



The Prevalence Of Self-Medication And Its Associated Factors Among Students Of The Bayelsa Medical University

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Abstract

Self-medication (SM) is drug use without a doctor's or licensed health practitioner's prescription. While it is not without draw backs, it has recently grown to become a significant part of health systems globally. Thus, if well-supervised and regulated, self-medication practice could significantly lessen a country's health-care burden, especially in low and middle-income countries. To determine the prevalence of self-medication and its associated factors among students of the Bayelsa Medical University. A structured questionnaire was used in cross-sectional descriptive research among 252 medical students at Bayelsa Medical University (BMU) to obtain data about self-medication practices. Multi-staged sampling method was used for data collection, while Microsoft Excel and SPSS version 25 were used for the data entry and analysis. The research revealed a relatively high SM prevalence of 217 (86.1%) among BMU students. The most widely used medications for SM included drugs in the group of Analgesics (149 respondents, 59.1%), Antimalarial drugs (104, 41.3%) and Vitamins (75, 29.8%). Also, (128 students, 58.9%) reported that SM cured the disease conditions for which it was used, 60 respondents (27.6%) believed it only improved the disease condition while about a tenth (23 respondents, 10.6%) thought self-medication prevented diseases. This research revealed relatively high self-medication prevalence among the students, which is similar to reviewed literature. The most frequent illnesses for which respondents self-medicated were headaches and malaria, while the most notable class of self-medication drugs were analgesics. Thus, BMU should orient its students about self-medication in general. Doctors/healthcare practitioners at the university's health-center should make more effort to enlighten patients about prescribed medications and the disease-conditions.

Keywords: Self-medication, Self-care, Health system, Health-care burden.

INTRODUCTION

As stated by the World Health Organization (1), "self-medication is the use of drugs by an individual to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of medication prescribed by a physician for chronic or recurrent diseases or symptoms". Economic, political, and cultural issues have all contributed to an upsurge in

self-medication practices, which has now become a key public health issue. However, the prevalence of self-medication practices varies between the advanced and developing nations due to varying socioeconomic and cultural factors, in addition to the peculiarities in healthcare systems and structure for example, access to health-care, policies in dispensing

medicines and compensation rules (2). In nations economically disadvantaged, which are usually resources developing nations, self-medication is used in managing most events of illness, therefore posing much of public and professional concerns about the irrational use of medicines (2). Self-medication is one out of the main causes contributing to drug-related challenges such as antimicrobial resistance, which is now a global issue, notably in underdeveloped nations where medicines are commonly available without a prescription. The WHO stressed the importance of effectively teaching and controlling self-medication to be able to minimize drug-related issues such as antibiotic resistance (3, 4, 5). While many of these studies about SM in the country were tilted towards the general populace, the relatively few research done in Nigeria in undergraduate levels were mostly in the western and northern regions of the country and more of these were specifically on antimicrobial self-medication (6). Globally, self-medication practice is employed by diverse groups of people. The challenge of SM is universal that requires public health attention as a result of the potential threats it poses (7). In the UK, where self-medication makes up for 50% of all medical care, and its practice is relatively effective. Self-medication is not uncommon nowadays in our societies, but being practiced worldwide (8, 9).

Furthermore, BMU was only recently created, a specialized medical university and none of such studies has been conducted amid its students in this institution so far. Thus, it is crucial that similar research be conducted and compared to other research works steered in and outside this region. Most of all, it is essential and necessary to ascertain if drifts in prevalence, pattern and associated factors of SM among the student population have occurred in recent years. These new developments when analyzed by researchers can be of importance in public health and a good indicator of disease burden in the health-care system (10, 6, 11, 12).

METHODOLOGY

Study Design

This was an institution-based descriptive cross-sectional research, carried out in BMU among its students.

Study Area

This research was done in Bayelsa Medical University, Yenagoa Bayelsa State. Bayelsa State is at the southernmost section of Nigeria, situated in the Niger Delta area. BMU was created in August 2018 by the government of Bayelsa State, Nigeria, and is a specialized medical university in the state capital. The government did so pursuant to a provision in the Federation's Constitution that allows state governments to establish tertiary institutions/universities in the nation. The BMU's strategic goal is to develop medical professionals capable of working in many fields of medicine/health and related disciplines in any region of our globe. The strategies of the institution for achieving this vision include academic collaborations, partnerships, and relations with alike institutions both locally and internationally, recruiting standard, skilled and proficient academicians from anywhere in the globe and acquiring recent and world-class medical research tools and services to aid the fulfillment of the university's mandate. There are over 500 students currently, and more than 200 academic and non-academic staff running 24 programmes. At present, the institution has 7 faculties including Basic medical faculty, Health sciences,

Pharmaceutical sciences, Dentistry, Sciences, Clinical Sciences, and Basic clinical sciences. These faculties offer undergraduate degree programs and comprise mainly of scholars from diverse regions of Nigeria. Other programmes include BMU foreign language institute, centre for entrepreneurial and general studies, and premedical/foundation program.

Study Population

The population of study for this research consists of BMU's undergraduate students.

Inclusion and Exclusion Criteria

Inclusion Criteria

1. Undergraduate students of BMU.
2. Undergraduate Students from 100 to 300 levels (highest level currently).

Exclusion Criteria

1. Undergraduate students who were not present at the time of the study.
2. Students in the university's pre-degree (Foundation program).

