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Original article

Self-medication with antibiotics among medical students at the International School of Nursing and midwifery-Maya, Wakiso district. A cross-sectional study.

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ABSTRACT

Background:

Self-medication with antibiotics is a common practice among medical students, posing significant public health risks, including antibiotic resistance, adverse drug reactions, and masking of underlying diseases. The study focused on determining the factors influencing self- medication with antibiotics among medical students of the International School of Nursing and Midwifery- Maya, Wakiso District.

Methodology:

A cross-sectional study design was employed, utilizing a semi-structured questionnaire to collect data from 96 nursing and midwifery students selected through simple random sampling. Data exploring demographic, hospital-related factors, and the different sources of antibiotics was collected and analyzed using Microsoft Excel. The results were presented in the form of tables and figures.

Results:

Out of 96 participants, 52% were aged 17 to 21 years, while only 8.3% were above 26 years. 54% were female, 45.8% were male, 40.6% were in the 1st year of their study, and only 27.1% were in their 2nd year of study. The results indicate a high prevalence of antibiotic self- medication, driven by demographic factors such as age (55.8%) and gender (58.1%) and having a relative in the health profession (67.4%), hospital related factors including high consultation fees (68.6%), lack of time to visit the facility (73.3%), difficult access to the facility (38.4%) and unfriendly nature of the health workers (57.0%) and the common source of antibiotics used for self-medication were community pharmacies 44(51.1%) and drug shops 18(20.9%). The common conditions for which antibiotics were obtained were flu/cold 46(53.5%) and urinary tract infection 26(30.2%), where the commonly used antibiotics included amoxicillin, ampicillin/cloxacillin, and metronidazole.

Conclusion:

Hospital-related factors, like negative attitude amongst health workers, are the precipitating factors contributing to self-medication among the students.

Recommendations:

Addressing these factors through public health initiatives and stricter regulations on antibiotic sales could reduce the prevalence of self-medication and its associated risks.

Keywords: *Self-medication, International School of Nursing and midwifery-Maya, Antimicrobial resistance, Polypharmacy*
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BACKGROUND

Self-medication, as defined by the World Health Organization (2018), refers to the practice of individuals using drugs to treat self-diagnosed disorders or symptoms without professional guidance, or the continued use of previously prescribed medications for chronic or recurrent conditions. This practice has become increasingly common, particularly with antibiotics, which are among the most frequently purchased medications globally due to their vital role in treating bacterial infections, especially in developing countries (WHO, 2018; Gaurav & Shekhar, 2018).

However, self-medication with antibiotics (SMA) poses significant health risks, most notably the rise of antibiotic resistance, which has become a global public health concern. Prolonged and inappropriate exposure to

antibiotics through self-medication contributes to the development of antibiotic-resistant bacteria, making infections harder to treat and increasing the risk of complications and mortality (Fat-hiya et al., 2022).

SMA is particularly prevalent in low- and middle-income countries (LMICs), where access to healthcare services may be limited, leading individuals to self-treat rather than seek medical advice. N.F. Torres et al. (2019) highlighted that SMA is a widespread practice, with prevalence rates in LMICs ranging from 8% to 93%. Factors such as poverty, lack of access to healthcare facilities, and limited awareness about the dangers of antibiotic misuse drive this behavior.

In the Eastern Mediterranean region, the prevalence of SMA is similarly concerning, ranging between 20.8% and 45.8% according to Feras et al. (2022). Shabnam & Marium (2017) in their study cited a high prevalence, 26% of SMA. The rate of SM was highly prevalent, 48% among men, as compared to the females (38%). In Saudi Arabia, SMA was reported to be highly prevalent, with 64% of study participants using antibiotics without a prescription. A significant portion of these individuals (36.6%) relied on previous prescriptions from doctors, and despite 81.3% acknowledging the potential harm of such practices, the trend persists (Sultan et al., 2018).

