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Assessment of self-medication with antibiotics among youths in Obio-Akpor Local Government Area of Rivers State, Nigeria

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Abstract

Introduction: *Self-medication has facilitated the growing prevalence of antibiotics misuse and the emergence and spread of microbial resistance which has become a global public health challenge. This study aimed to assess self-medication practices with antibiotics among youths in Obio-Akpor local government area, Rivers State.*
Methods*: This study was a descriptive cross-sectional study carried out between January and July 2021. Pre-tested questionnaires and a multi-stage sampling technique was used to collect information from respondents who had used antibiotics in the last two months preceding this survey. The overall knowledge of, attitude towards antibiotics use and prevalence of antibiotics self-medication were the outcomes measured. Data was analyzed and the results presented using descriptive statistics.*
Results: *Out of the 486 questionnaires distributed, the response rate was 87.9%. The mean age of respondents was 24.7 ± 3.17 years with a female preponderance of 54.1%. Overall knowledge of antibiotics use was demonstrated by 59% of respondents and positive attitude towards antibiotic use was also shown by 59% of respondents. Prevalence of antibiotics self-medication was 54%, ciprofloxacin being the commonest self-medicated antibiotics. Level of education was statistically associated with antibiotic use (p=0.001). Good knowledge of antibiotic use increased the odds of its rational use by about four times (95% CI=1.614-11.964; p=0.004) and positive attitude by about six times (95% CI=2.659-16.717; p=0.000) while poor knowledge increased the odds of obtaining antibiotics from family members and friends by about eleven times (95% CI=2.568-53.306; p=0.0001).*
Conclusion: *This study revealed that majority of respondents practiced self-medication with antibiotics despite having average knowledge of, and attitude towards antibiotics use. This calls for the need to intensify public enlightenment campaigns on rational antibiotics use.*

Keywords: *Self-medication, Youths, Antibiotics, Rivers State, Nigeria.*

Introduction

Antibiotics are chemotherapeutic agents which have been useful in the clinical management of diseases caused by bacteria and are one of the most prescribed category of drugs world-wide.[1] The effectiveness of antibiotics against infectious diseases have been dramatically undermined as a result of emerging antimicrobial-resistant bacteria in recent times.[2] Self-medication with antibiotics involves obtaining antibiotics without a prescription and taking antibiotics on advice from friends and families. It is a form of irrational medicine use and antibiotics misuse and is of global concern because it contributes to antibiotics resistance, therapeutic failure, wrong choice of antibiotics, use of insufficient dosages and unnecessary therapy, longer hospital stays, higher cost of medical services and increased mortality.[3] Existing literature reflects consumer or patient demand and behavior as a driving force behind antibiotic misuse.[4-6] Developed and developing countries are equally affected by antibiotic-resistant infections, with developed countries less affected due to tight regulations of antibiotic use.[7] In many developing countries like Nigeria, antibiotics are usually sold to patients outside the hospital without a medical prescription. This is usually due to poor regulatory control of its sales and purchases 3,8]. Studies on self-medication practices estimate its burden in low- and middle-income countries to be high.[9] Rational use of existing antibiotics is needed to ensure the availability in the long term, of effective treatment of bacterial infections. Actions to contain the consequences of inappropriate use of antibiotics are imperative,

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requiring extensive research to investigate the drivers behind the practice across different populations. Studies investigating self-medication practices have been carried out in some parts of Nigeria, [10-13] but not much amongst young populations in the South-South region.

This study will provide data on knowledge, attitude and practice regarding antibiotic use, as well as factors that are associated with antibiotic self-medication among young people in communities.

Methods

This descriptive cross-sectional study was conducted across eighteen communities in Obio-Akpor Local Government Area of Rivers State in Nigeria, among youths aged 18-29 years. Using the Cochrane formula [14] and a prevalence of 52% reported in a survey in Kebbi State, Nigeria on self-medication with antibiotics [8], a minimum sample size of 427 was obtained, after adjusting for 10% non-response rate. Multi-stage sampling technique was used to select nine out of the eighteen wards in the LGA, followed by the selection of two communities each from the nine wards using simple random method by balloting. Using computer-generated random numbers, 486 participants who met the inclusion criteria of being 18–29years, in the selected study communities and had taken antibiotics within the last two months of the study were recruited for the study.