3. Students having industrial training (IT) programs who will not be readily available.

Sample size

The following statistical formula was used to estimate the minimal sample size in the research:

$$n = (Z\alpha^2 \times pq) / d^2$$

By (13).

Where n = minimum sample size

$Z\alpha = 1.96$ at 95% confidence level obtained from standard statistical table of normal distribution.

P = Population with desired characteristics was taken to be 81.8% prevalence, from a previous study which was aimed at assessing the self-medication practice and factors affecting it among undergraduate students at a private university in Nigeria (3).

Note $q = 1 - p$

Therefore, $q = 1 - 0.82 = 0.18$ $P = 0.82$ and $q = 0.18$

$d = 0.05$.

Thus,

$$n = 1.96^2 \times 0.82 \times 0.18$$

$$0.05^2 \quad n = 226.8$$

Assuming a non-response rate of 30%. Accounting for 30% Non-response rate (NRR) $n = N / (1 - \text{NRR}) = 226.8 / (1 - 0.3) = 330$ Approx.

Hence, the minimum-sample-size required = 330

Sampling Techniques

Quantitative: The sample size was determined using a multi-staged sampling technique method.

Stage 1: Among the seven faculties of the institution, six were selected via simple-random sampling (balloting). The selected faculties were; Basic medical sciences, Sciences, Health Sciences, Dentistry, and Clinical sciences while the non-selected faculties include Pharmacy and Basic clinical sciences.

Stage 2: Determination of the participating students from each level of study (100 to 300 level) using proportionate sampling. This was performed pursuant to the student population at the three levels of study. There were over 250 students in year one, and above hundred students in both year 2 and 3 respectively.

Thus, the following numbers of participants were allotted to each study level according to the student population at the three levels of study.

Year 1 – 180 participants

Year 2 – 80 participants

Year 3 – 70 participants

Stage 3: Using proportional sampling, participants to be included for each faculty at each study levels (years 1 to 3) was determined. Additionally, this was done depending on the student population in each faculty.

Year one

Basic medical science – 60

Health sciences – 50

Sciences – 30

Dentistry – 10

Clinical sciences – 30

Total participants in year one = 180

Year two

Basic medical science – 40

Health sciences – 20

Sciences – 20

Dentistry – Nil

Clinical sciences – Nil

Total participants in year two = 80

Year three

Basic medical sciences – 30

Health sciences – 20

Sciences - 20

Dentistry – Nil

Clinical sciences – Nil

Total participants in year three – 70

NB: During data collection, there were no admitted students in clinical sciences and dentistry faculties for levels 2 as well as 3. There was thus, no student selected from the faculties at these levels.

Stage 4: Using simple-random-sampling to select participants from the selected faculties in stage 3 at

all levels of study (100 to 300level). This was performed by balloting, that is, each participating student picked ballots with yes or no papers. Those who handpicked yes were selected to participate in the study.

That is,

Year one = 180 Participants, Year two = 80 Participants, Year three = 70 Participants, Participants' total no. = 330

Study Tools Type of Tool

This study employed a self-designed structured questionnaire (quantitative data). The questionnaire was adapted from (6) and designed such that the participants could administer it themselves, ensuring that the questions were comprehensive enough for each student to respond separately and independently.

Pretesting

The questionnaire was pre-tested at the Bayelsa State School of Nursing. The pre-test sample size was 10% of the required sample size (330), which was 33. This was critical for this study instrument to make changes in it before using it in the actual study. The numbers of questions in it were reduced from 27 to 23 resulting from the corrections. Due to this, the average time spent answering the questionnaire decreased.

Data Collection

Self-administered questionnaires were used and were handed out to the participants in the lecture halls during their faculty general courses and retrieved by course representatives afterwards at their hostels.

Questionnaire

There were 3 sections to the questionnaire.

Section 1: Had 8 items that indicated the sociodemographic data of respondents.

Section 2: Included 12 questions that explored the respondent's frequency of SM practice, drugs commonly used and the outcome of self-medication.

Section 3: Had 3 items that elicited the associated factors which influenced self-medication practice.

The participants responded to 23 questions in total.

Data Analysis

Data entry was done manually.

Descriptive Statistics: Discrete variables were expressed as frequencies and proportions whereas continuous variables were summarized using standard deviations and means.

Inferential Statistics: The socio-demographic features of the research participants were the independent variable whereas, the outcome (dependent) variables were SM practice prevalence and those factors associated with it.

A p-value of less than 0.05 was considered statistically significant when using the Chi-square test to find relationships between categorical variables.

A multivariate-logistic-regression analysis was conducted to determine the characteristics and variables associated with self-medication.

Validity/Reliability of Study tools

Data Reliability & Validity Plan: The questionnaire was pretested, and face and content validity tests were performed.

Data Entry Plan: Quantitative data were coded, evaluated by employing SPSS. Data Analysis: SPSS version 25 was adopted analyzing the data.

Ethical considerations

Permissions: Permission pertaining the research work was taken from the Vice Chancellor of the BMU and the university's research ethical committee - Ethical Approval No. REC/2022/008 and University of Port Harcourt ethical committee with ethics approval number UPH/CEREMAD/REC/119

Consent: An informed consent was taken from all the respondents before they participated in the study.

Confidentiality: All information acquired from the respondents was kept strictly secret and confidential.

Privacy: The identity of the participating students was kept anonymous by not having their names on the questionnaires.

Risks: There were no risks/hazards identified in this investigation.