Similarly, in Ethiopia, a study conducted among healthcare professionals in Addis Ababa found that 22.7% of the respondents engaged in SMA, with familiarity with treatment options (43%) and the need for rapid relief (34.7%) cited as key reasons (Tsehay et al., 2022). In Tanzania, studies show that SMA is widespread among both parents and students. Beatus and Method (2020) reported that 47.7% of parents administered antibiotics to their under-five children without professional guidance. Additionally, among 300 undergraduate students, 63.7% engaged in SMA, with pharmacies being the primary source of antibiotics (Fat-hiya et al., 2022).

In Uganda, a study conducted in Kawempe revealed that 79% of respondents had used the internet to source information for self-medicating with antibiotics. Factors such as gender and proximity to healthcare facilities influenced the prevalence of SMA in the region (Joan et al., 2023). Despite the widespread nature of SMA globally, there remains limited data on the factors influencing this practice within specific regions, such as Wakiso District in Uganda. As a result, this study aimed to investigate the factors influencing self-medication with antibiotics among students of the International School of Nursing and Midwifery in Maya, Wakiso District. Understanding the drivers of SMA in this context will provide valuable insights for designing effective interventions to reduce antibiotic misuse and combat the growing threat of antibiotic resistance. The study determined the factors influencing self- medication with antibiotics among medical students of the International School of Nursing & Midwifery- Maya, Wakiso District.

METHODOLOGY

Study design

A cross-sectional study design was used, employing quantitative methods of data collection.

Study area

The study was conducted in Nanziga village, Nsangi Sub-county, Busiro County in Wakiso district, which is located in central Uganda.

Study population

The study targeted the nurses and midwife students of the International School of Nursing and Midwifery, Maya, Wakiso district.

Sample size determination

The sample size was determined by Kish and Leslie (1965)

$Z^2 \times p(1 - p) / d^2$

Where, N=the sample size

z=value corresponding to 95% level of significance=1.96

p=the expected proportion of the target population practicing self-medication, 50%(constant)=0.5

q=1-p = 0.5

d= absolute precision 10% = 0.1 $((1.96)^2 \times 0.5 \times (1 - 0.5)) \div (0.1)^2$

N=96.04 respondents.

Hence N= 96 participants were considered.

Sampling technique

Simple random sampling was used to obtain the study samples. This is because it ensured that all members were equally represented in the study.

Sampling procedure

Simple random sampling was used. Equal-sized papers, which either contained yes or no, were folded and mixed in a bowl. Then each respondent chose one paper. Those who picked papers with yes were considered to participate in the study.

Data collection method

Data was collected from the respondents by use of self-administered questionnaires.

Data collection tools

The study was conducted using a semi- structured questionnaires which consisted of closed-ended questions. The questionnaire was written in very simple language.

The questionnaire was pretested to eliminate ambiguous questions.

Data collection procedure

After obtaining the introductory letter from the research committee of International Paramedical Institute-Maya, it was presented to the administration of International School of Nursing & Midwifery-Maya to allow commencement of data collection on the required participants. Written consent was obtained from respondents before data collection, questionnaires were administered, and collected back, once the respondents filled the required information on the day of distribution, and an appreciation in the form of a thank you was expressed to the clients. Data was collected from 4 pm to 6 pm for a period of 14 days.

Dependent variable

Self-medication with antibiotics.

Independent variable

Factors influencing the practice of self-medication.

Quality control

The self-administered questionnaires were pretested among students of the International Paramedical Institute-Maya to determine the extent to which the questions in the questionnaires addressed the variable of interest.
Questionnaires were also clearly explained to the respondents so that quality data could be obtained from them.

Inclusion criteria

Any nursing or midwifery student of the International School of Nursing & Midwifery who was present and had consented to the study.

Exclusion criteria

The extensors of the Diploma programs of nursing and midwifery are busy with their schedule.
The teaching and non-teaching staff did not participate in the study.

