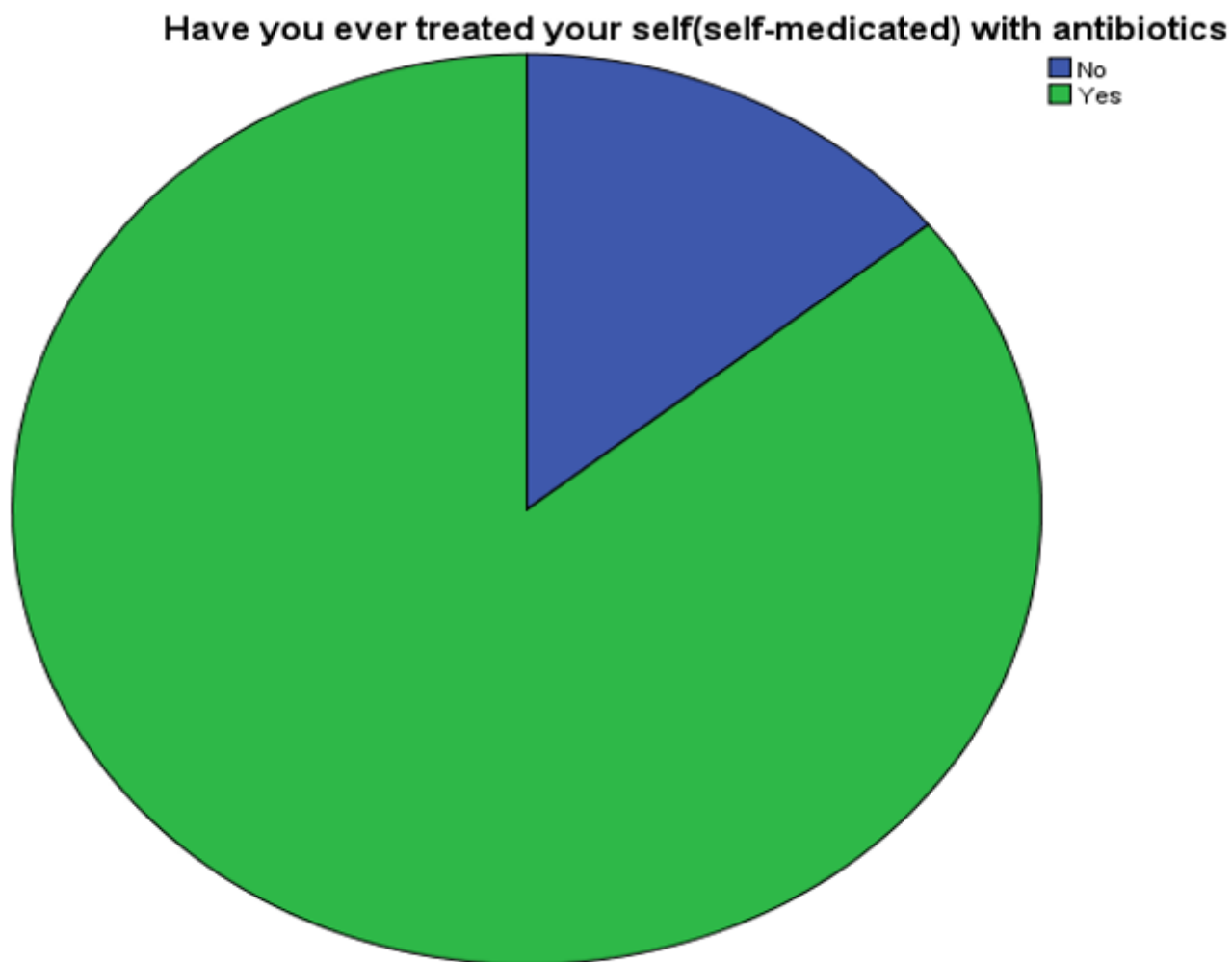
1. Babatunde, A. A., Awunor, N. S., & Richard, O. O. (2020). *Prevalence of Antibiotic Self-Medication Among University Students in Kampala, Uganda*. 7(July), 0–5.
2. Bala, R., Singh, H., Kaur, K., Girish, P., & Kohli, K. (2020). *Knowledge and attitude towards antimicrobial self medication usage: a cross sectional study among medical and nursing students IJBCP International Journal of Basic & Clinical Pharmacology Research Article Knowledge and attitude towards antimicrobial self. July*. <https://doi.org/10.5455/2319-2003.ijbcp20130816>
3. Bisht, R., Katiyar, A., Singh, R., & Mittal, P. (2016). *P. Mittal, V. Juyal. Drug-dietary interaction potential of garlic on glimepiride treated type 2 diabetic wistar rats. Journal of Diabetology, (October 2012) 3: 2. ANTIBIOTIC RESISTANCE – A GLOBAL ISSUE OF CONCERN. March*.
4. Broom, A., Broom, J., Kirby, E., & Scambler, G. (2016). *Nurses as Antibiotic Brokers: Institutionalized Praxis in the Hospital Nurses as Antibiotic Brokers: Institutionalized Praxis in the Hospital. November*. <https://doi.org/10.1177/1049732316679953>
5. Ehigiator, O., Azodo, C. C., Ehizele, A. O., Ezeja, E. B., Ehigiator, L., & Madukwe, I. U. (2021). *Self - medication practices among dental, midwifery and nursing students. 2(1)*. <https://doi.org/10.4103/2278-9626.106813>
6. Esan, D. T., Fasoro, A. A., Odesanya, O. E., Esan, T. O., Ojo, E. F., & Faeji, C. O. (2018). *Assessment of Self-Medication Practices and Its Associated Factors among Undergraduates of a Private University in Nigeria. Journal of Environmental and Public Health, 2018*. <https://doi.org/10.1155/2018/5439079>
7. Jamhour, A., El-kheir, A., Pharmd, P. S., Hanna, P. A., Mansour, H., & Bcps, P. (2017). *Antibiotic knowledge and self-medication practices in a developing country: AJIC: American Journal of Infection Control, January*. <https://doi.org/10.1016/j.ajic.2016.11.026>
8. Kaggwa, M. M., Bongomin, F., Najjuka, S. M., Rukundo, G. Z., & Ashaba, S. (2021). *Cannabis-Induced Mania Following COVID-19 Self-Medication: A Wake-Up Call to Improve Community Awareness. In International medical case reports journal (Vol. 14, pp. 121–125)*. <https://doi.org/10.2147/IMCRJ.S301246>