Benefits: The benefits of this research span across the participants (BMU students), the university where the research was performed (Bayelsa Medical

University) and University of Port Harcourt, Rivers State.

First, the study's findings will help the health centre of the school to improve its medical services which in turn will benefit the students. It will also give an idea of how frequent the BMU students self-medicate and thus giving room for recommendations for the university including its students. Second, the university would benefit from this survey in that the results from this research could be published in the university's journal. Also, the research was the first of its kind steered in the institution thus, it has closed a gap of literature.

Timelines for the Study

This study spanned through 1st of February, 2022 to 30th of May, 2022.

RESULTS

Socio-demographic characteristics of Respondents

Two hundred and fifty-two (252) students answered the questionnaire out of three hundred and thirty (330) participants. Forty (40) of them were not returned, while thirty and eight were not properly answered by the participants and therefore could not be analyzed. Table.1 illustrates that majority were female (158, 62.7%), and aged less than 25 years (233, 92.5%). The mean age of students who responded was 22.7 years (standard deviation of 5.9 years). Quite a great number of those who responded were single (247, 98.0%), Christians (248, 98.4%) and of the Ijaw ethnic nationality (136, 54.0%). Almost half (116, 46.0%) had an average monthly income below twenty- four thousand naira (Table 1).

As presented in Table.2, 108 participants (42.9%), 76 (30.2%) and 45 participants (17.9%) were in the basic medical sciences, health sciences and clinical sciences faculties of learning respectively. About half (150 participants, 59.5%) were in their first year (Level) of study (Table 2).

Table 1: Sociodemographic characteristics of the participants

Characteristics	Frequency N = 252	Percent (%)
Age		
≤ 25 years	233	92.5
>25 years	19	7.5
Gender		
Male	94	37.3
Female	158	62.7
Marital status		
Single/separated	247	98.0
Married	5	2.0
Tribe		
Ijaw	136	54.0
Delta/Edo	44	17.5
Igbo	31	12.3
Yoruba	22	8.7

Others	19	7.5
Religion		
Christians	248	98.4
Muslims	4	1.6
Average monthly income		
≤ 24,999 naira	116	46.0
25 – 49,999 naira	87	34.5
50 – 100,000 naira	42	16.7
>100,000 naira	7	2.8

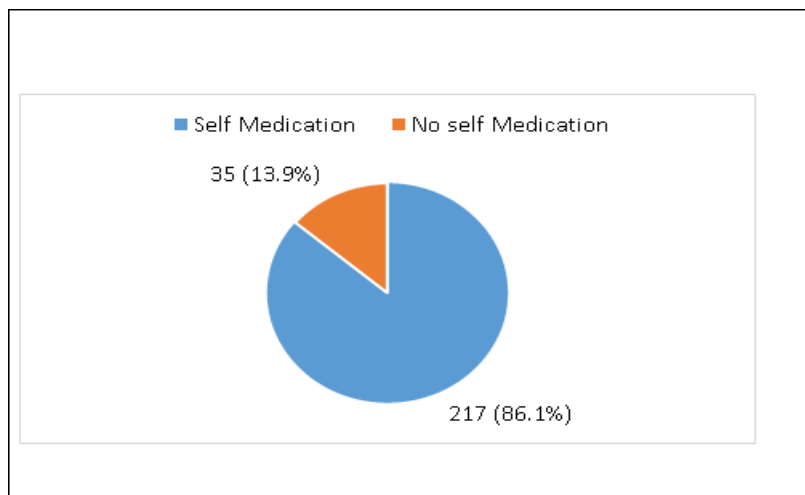
Table 2: Faculty and year of study of participants in the study

Characteristics	Frequency N = 252	Percent (%)
Faculty of Study		
Basic Medical Science	108	42.9
Health Science	76	30.2
Clinical Sciences	45	17.9
Science	15	6.0
Dental Science	8	3.2
Year of Study		
Year 1	150	59.5
Year 2	57	22.6
Year 3	45	17.9

The prevalence of self-medication among the study respondents

Two hundred and seventeen (217) respondents were indulged in self-medication practice, giving a prevalence rate of 86.1% among the student population in the BMU (Figure 1).

Figure 1: Prevalence of self-medication among the students in BMU



The Reasons for Self-Medication Practice among the Students

Among the first category of reasons, the most predominant reason for the practice of self-medication – symptoms of illness, was headache (159, 63.1%). Other symptoms that necessitated self-medication include fever (84, 33.3%), body ache (71, 28.2%) and cough (49, 19.4%) as illustrated in Table 3. Suspected illnesses for which respondents resulted to SM made up the second category of SM reasons (Table 3). These included malaria (171, 67.9%), respiratory tract infection, (RTI) (28, 11.1%), skin disease (23, 9.1%) and sexually transmitted infections, STIs (19, 7.5%). Other reasons for self-medication practice as illustrated in Table 3 included having a previous knowledge/experience with the medicines used in self-medicating (101, 40.1%), mild illness (92, 36.5%) and use in emergency condition (46, 18.3%). Thirty-three respondents (13.1%), 17 respondents (6.7%) and 11 respondents (4.4%) took self-medication for prevention, admitting that it was less time-consuming and less expensive, respectively (Table 3).