Data analysis and presentation

After collecting data, all questionnaires were thoroughly checked for completeness. Answered questionnaires were assigned unique numbers to avoid mixing up the data.
The collected data were fed into the Microsoft Excel Software version for analysis. After data analysis, the information obtained was presented in the form of tables, graphs, and pie-charts.

Ethical consideration.

An introductory letter was obtained from the research committee of the school (International Paramedical Institute, Maya). Permission from the administration of the International School of Nursing and Midwifery, Maya, was also sought. Consent was obtained from each respondent using a consent form after explaining the importance of the study. Confidentiality was maintained at all levels; in this regard, respondents were not required to write down their names in the questionnaires, and their responses were kept. A rapport was created with respondents that made them free to share information.

RESULTS

Demographic data influencing self-medication with antibiotics.

Table 1: Demographic data of the respondents(n=96).

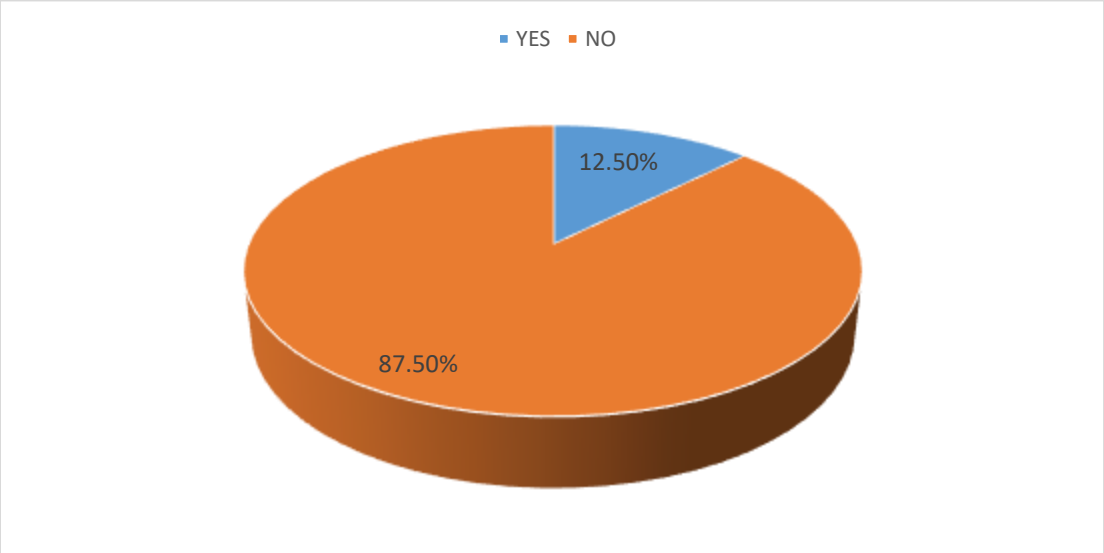
Variable	Category	Frequency (n=96)	Percentage (%)
Age	17-21years	50	52.0
	22-25years	38	39.5
	26years and above	8	8.3
Gender	Female	52	54.2
	Male	44	45.8
Relative in the health profession	Yes	63	65.5
	No	33	34.4
Year of study	1st year	39	40.6
	2nd year	31	32.3
	3rd year	26	27.1

Source: Primary data 2024

According to Table 1, the majority 52% were between the ages of 17 and 21 years, while only 8.3% were above 26 years. The majority of the participants were female, 54.2%, and 45.8% were male. 65.5% of the participants have a

relative in the health profession, while 34.4% do not have. The majority of the participants 40.6% were in the 1st year of their study, while only 27.1% were in their 2nd year of study.

Figure 1: Participants' responses on whether they have ever self-medicated with antibiotics (n=96).



According to Figure 1, the majority 87.5% had ever self-medicated with antibiotics, while 12.5% had never self-medicated with antibiotics.