9. Kasulkar, A. A., & Gupta, M. (2015). Self Medication Practices among Medical Students of a Private Institute. *Indian Journal of Pharmaceutical Sciences*, 77(2), 178–182. <https://doi.org/10.4103/0250-474x.156569>
10. Klein, E. Y., Boeckel, T. P. Van, Martinez, E. M., Pant, S., Gandra, S., & Levin, S. A. (2018). *Global increase and geographic convergence in antibiotic consumption between 2000 and 2015*. 115(15), 3463–3470. <https://doi.org/10.1073/pnas.1717295115>
11. Krishna, R., Gupta, S., Tang, C. Y., Althubyani, A. N., Jois, M., Higgs, P., Ramesh, M., & Thomas, J. (2021). Factors affecting self-medication practices among people living with type 2 diabetes in India- A systematic review. *Metabolism Open*, 9, 100073. <https://doi.org/10.1016/j.metop.2020.100073>
12. Nabaweesi, I., Olum, R., Sekite, A. B., Suubi, W. T., Machali, A., Kiyumba, R., Kalyango, P., Natamba, A., Kyeyune, M., Mpairwe, H., & Katagirya, E. (2021). *Antibiotic Practices , Perceptions and Self-Medication Among Patients at a National Referral Hospital in Uganda*. 2155–2164.
13. Nepal, G., & Bhatta, S. (2018). Self-medication with Antibiotics in WHO Southeast Asian Region: A Systematic Review. *Cureus*, 10(4). <https://doi.org/10.7759/cureus.2428>
14. Niwandinda, F., Lukyamuzi, E. J., Ainebyona, C., Ssebunya, V. N., Murungi, G., & Atukunda, E. C. (2020). *Patterns and Practices of Self-Medication Among Students Enrolled at Mbarara University of Science and Technology in Uganda*.
15. Ocan, M., Bwanga, F., Bbosa, G. S., Bagenda, D., Waako, P., Ogwal-Okeng, J., & Obua, C. (2014). Patterns and predictors of self-medication in northern Uganda. *PloS One*, 9(3), e92323. <https://doi.org/10.1371/journal.pone.0092323>
16. Sah, A. K., Jha, R. K., & Shah, D. K. (2016). Self-medication with antibiotics among nursing students of Nepal. *IJPSR*, 7, 427–430.
17. Tomas, A., Paut Kusturica, M., Tomić, Z., Horvat, O., Djurović Koprivica, D., Bukumirić, D., & Sabo, A. (2017). Self-medication with antibiotics in Serbian households: a case for action? *International Journal of Clinical Pharmacy*, 39(3), 507–513. <https://doi.org/10.1007/s11096-017-0461-3>
18. Xu, R., Mu, T., Wang, G., Shi, J., Wang, X., & Ni, X. (2019). Self-Medication with Antibiotics among University Students in LMIC: A systematic review and meta-analysis. *The Journal of Infection in Developing Countries*, 13(08), 678–689.
19. Yeika, E. V., Ingelbeen, B., Kemah, B. L., Wirsiy, F. S., Fomengia, J. N., & van der Sande, M. A. B. (2021). Comparative assessment of the prevalence, practices and factors associated with self-medication with antibiotics in Africa. *Tropical Medicine and International Health*, 26(8), 862–881. <https://doi.org/10.1111/tmi.13600>
20. Torres, N. F., Chibi, B., Middleton, L. E., Solomon, V. P., & Mashamba-Thompson, T. P. (2019). Evidence of factors influencing self-medication with antibiotics in low and middle-income countries: a systematic scoping review. *Public health*, 168, 92-101.
21. Nepal, G., & Bhatta, S. (2018). Self-medication with antibiotics in WHO Southeast Asian Region: a systematic review. *Cureus*, 10(4).