Table 3: The reasons for self-medication practice among the students

Reasons for self-medication	Frequency N = 252	Percent (%)
Symptoms for taking self-medication*		
Headache	159	63.1
Fever	84	33.3
Body Ache	71	28.2
Cough	49	19.4
Diarrhea	10	4.0
Others ^a	27	10.7
Suspected illness for which self-medication was taken*		
Malaria	171	67.9
Respiratory Tract Infections	28	11.1
Skin Disease	23	9.1
Sexually transmitted diseases	19	7.5

Peptic Ulcer disease	17	6.7
Others ^b	17	6.7
Other reasons for self-medication*		
Students have previous experience about the drug	101	40.1
Student considered the illness as mild	92	36.5
Emergency use	46	18.3
For the prevention of unknown/known illness	33	13.1
Self-medication is less time consuming	17	6.7

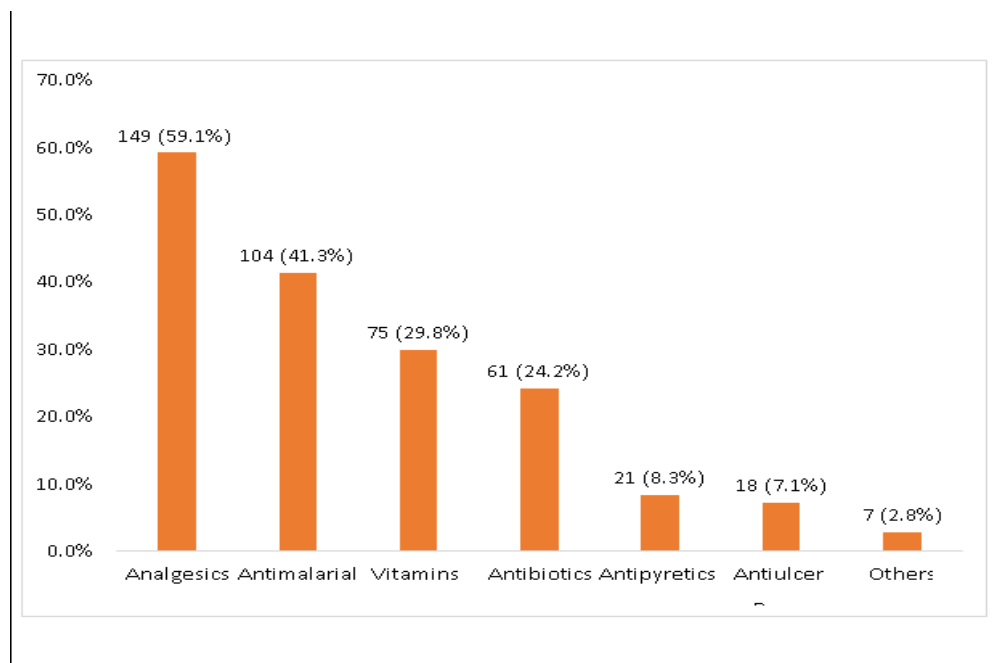
*More than one option applies, Othersa include Catarrh, abdominal pain, menstrual pain and low blood level; Othersb include Acne, Allergies/Asthma, and Sickle cell disease.

The most commonly used drugs for self-medication by the students

Figure 2 illustrates that the most widely used medicines included medicines in the family of Analgesics (149 respondents, 59.1%), Antimalarial drugs (104, 41.3%) and Vitamins (75, 29.8%).

Others included Antibiotics (61, 24.2%) antipyretics (21 8.3%) and antiulcer drugs (18, 7.1%).

Figure 2: Drugs commonly used by students for self-medication of BMU, Yenagoa.



The perception of Students about self-medication

Slightly above one-third of respondents (92, 36.5%) considered self-medication practice as an acceptable behavior (Table 4). About 2 in every 5 respondents (108, 42.9%) accepted sharing of medications with family members, neighbors, and friends (Table 4). Above half of 217 students who use self-medication (128 students, 58.9%) believed it cured the illness/ailment for which it was used, 60 respondents (27.6%) believed it only improved the disease condition while about a tenth (23 respondents, 10.6%) thought self-medication prevented diseases.

Table 4: Perception about Self-Medication among Students in BMU

Perception	Frequency N = 252	Percent (%)
Do you think self- medication is acceptable	92	36.5
Place from where drugs are gotten without prescription		
From pharmacy shops	191	75.8
From medicine vendors	9	3.6
From friends and family members	34	13.5
Other	4	16
Share medications with family members, neighbors and friends	108	42.9
The usual outcome of self- medication		
		Frequency N = 217
It cures the disease condition	128	58.9
Only improves the condition	60	27.6
It prevents the disease	23	10.6
It does not cure, improve or prevent the disease	6	2.9

The factors associated with self-medication among the students.

Table 5 demonstrates that not one of the respondents' socio-demographic features was significantly associated to their indulgence in SM behavior or practice in the research. Age ($\chi^2 = 0.19$; $p = 0.659$), gender ($\chi^2 = 2.21$; $p = 0.137$), marital status ($\chi^2 = 0.16$; $p = 0.690$) and religion ($\chi^2 = 0.42$; $p = 0.517$) were not in any way associated with SM practice (Table 5). Meanwhile, the faculty of study was significantly associated ($\chi^2 = 9.75$; $p = 0.045$) with self-medication practice. Comparing to the sciences faculty students, participants in the faculty of health-sciences had a considerably higher likelihood of using self-medication (OR - 3.74; $p = 0.017$). (Table 6). Of all the health-seeking behavior explored here, illness seen to be mild ($\chi^2 = 11.03$; $p = 0.001$), drug use in emergency conditions ($\chi^2 = 4.28$; $p = 0.038$) and previous experience with medication ($\chi^2 = 19.99$; $p = 0.001$) were seen to be associated significantly with SM practice (Table 7). When illnesses were considered mild, students were about five times more likely to indulge in self-medication (OR – 5.29; $p = 0.002$) and they were four times more probable in adopting SM practice for emergency use (OR – 4.20; $p = 0.045$). Importantly, a previous/past experience with drug, increases the chance of self-medication 13 times higher (OR– 13.84; $p = 0.001$) among the participating students of this study (Table 7).