Table 2: Demographic factors influencing self-medication with antibiotics (n=86).

Variable	Category	Frequency (n=86)	Percentage (%)
Age	17-21years	48	55.8
	22-25years	30	34.9
	26years and above	8	8.3
Gender	Female	50	58.1
	Male	36	41.9
Relative of a health professional	Yes	58	67.4
	No	28	32.6
Year of study	1st year	35	40.7
	2nd year	25	29.1
	3rd year	26	30.2

Source: Primary data 2024

According to Table 2, the majority 55.8% were aged between the age of 17 and 21 years, and only 8.3% were aged 26 years and above. A greater percentage of SMA was by females 58.1%while the males were 41.9%. The majority of the participants 67.4% have close relatives belonging to the health profession, while only 32.6% do not have. Most of the participants 40.7% were in the 1st year, while 29.1% were in the 2nd year.

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Hospital-related factors influencing self-medication with antibiotics.

Table 3: Table showing the hospital-related factors influencing self-medication with antibiotics (n=86).

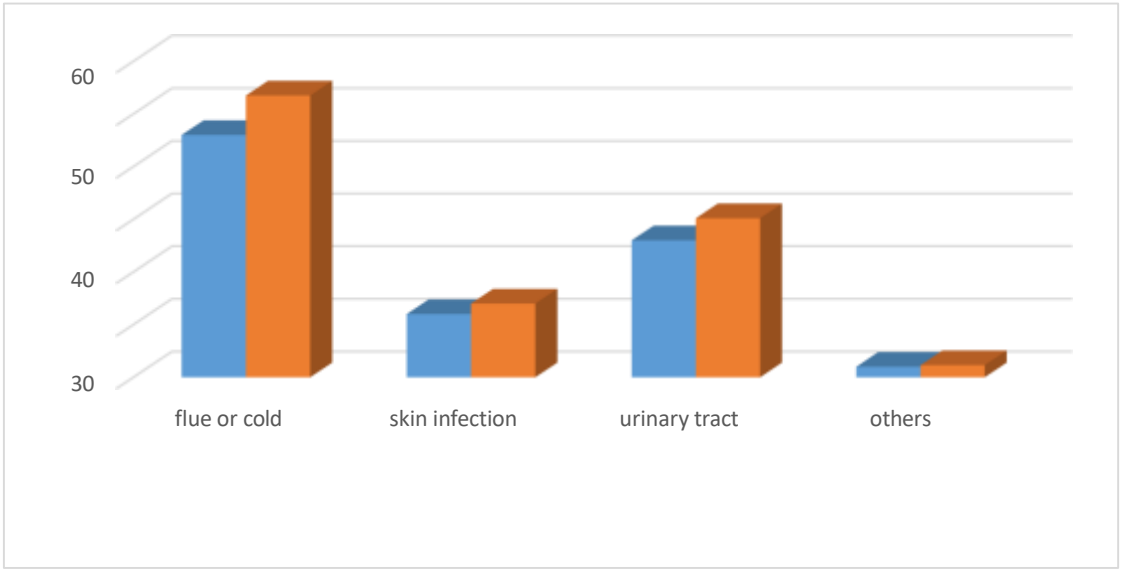
Variable	Category	Frequency(n=86)	Percentage(%)
Knowledge of the effectiveness o antibiotics against infections	Yes	32	37.2
	No	54	62.8
Ease of access to health facility	Very easy	15	17.4
	Difficult	20	23.3
	Easy	18	20.9
	Very difficult	33	38.4
Enough time to go to the facility	Yes	23	26.7
	No	63	73.3
Time spent without being worked on	Less than 30 minutes	46	53.5
	More than 30 minutes	40	46.5
Violation of health workers	Friendly	37	43.0
	Unfriendly	49	57.0
Is the cost of Consultation high?	Yes	59	68.6
	No	27	31.1
Conditions that influence self-medication	Flu or cold	46	53.5
	Skin infection	12	14.0
	Urinary tract infection	26	30.2
	Others	2	2.3
Unavailability of drugs at the health facility	Yes	68	79.1
	No	18	20.1