Self-administered questionnaires were used to collect data, after obtaining ethical approval from the Ethics and Research Committee of the University of Benin, Benin-City and written informed consent from each respondent. The questionnaire was pre-tested in 10% of the sample size in Phalga LGA which has a similar population and socio-economic characteristics as the study LGA but in a different location of the State. The questionnaire comprised of sections on socio-demographics, knowledge of, attitude toward antibiotic use and antibiotics consumption. Questions assessed antibiotic self-medication practice in the past two months in order to minimize recall bias which may be a possible limitation of the study. Data was analyzed using SPSS version 25 and results presented descriptively and in tabular format. Bivariate analysis was done using chi-squared test and the level of significance set at $p < 0.05$.

Results

A total of 486 respondents participated in the study but 427 responses were analyzable giving a response rate of 87.9%. The mean age of the respondents was 24.67±3.17 years, with most of them (54.1%), being females. A majority (93.2%) were Christians, 59.3% were single or never married, 37.2% married and 47.0% had tertiary education.

Table 1: Sociodemographic characteristics of respondents

Variable	Frequency n = 427	Percent
Age (yr)		
18 – 21	128	30.0
22 – 25	139	32.6
26 – 29	160	37.4
Mean: 24.7±3.17		
Sex		
Male	196	45.9
Female	231	54.1
Religion		
Christianity	398	93.2
Islam	27	6.3
Traditional Religion	2	0.5
Marital Status		
Single/never married	253	59.3
Married	159	37.2
Divorced/Widowed/ Separated	15	3.5
Education		
Tertiary	201	47.0
Secondary	186	43.6
Primary	40	9.4
Occupation		
Small scale business	215	50.3
Student	101	23.7
None	67	15.7
Artisan	44	10.3

Majority of the respondents, 231 (54.1%) indicated that antibiotics are used to treat all kinds of infections including bacterial and viral ones. Likewise, most of the respondents, 226 (53.1%) said that it is safe to take antibiotics whenever they felt ill, while 252 (59.0%) said antibiotics are used for periodic detoxification of the body. About two-fifth 166 (38.9%) indicated that antibiotics makes one recover faster when having a cold (Table 2). Overall, 254(59%) of the respondents, had good knowledge on the use of antibiotics.

The measures of antibiotics use are showed on Table 4. A majority (71.9%) took antibiotics as prescribed by the doctor, 258(60.4%) had prescriptions containing antibiotics when they had flu, about a third, 136(31.8%) bought antibiotics elsewhere when they failed to get prescriptions from doctors when ill with flu, 25% requested the doctor to prescribe antibiotics, while 169(39.6%) were indifferent if antibiotics were prescribed or not. The most commonly used antibiotics by the respondents was Ciprofloxacin (23.9%) and Cefuroxime was the least used (3.5%). Overall, a majority of the respondents, 229(54%) misused antibiotics while 198 (46%) used it rationally.

Age, marital status and level of education were statistically significantly associated with the knowledge of antibiotic use, with the younger age group, the unmarried and those with primary education having better knowledge of antibiotics use. This pattern also applies to the association between the socio-demographic characteristics and the attitude towards

Table 2: Knowledge about indications for antibiotics use among the respondents

Variable	Frequency (n = 427)	Percent
Antibiotics are used to treat bacterial and viral infections	196	45.9
Antibiotics are safe to take whenever you feel ill	227	53.2
Antibiotics are used for periodic detoxification of the body	252	59.0
Antibiotics make one recover faster when having a cold	261	61.1
Measles can be treated with antibiotics	166	38.9
Diarrhea can be treated with antibiotics	31	7.3
Cold and Flu can be treated with antibiotics	196	45.9
Chickenpox can be treated with antibiotics	141	33.0
STIs can be treated with antibiotics	7	1.6
Sore throat can be treated with antibiotics	132	30.9
Skin and wound infection can be treated with antibiotics	15	3.5