Table 5: Association between Socio-Demographic Characteristics and Self-Medication among students of BMU, Yenagoa

Characteristics	Self-medication		Chi-square (pValue)	OR (95%CI)	p-value
	Yes N = 217(%)	No N = 35 (%)			
Age					
≤ 25 years	200 (85.8)	33 (14.2)	0.19 (0.659)	1.40 (0.31 – 6.35)	0.661
>25 years	17 (89.5)	2 (10.5)		1	
Gender					
Male	77 (81.9)	17 (18.1)	2.21 (0.137)	1.72 (0.84 – 3.52)	0.140
Female	140 (88.6)	18 (11.4)		1	
Marital status					
Single/separated	213 (86.2)	34 (13.8)	0.16 (0.690)	1.57 (0.17 – 14.44)	0.692
Married	4 (80.0)	1 (20.0)		1	
Tribe					
Delta/Edo	37 (84.1)	7 (15.9)	0.36 (0.986)	1.17 (0.45 – 2.99)	0.751
Ijaw	117 (86.0)	19 (14.0)		1.20 (0.28 – 5.17)	
Yoruba	19 (86.4)	3 (13.6)		1.28 (0.34 – 4.80)	
Igbo	27 (87.1)	4 (12.9)		1.61 (0.30 – 8.57)	
Others	17 (89.5)	2 (10.5)		1	
Religion					
Christians	214 (86.3)	34 (13.7)	0.42 (0.517)	2.10 (0.21 – 20.76)	0.526
Muslims	3 (75.0)	1 (25.0)		1	
Average monthly income					
≤ 24,999 naira	102 (87.9)	14 (12.1)	4.24	1.21 (0.14 – 10.84)	0.862

25 – 49,999 naira	70 (*80.5)	17 (19.5)	(0.236)	0.69 (0.08 – 6.09)	0.735
50 – 100,000 naira	39 (92.9)	3 (7.1)		2.17 (0.19 – 24.39)	0.531
>100,000 naira	6 (85.7)	1 (14.3)		1	

Table 6: Association between faculty and year of study of participants and self-medication among students of BMU, Yenagoa

Characteristics	Self-medication		Chi-square (pValue)	OR (95%CI)	pValue
	Yes N = 217(%)	No N = 35 (%)			
Faculty of Study					
Basic Medical Science	89 (82.4)	19 (17.6)	9.75 (0.045)	0.72 (0.15 – 3.46)	0.682
Clinical Sciences	36 (80.0)	9 (20.0)		0.62 (0.12 – 3.23)	0.566
Dental Science	6 (75.0)	2 (25.0)		0.46 (0.05 – 4.11)	0.488
Health Science	73 (96.1)	3 (3.9)		3.74 (1.57 – 24.63)	0.017
Science	13 (86.7)	2 (13.3)		1	
Year of Study					
Year 1	134 (89.3)	16 (10.7)	3.27 (0.195)	1	
Year 2	46 (80.7)	11 (19.3)		0.49 (0.22 – 1.15)	0.220
Year 3	37 (82.2)	8 (17.8)		0.55 (0.22 – 1.39)	0.845

Table 7: Association Between Health Seeking Behavior and Self-Medication among Students in BMU, Yenagoa

Yes	41 (91.1)	4 (8.9)	1.14	1.81 (0.60 – 5.39)	0.290
No	176 (85.0)	31 (15.0)	(0.285)		
Waiting time in clinic is too long					
Yes	68 (90.7)	7 (9.3)	1.85	1.83 (0.76 – 4.39)	0.178
No	149 (84.2)	28 (15.8)	(0.173)		

Yes	69 (88.5)	9 (11.5)	0.52	0.74 (0.33 – 1.67)	0.471
No	148 (85.1)	26 (14.9)	(0.470)		
Student’s lack of time to visit clinic					
Yes	62 (86.1)	10 (13.9)	0.00	1.00 (0.45 – 2.20)	1.000
No	155 (86.1)	25 (13.9)	(1.000)		
Student has health insurance					
Yes	90 (83.3)	18 (16.7)	1.22	0.67 (0.33 – 1.36)	0.272
No	127 (88.2)	17 (11.8)	(0.269)		

Student uses school clinic					
Yes	151 (85.8)	25 (14.2)	0.05	0.92 (0.42 – 2.01)	0.826
No	66 (86.8)	10 (13.2)	(0.825)		
The illness was mild					
Yes	88 (95.7)	4 (4.3)	11.03	5.29 (1.80 – 15.51)	0.002*
No	129 (80.6)	31 (19.4)	(0.001*)		
Drug use in emergency					
Condition					
Yes	44 (95.7)	2 (4.3)	4.28	4.20 (1.97 – 18.16)	0.045*
No	173 (84.0)	33 (16.0)	(0.038*)		
Previous experience about the drug					
Yes	99 (98.0)	2 (2.0)	19.99	13.84 (3.24 – 59.14)	0.001*
No	118 (78.1)	33 (21.9)	(0.001*)		
For prevention of unknown illness					
Yes	32 (97.0)	1 (3.0)	3.74 (0.053)	5.88 (0.78 – 44.50)	0.086
No	185 (84.5)	34 (15.5)			