Source: Primary data 2024

According to Table 3, the majority of the participants 62.8% thought that antibiotics are effective against infections, while a minority 37.2% thought that antibiotics are effective. Most participants 38.4% revealed that it is very difficult to access the facility, while the least 17.4% have easy access to the facility. The majority of the participants, 73.3%, do not have enough time to visit the health facility, while the minority, 26.7%, have the time. Most participants 53.5% spend less than 30 minutes without being worked on, while the least 46.5% spend more than 30 minutes without being worked on. The majority of the participants, 57.0%, confirmed that the

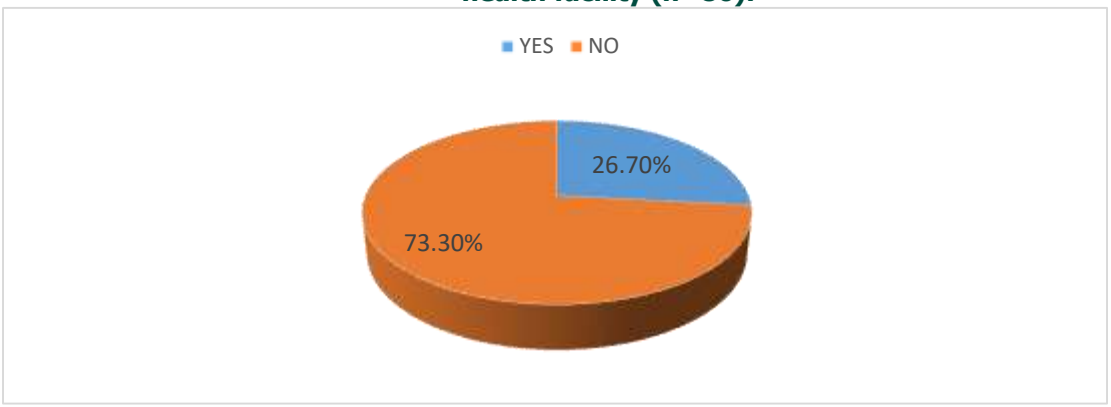
health workers are unfriendly, while 43.0% confirmed that the health workers are friendly. Most participants, 68.6%, agreed that the consultation fee was high, while the least, 31.1%, disagreed. The majority of the participants who self-medicate due to flue or a cold are 53.5%, and only 14.0% self-medicate due to skin infections. The majority of the participants 79.1% confirmed the availability of drugs at the health facility, while 20.9% did not.

Figure 2: Distribution of the participants' responses on the conditions that influence self- medication (n=86).



The majority of the participants who self-medicate due to flue or a cold are 53.5%, and only 14.0% self- medicate due to skin infections.

Figure 3: Distribution of participants' responses on whether they have time to visit the health facility (n=86).



The majority of the participants, 73.3%, do not have enough time to visit the health facility, while the minority 26.7% have the time.