22. Onchonga, D., Omwoyo, J., & Nyamamba, D. (2020). Assessing the prevalence of self-medication among healthcare workers before and during the 2019 SARS-CoV-2 (COVID-19) pandemic in Kenya. *Saudi Pharmaceutical Journal*, 28(10), 1149-1154.
23. Tuyishimire, J., Okoya, F., Adebayo, A. Y., Humura, F., & Lucero-Prisno III, D. E. (2019). Assessment of self-medication practices with antibiotics among undergraduate university students in Rwanda. *The Pan African Medical Journal*, 33.

## Figures

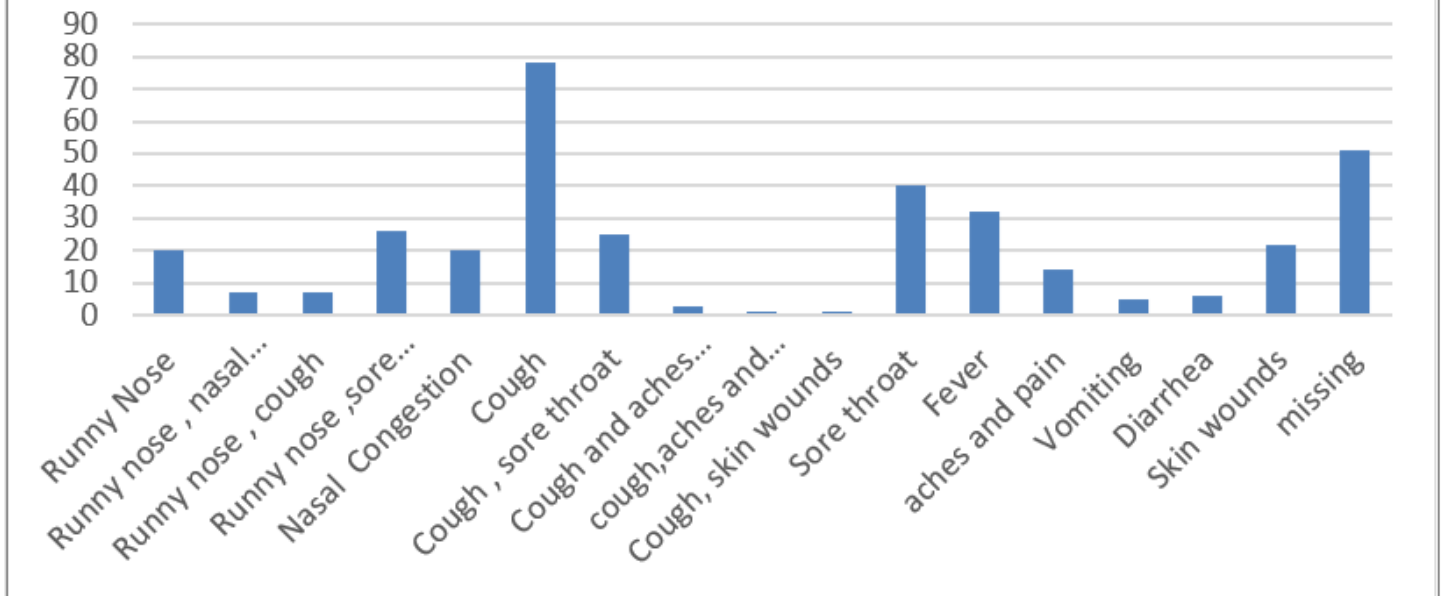


SOURCE: Primary research data

Figure 1

A PIE CHART SHOWING THE PREVALENCE OF SELF MEDICATION PRACTICES AMONG NURSING STUDENTS AT MAYANJA MEMORIAL MEDICAL TRAINING INSTITUTE

## A CHART SHOWING THE CONDITIONS COMMONLY SELF MEDICATED FOR AND THEIR FREQUENCIES



Source; primary research data

Figure 2

MEDICAL COMPLAINTS MOST COMMONLY SELF MEDICATED FOR AND THEIR FREQUENCIES