Table 8: Association between Clinical Symptoms, Medical Conditions and Self-Medication among Study Participants

Fever					
Yes	82 (97.6)	2 (2.4)	13.95	10.02 (2.34 – 42.87)	0.002*
No	135 (80.4)	33 (19.6)	(0.001*)		
Headaches					
Yes	153 (96.2)	6 (3.8)	36.86	11.56 (4.58 – 29.17)	0.001*
No	64 (68.8)	29 (31.2)	(0.001*)		
Diarrhoea					
Yes	10 (100.0)	0 (0.0)	1.68	3.59 (0.31 – 62.69)	0.198
No	207 (85.5)	35 (14.5)	(0.195)		
Cough					
Yes	49 (100.0)	0 (0.0)	9.81	20.85 (1.25 – 346.2)	0.002*
No	168 (82.8)	35 (17.2)	(0.002*)		
Body aches					
Yes	70 (98.6)	1 (1.4)	12.87	16.19 (2.17 – 120.70)	0.007*
No	147 (81.2)	34 (18.8)	(0.001*)		

Malaria					
Yes	163 (95.3)	8 (4.7)	37.74	10.19 (4.37 – 23.76)	0.001*
No	54 (66.7)	27 (33.3)	(0.001*)		
STD					
Yes	19 (100.0)	0 (0.0)	3.31	6.97 (0.41 – 118.2)	0.069
No	198 (85.0)	35 (15.0)	(0.069)		
Respiratory tract infection					
Yes	28 (100.0)	0 (0.0)	5.08	10.68 (1.55 – 178.8)	0.024*
No	189 (84.4)	35 (15.6)	(0.024*)		
Peptic ulcer					
Yes	17 (100.0)	0 (0.0)	2.94	1.17 (0.82 – 1.60)	0.087
No	200 (85.1)	35 (14.9)	(0.086)		
Skin disease					
Yes	23 (100.0)	0 (0.0)	4.08	8.57 (1.65 -144.47)	0.044*
No	194 (84.7)	35 (15.3)	(0.043*)		

Table 8 shows clinical symptoms that are significantly associated with SM. They include fever ($\chi^2 = 13.95$; $p = 0.001$), headaches ($\chi^2 = 36.86$; $p = 0.001$), cough ($\chi^2 = 9.81$; $p = 0.002$), and body aches ($\chi^2 = 12.87$; $p = 0.001$). The odd of SM is significantly higher with fever (OR – 10.02; $p = 0.002$), headaches (OR – 11.56; $p = 0.001$), cough (OR – 20.85; $p = 0.001$) and body pains (OR – 16.19; $p = 0.001$).

Disease conditions associated with SM included malaria ($\chi^2 = 37.74$; $p = 0.001$), RTIs (respiratory tract infections) ($\chi^2 = 5.08$; $p = 0.024$) and skin diseases ($\chi^2 = 4.08$; $p = 0.043$). Malaria (OR – 10.19; $p = 0.001$) and respiratory tract infection, RTI (OR – 10.68; $p = 0.001$) increases SM possibility by 10-folds (Table 8).

Table 9: Knowledge about drugs used and the information source for self-medication practice.

Knowledge about Drugs used for Self- Medication		
Participants know the indication for drug used for self-medication	190	75.4
Participants know the dose of the drug used for self-medication	186	73.8
Participants know the duration to take the drug used for self-medication	169	67.1
Source of Information about Self-Medication		

Recommended by healthcare personnel but without prescription	116	46.0
Read the label or leaflet or promotional material of the drug	84	33.3
Received advise from neighbors, friends and relative	60	23.8
Received no advice	43	17.1

DISCUSSION

Prevalence of Self-Medication among the Students of Bayelsa Medical University in our findings shows that Self-medication is more prevalent in some countries than others and in different regions in the globe. It also varies from one institution to another. These variations maybe due to dissimilarities in the methodologies employed in the studies inclusive of various sociodemographic and economic and social factors peculiar to each of those populations of research. Self-medication prevalence was found to be rather high (217, 86.1%) among BMU students in this study. For example, although 35 (13.9%) of the 252 respondents said they did not self-medicate, 217 (86.1%) of them said they did. This is consistent with the study done by, (3) at a Nigerian private university, which investigated SM practice and the risk/associated factors related with it in undergraduate students and discovered that it was widespread in 81.8% of them. Additionally, a comparable research performed in Kuwait among college students found a startlingly high self-medication rate. The perceived intensity/mildness of the diseases by the respondents (34.13%) and their dissatisfaction with health-care services (26.34%), among other factors, may be the cause of this relatively high prevalence among BMU students. These factors appeared to be the key drivers of the behavior/practice of self-medication in the population studied. It is obvious that when students perceived the illness as not severe or mild, they became more probable to involve in SM behaviors or practice, coupled with their experiences with previous medications that probably cured their condition. Another factor that possibly encouraged the respondents' self-medication (SM) behavior is their dissatisfaction with the university's health center as a good number of those who responded (66, 26.34%) were not satisfied with services rendered to them. And although self medication practice was not

substantially influenced by sociodemographic characteristics in this investigation, the literature review revealed that females self-medicate more frequently than males do.