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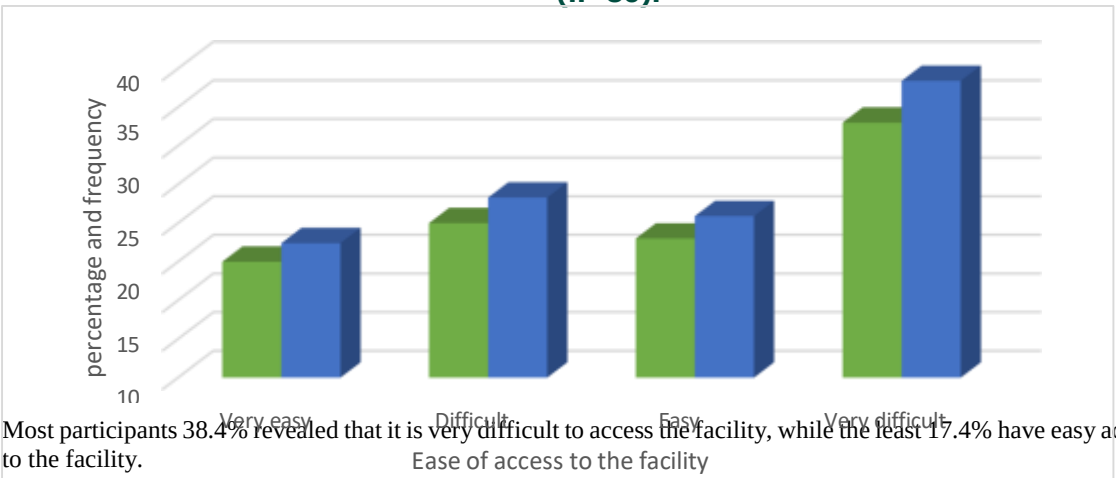
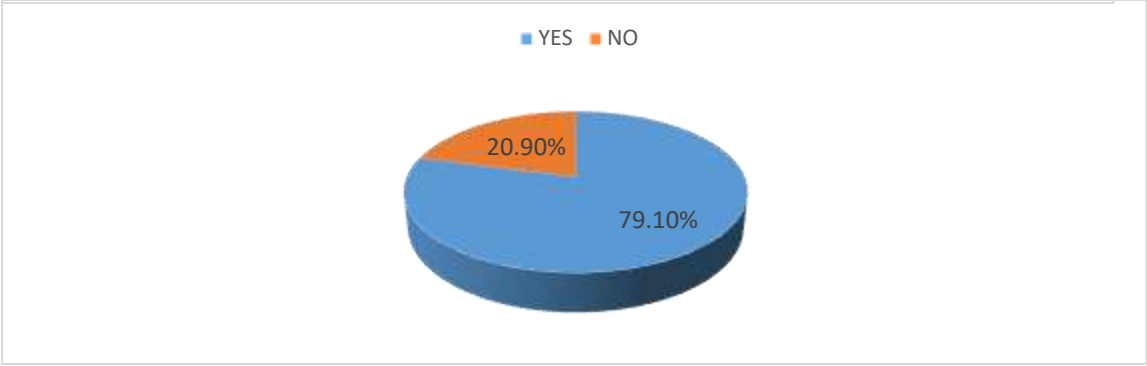
Figure 4: Distribution of participants' responses on the ease of access to the facility (n=86).



Most participants 38.4% revealed that it is very difficult to access the facility, while the least 17.4% have easy access to the facility.

Figure 5: Distribution of participants' responses on the availability of drugs at the health facility. (n=86)



The majority of the participants 79.1% confirmed the availability of drugs at the health facility, while 20.9% did not.

The common sources of antibiotics used for self-medication are.