Table 3: Attitude of respondents towards antibiotic use

Variable	Frequency (n = 427)	Percent
Antibiotics should be purchased without a prescription	206	48.2
When should one stop taking antibiotics after you have begun treatment		
When you feel better	170	39.8
When you complete the prescribed dosage	257	60.2
Taking less antibiotics than prescribed is appropriate	379	88.8
If your doctor prescribed antibiotics but did not explain the reason, would you be satisfied	120	28.1
It is safe to buy the same antibiotics or use left-over ones, if you are sick	148	34.7
It is safe to use antibiotics that were given by a friend/family member, as long as they were used to treat the same illness	215	50.4

antibiotics use, but with those who had secondary education having better attitude towards antibiotics use. More of the older age group, the married and those with tertiary education used antibiotics rationally than others (Table 5).

The predictors of rational use of antibiotics are shown on Table 6. Having good knowledge of antibiotics use increased the odds of its rational use by about four times (95% CI=1.614-11.964; p=0.004), having positive attitude by about six times (95% CI=2.659-16.717; p<0.001), while poor knowledge increased the odds of obtaining antibiotics from family members and friends by about eleven times (95% CI=2.568-53.306; p<0.001).

Discussion

Misuse of antibiotics and emergence of antibiotic resistance is a significant public health challenge globally. The overall knowledge of antibiotics use was demonstrated by 59% of respondents while positive attitude towards antibiotic use was also shown by 59% of respondents. Prevalence of antibiotics self-medication was 54% with ciprofloxacin being the commonest used antibiotics. Level of education was statistically associated with antibiotic use (p=0.001) and having a good knowledge of antibiotic use increased the odds of its rational use by about four times (95% CI=1.614-11.964; p=0.004), positive attitude by about six times (95% CI=2.659-16.717; p=0.000), while poor knowledge increased the odds of obtaining antibiotics from family members and friends by about eleven times. (95% CI=2.568-53.306; p=0.0001).

Studies within and outside the country have shown that young people are prone to antibiotic misuse. [8,15-17] Since they are the future of any nation, it is important to focus on their attitudes and practices towards antibiotic use as well as improving their knowledge about rational antibiotics use.

It is not surprising that a majority were Christians since the study was carried out in the southern part of the country where Christianity is the predominant religion. The occupational distribution of the respondents showed that half of them engaged in small scale businesses, giving them the financial capability to purchase antibiotics whenever they chose to. The fact that the respondents were all literate may have been responsible for the overall good knowledge (59%) of antibiotics use. This result is comparable to results from studies where 57% and 67% of respondents had a good knowledge of antibiotics respectively [18,19] There was however, a false belief that antibiotics can be used to treat viral infections as wrongly reported by about half of the respondents thus corroborating the finding from another study, [20] where a majority had similar beliefs. This was expected as the respondents were basically non-medical professionals. The high level of misconception on the indications for the use of antibiotics reiterates the need for healthcare workers to explain the difference between viral and bacterial infections when communicating with patients.

The male respondents showed better knowledge of and positive attitude towards antibiotics use but the female respondents showed a slightly higher rational antibiotics use than their male counterparts. The gender difference may be due in part to women

Table 5: Association between sociodemographic characteristics and knowledge of antibiotics