The Reasons for Self-Medication among Bayelsa Medical University Students show that headache (159, 63.1%) appeared to be most common/frequent cause of Self Medication in the first category of reasons – (symptoms of illness), and this could possibly be related to high stress levels among the students, which caused them to experience stress-related headaches, resulting to the frequent use of analgesic-medicines in treating the headaches. Other symptoms that necessitated self-medication include; fever (84, 33.3%), body ache (71, 28.2%) and cough (49, 19.4%) as demonstrated in Table. 3. Strikingly, fever was among the key symptoms that prompted frequent self-medication practice, which may be linked with or related to malaria fever as it has a relatively high endemicity in the south-south region of the country. In general, females use medicines in treating their menstruation symptoms (dysmenorrhea – menstrual pains), which perhaps is resulting from the severe pain they feel or the wide variety of analgesics at their disposal. The second group of reasons for SM included suspected ailments for which respondents turned to self-medication (Table 3). These include Malaria (171, 67.9%), RTIs (28, 11.1%), skin disease (23, 9.1%) and STIs (19, 7.5%). Again, malaria was listed as the illness/condition that people most usually suspected (self-diagnosed), and this is likely because malaria is among few of diseases that people (including medical personnel) in the tropics most regularly diagnose. Apart from malaria, it was widely reported that RTIs were among commonest medical conditions that influenced self-medication behavior or practice. This may have resulted from the relatively wider spectrum of mild to moderate respiratory tract conditions/illnesses that resolve literally or the self-

limiting nature of some RTIs with or without treatment, including the common cold, minor allergies, and sore throats. According to Table 3, other explanations for self-medication include previous drug use (101, 40.1%), moderate sickness (92, 36.5%), and medications use in an emergency situation (46, 18.3%). It is obvious that when there is a positive outcome with a self-medicated drug by the user, likelihood of reusing such medicines increases. Drugs usage in emergency situations such as in contraceptive use could be rampant as the study population is mostly of adolescents. Thirty-three respondents (13.1%), 17 respondents (6.7%) and 11 respondents (4.4%) took self-medication for prevention, because it was considered less time-consuming and less expensive, respectively (Table 3). However, the most commonly used drugs for self-medication by BMU students as seen in (Figure 2) illustrates that the most used drugs included drugs in the family of Analgesics 149 respondents, 59.1%, Antimalarial drugs 104, 41.3% and Vitamins 75, 29.8%. Others include Antibiotics 61, 24.2% antipyretics 21 8.3% and antiulcer drugs 18, 7.1%. Analgesic medications were more often taken to self-medicate, most likely because individuals generally treat symptoms rather than the illness itself. Furthermore, they are medications that are quite inexpensive and widely accessible over the counter in practically and almost all medicines stores/pharmacies. The finding is backed by (14) who established the fact that the most widely and commonly used class of medicines used was said to be analgesics 13.1%; anti-pyretic 12.7%; anti-inflammatory 9.9%; anti-histamines 9.7%; antacids 9.6%; Nutrients/energy supplementations such as vitamins and minerals 8.6%; topical medicines, which include anti-fungal, anti-microbial and analgesics 7.9%; antibiotics 6.7%; nasal or ear/eye drops 5.2%; laxatives 4.1%; traditional medicines 2.1%; corticosteroids such as anti-asthmatics 7.0%; and oral contraceptives 1.9%. Also, (15;16,17) found that antibiotics, cough preparations, analgesics, antacids and anti-diarrheal were part the common medicines used in self-medicating as mentioned by those who responded in their study.

Similarly, the perception of the students of Bayelsa Medical University about self-medication shows that slightly above one-third of respondents (92, 36.5%) considered self-medication an acceptable behavior

(Table 4) and this is possibly because SM is broadly practiced and accepted among the general public and the world at large, especially in low/middle income countries. Also, about 2 in every 5 respondents (108, 42.9%) accepted sharing of medications with family members, neighbors, and friends (Table 4). Slightly above half of 217 students who practiced self-medication (128 students, 58.9%) reported that it cured the disease conditions/ailments for which it was used, 60 respondents (27.6%) believed it only improved the disease condition while about a tenth (23 respondents, 10.6%) thought self-medication prevented the disease (Table 4).

Furthermore, the associated factors of self-medication seen in table no.5, no sociodemographic factors were seen to be related significantly to SM in this study's respondents. Age ($\chi^2 = 0.19$; $p = 0.659$), gender ($\chi^2 = 2.21$; $p = 0.137$), marital status ($\chi^2 = 0.16$; $p = 0.690$), and religion ($\chi^2 = 0.42$; $p = 0.517$) were not linked to SM practice or behavior in any way (Table 5). This is quite unclear and might thus assumed to be peculiarities of study population being relatively small as several other research revealed associations between SM and respondents' sociodemographic characteristics. Meanwhile, the faculty of study was seen to be substantially linked with self-medication ($\chi^2 = 9.75$; $p = 0.045$). Health sciences faculty students much more frequently self-medicated compared to those of other faculties (OR = 3.74; $p = 0.017$). While this is quite unclear as the respondents were all in their preclinical years of study, the finding is line with some literatures reviewed in general. Among all the health-seeking behavior/practices examined here, when the illness was viewed as minor ($\chi^2 = 11.03$; $p = 0.001$), usage of medications in emergency settings ($\chi^2 = 4.28$; $p = 0.038$) and previous exper medication ($\chi^2 = 19.99$; $p = 0.001$) were revealed to be substantially associated with SM practice (Table 7).When diseases were regarded mild, students were at least five times more probable to self-medicate (OR - 5.29; $p = 0.002$), including being four times more probably to indulge in SM practices for drugs used during emergency situations (OR - 4.20; $p = 0.045$).