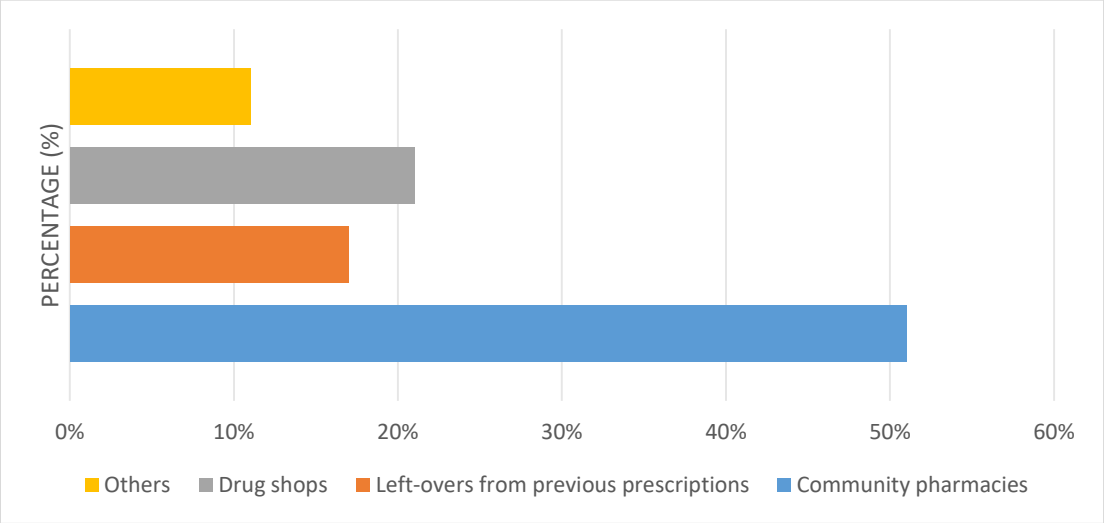
Table 4: Table showing the different sources of antibiotics used for self-medication(n=86)

Variable	category	Frequency(n=86)	Percentage(%)
Sources of information about drugs used for self- medication	Recommendation from community pharmacies	11	12.8
	Opinion from family members	22	25.6
	Previous doctor's prescription	38	44.2
	My own experience	15	17.4
Sources of antibiotics used for self- medication	Community pharmacies	44	51.1
	Leftovers of the previous prescription	15	17.4
	Drug shops	18	20.9
	Others	9	10.5

Source: Primary data 2024

Majority 44.2% of 86 participants, chose their drugs following the previous doctor's prescriptions, and only 12.8% depended on the recommendations by community pharmacies. Most 51.1% participants obtained their drugs from community pharmacies, while only 10.5% had other sources.

Figure 6: Distribution of participants' responses on where they obtain drugs from (N=86)



With reference to Figure 6, of 86 participants, 51.1% participants obtained their drugs from community pharmacies, while only 10.5% had other sources.

DISCUSSION

Demographic factors influencing self-medication with antibiotics.

The study revealed that high rates, 55.8% of self-medication, were attributed to the students aged 17-21 years. This is because the students can easily access information from the internet and rely on it. They can also rely on the information provided by their peers, probably due to limited experience health-wise. The above reason can favor self-medication among these students. These findings are in contrast with the study conducted by Ginenus et al. (2020), where self-medication was attributed to participants aged 25±3.23 years.

The study revealed that out of 86 participants, antibiotic self-medication was high among females, 58.1%. This is due to fear of disclosing their health issues to the doctors and the lack of time to visit the health facility. This information is in line with the study carried out by Valentina et al. (2023), on antibiotic self-medication patterns and associated factors in the context of COVID-19 in Medellin, Colombia.

Hospital-related factors influencing self-medication with antibiotics

The study revealed that the majority of the participants 62.8% thought that antibiotics are not effective for all infections. This is because they had knowledge that not all infections are bacterial in nature, making antibiotics not totally effective. This agrees with a study conducted in Northwest Nigeria on the attitude and knowledge of antibiotic resistance among community residents and undergraduate students (Olumide et al., 2018).

The study also revealed that 38.4% of the respondents had a lot of difficulty accessing the health facility. This factor accelerated the rates of self-medication with antibiotics. This is probably because of the high cost of drugs and medicines at that facility. This study agrees with another study conducted in Lebanon on antibiotic knowledge and self-medication practices (Antoun et al., 2017).

The study revealed that the majority of the participants, 73.3%, did not have enough time to visit the health facility. This is probably due to the fact that the students have a busy schedule and face difficulty with balancing their studies. This is in line with a study conducted in Malaysia on self-medication practices with antibiotics and associated factors (Adeel et al., 2021).