CONCLUSION

In conclusion, this research deciphered a relatively high self-medication prevalence among

Bayelsa Medical University students, which is consistent with the reviewed literature and is associable to peculiarities of the healthcare or medical services provided at the university's health centre or to the country's relatively poor health coverage in general. Headaches and malaria appeared to be more prevalent symptoms and illnesses for which respondents resort to self-medicated, while analgesics emerged as topmost group of self-medication medicines. Meanwhile, in the faculty of study, illness being mild and previous experience with medicines was associated significantly with the practice of self-medication by the BMU Students. Also, almost a third of those who responded perceived self medication practice to be acceptable thus, students should be enlightened about self-medication benefits and its dangers.

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REFERENCES

1. World Health Organization (2000) Guidelines for Regulatory Assessment of Medicinal Products for use in Self-medication. Geneva, 2000. WHO/EMO/QSM/00.1
2. Arrais. P. S. D., Fernandes. M. E. P., Pizzol. T. da S. D., Ramos. L. R., Mengue. S. S., Luiza. V. L., Tavares. N. U. L., Farias. M. R., Oliveira. M. A; & Bertoldi. A. D. (2016). Prevalence of self-medication in Brazil and associated factors. *Revista de Saúde Pública*, 50(suppl 2). <https://doi.org/10.1590/s1518-8787.2016050006117>.
3. Esan. Deborah; Fasoro. Ayo. Odesanya. Opeoluwa.O; Esan. Theophilus; Ojo. Elizabeth, Faeji. Charles; (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. 1-7. 10.1155/2018/5439079.
4. Kumar.N, Kanchan. T., Unnikrishnan. B., Rekha. T., Mithra. P., Kulkarni. V., Uppal, S. (2013). Perceptions and practices of self-medication among medical students in coastal South India. *PloS One*, 8(8), e72247.
5. Fuentes, A. K., Villa, Z.L. (2008). Analysis and Quantification of Self-Medication Patterns of Customers in Community Pharmacies in Southern Chile. *International Journal of Pharmacy World and Integrated Life Sciences*. (30), p.863–868.
6. Bitrus, D. (2017). Perception and practice of self-medication among non-clinical students in Niger Delta University, Bayelsa State, Nigeria. *The Nigerian Health Journal*, 16(4), 205. <http://tnhjph.com/index.php/tnhj/article/view/248>
7. Jambo, A., Mengistu, G., Sisay, M., Amare, F., & Edessa, D. (2018). Self-Medication and Contributing Factors among Pregnant Women Attending Antenatal Care at Public Hospitals of Harar Town, Ethiopia. *Frontiers in Pharmacology*, 9. <https://doi.org/10.3389/fphar.2018.01063>
8. Chouhan. Kiranbir; & Prasad. D. Shyam. (2016). Self-medication and their consequences: A challenge to health professional. *Asian Journal of Pharmaceutical and Clinical Research*. 9. 314-317.
9. Ghosh. A., Biswas. S., Mondal. K; Haldar. M; and Biswas. S. (2015). A study on knowledge and practices of over the counter medications among 2ndyear medical students. *World journal of pharmacy and pharmaceutical sciences*, 4, 1074-1081.
10. Gras. M., Champel. V., Masmoudi. K; & Liabeuf. S. (2020). Self-medication practices and their characteristics among French university students. *Therapies*. <https://doi.org/10.1016/j.therap.2020.02.019>
11. Al-Hussaini. M., Mustafa. S., & Ali, S. (2014). Self-medication among undergraduate medical students in Kuwait with reference to the role of the pharmacist. *Journal of Research in Pharmacy Practice*, 3(1), 23. <https://doi.org/10.4103/2279-042x.132706>
12. Aishwaryalakshmi.Sasikala; Sreelalitha. Vigneshwaran. & Padmanabha. (2012). Assessment of Knowledge Perception and Attitudes on Medications in General Population. *Indian Journal of Pharmacy Practice*, 5(3), 3–6.
13. Cochran WG. *Sample Techniques*. Third Edition, John wiley & sons, New York. 1977.
14. Ali. A. N., Kion. Kai. J. T., Keat. C. C., and Dhanaraj. S. A. (2012) studied the prevalence of self-medication practice among healthcare

- professionals in a private university, Malaysia. International Current Pharmaceutical Journal, 1(10): 302-310
<http://www.icpjonline.com/documents/Vol1Issue10/01.pdf>
15. Akande-Sholabi, W., Ajamu. Amen. T., & Adisa. R. (2021). Prevalence, knowledge and perception of self-medication practice among undergraduate healthcare students. Journal of Pharmaceutical Policy and Practice, 14(1).
<https://doi.org/10.1186/s40545-021-00331-w>
16. Afolabi, A. (2008). Factors influencing the pattern of self-medication in an adult Nigerian population. Annals of African Medicine, 7(3), 120–127.
17. Bexell. A., Lwando. E., Hofsten. B., Tembo. S., Eriksson. B., Diwan. V.K. (2006). Improving drug use through continuing education: A randomized controlled trial in Zambia. Journal of Clinical Epidemiology, (49):355-357. 41