The study also revealed that the majority of the participants 53.5% take less than 30 minutes without being worked on at the health facility. This is probably because of the sufficient staff available at the health facility. This study

disagrees with that conducted in Bule-Hora town, South West Ethiopia, where the main reason for self-medication was prolonged waiting to get service in the health institutions (Fitsum, Kelil & Getahun, 2022).

According to the results obtained, the majority of the participants 57.0% confirmed that the health workers were unfriendly. This is a precipitating factor for self-medication with antibiotics, as the patients are offended by the negative attitude of the health workers towards them. This agrees with a study conducted by Deborah et al. (2018) in Nigeria.

The results revealed that the majority of the participants 68.6% self-medicated with antibiotics due to the high consultation fee encountered when they visit the health facility. This factor has led to the increasing rates of self-medication among medical students. This agrees with a study conducted in Sanaa city, Yemen, about self-medication with antibiotics (Sami et al., 2017).

The study revealed that 79.1% participants confirmed the availability of drugs at the health facility. This is probably due to the regular restocking of the facility to avoid stockouts. These results disagree with a study conducted by Felix & Christine (2019) on the availability, prices, and affordability of essential medicines in Malawi, where drugs were more available at the retail pharmacies, 71.1%, than at public facilities, 48.5%. This has led to the increased antibiotic self- medication rates.

The common sources of antibiotics used for self-medication are.

The study revealed that the majority, 44.2% of 86 participants, chose their drugs depending on the doctors' prescriptions. These findings point to the increasing self-medication with antibiotics. This is because of the fact that the specific drugs were able to produce the desired outcome on the former prescription. This is in line with the study that was conducted in Medina Al-Munawara, Saudi Arabia, which revealed that 54.5% self-medicated following previously prescribed medication (Abdullah & Soliman, 2019).

From the study, the findings showed that the majority, 51%, obtained their drugs from community pharmacies. These findings contribute to the increasing rates of antibiotic self-medication. This is because the drugs can easily be acquired by the patients. This corresponds with the study conducted in Bule-Hora town in Ethiopia, which showed that the majority of the patients, 92.3%, obtained drugs from community pharmacies (Fitsum et al., 2022).

CONCLUSION

Age, gender, belonging to a family with a health worker, and year of study influenced self-medication. Additionally, high consultation fees, unfriendly health workers, long distance to the health facility, difficult access to the facility, and lack of time to visit the facility, while community pharmacies were highlighted as the main sources of antibiotics used for treatment.

RECOMMENDATION

The government, through respective bodies, should advise the pharmacy owners and dispensers to stop the sale of antibiotics to patients without prescriptions.

Through mass media, the Ministry of Health should create awareness on the consequences of antibiotic self-medication so as to aid in its reduction, and if possible, put up penalties on those who fail to comply with laws.

Health workers should be more friendly to the patients to create a conducive environment in which the patients are able to share their health-related problems.

The health workers, especially those in the private facilities, should reduce the cost of consultation.

The health workers should only supply or dispense antibiotics on presentation of a valid prescription from a qualified prescriber.

The students should visit health facilities every time they start to feel sickly and they also should always present to the pharmacies and drug shops with a valid prescription to reduce the rates of antibiotic self-medication.

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LIST OF ABBREVIATIONS

AMR:	Anti-microbial Resistance
LMICs:	Low and Middle-Income Countries
OTC:	Over-the-counter drugs
SMA:	Antibiotic Self-Medication
WHO:	World Health Organization

SOURCE OF FUNDING
The study was not funded.

CONFLICT OF INTEREST
The author declares that there was no conflict of interest.

AUTHOR CONTRIBUTIONS
KN- Developed and investigated a study.
MN- Supervised the Study.
MMM- Supervised the study.

DATA AVAILABILITY
Data is available upon request.

INFORMED CONSENT
There was full disclosure; full comprehension, and respondents voluntarily consented to participate in the study.

AUTHOR BIOGRAPHY
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Mayanja M Magala is a research supervisor affiliated with the International Paramedical Institute Maya.

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