Variables	Knowledge of Antibiotics Poor n = 173 Freq (%)	 Good n = 254 Freq (%)	Chi square (χ^2)	p value
Age group				
18 – 21	35 (27.3)	93 (72.7)	18.91	0.001 *
22 – 25	54 (38.8)	85 (61.2)		
26 – 29	84 (52.5)	76 (47.5)		
Marital Status				
Single/never married	83 (32.8)	170 (67.2)	17.61	0.001 *
Married	85 (53.5)	74 (46.5)		
Divorced/Widowed/Separated	5 (33.3)	10 (66.7)		
Level of Education				
Primary	0 (0.00)	40 (100.0)	30.12	0.001 *
Secondary	82 (44.1)	104 (55.9)		
Tertiary	91 (45.3)	110 (54.7)		
	Attitude to use of Antibiotics **Negative** **n = 176** **Freq(%)**	 **Positive** **n = 251** **Freq(%)**		
Age group				
18 – 21	21 (21.1)	101 (78.9)	49.07	0.001 *
22 – 25	51 (36.7)	88 (63.3)		
26 – 29	62(38.8)	98 (61.3)		
Marital Status				
Single/never married	82 (32.4)	171 (67.6)	35.07	0.001 *
Married	93 (58.5)	66 (41.5)		
Divorced/Widowed/Separated	1 (6.7)	14 (93.3)		
Level of Education				
Primary	38 (95.0)	5 (5.0)	112.84	0.001 *
Secondary	38 (20.4)	148 (79.6)		
Tertiary	65 (32.2)	136 (67.7)		
	Use of Antibiotics **Irrational** **n = 229** **Freq (%)**	 **Rational** **n = 198** **Freq (%)**		
Age group				
18 – 21	97 (75.8)	31 (24.2)	66.27	0.001*
22 – 25	85 (61.2)	54 (38.8)		
26 – 29	47 (29.3)	113 (70.6)		
Marital Status				
Single/never married	160 (63.2)	93 (36.8)	25.79	0.001*
Married	60 (37.7)	99 (62.3)		
Divorced/Widowed/Separated	9 (60.0)	6 (40.0)		
Level of Education				
Primary	34 (85.0)	6 (15.0)	106.61	0.001*
Secondary	140 (75.3)	46 (24.7)		
Tertiary	55 (27.4)	146 (72.6)		

*Statistically significant variable

exhibiting better health- seeking behavior than men thereby exposing them to better measures of antibiotics use. The attitude of respondents towards infections, hygienic practices and antibiotic use is important in reducing the prevalence of irrational antibiotics use and resistance.

The high prevalence of antibiotic self-medication could be due to the wrong perception and practice of antibiotics purchase without prescription, using same antibiotics used for past similar illness, using left-over ones or those given to them by friends/family members to treat similar illnesses as their own. Another study confirmed that people kept antibiotics for future use which can result in poor adherence to antibiotic therapy.[11] Shared antibiotics or left-over ones may not be the right drug for new infections as various infections may require different antibiotics and this predisposes to self-medication as it serves as a primary source of antibiotics in the event of an illness. This practice should be highly discouraged and an effective system for retrieval and disposal of unused medications should be considered by the government. Sometimes the saved medications may have expired at the time of reusing them without the knowledge of the patient which can further complicate the health

Table 6: Predictors of rational use of antibiotics among the respondents

Predictor	β (Regression Coefficient)	Odds Ratio	95% CI for OR		p value
			Lower	Upper	
Age group					
18 – 21			1		
22 – 25	-1.604	0.201	0.051	0.789	0.021*
26 – 29	-1.588	0.204	0.075	0.559	0.002*
Overall Knowledge of Antibiotics use					
Poor			1		
Good	1.480	4.394	1.614	11.964	0.004*
Overall Attitude to Antibiotics Use					
Poor			1		
Good	1.897	6.668	2.659	16.717	0.000*
Where antibiotics was obtained					
Community Pharmacy			1		
Hospital Pharmacy	0.033	1.034	0.220	4.868	0.966
Friend/family member	2.460	11.699	2.568	53.306	0.001*
Left-over antibiotics from previous time	-1.172	0.310	0.034	2.800	0.297
Patent medicine shop/hawker	-0.020	0.980	0.180	5.341	0.981
Can't remember	-0.480	0.619	0.111	3.441	0.584
Sought advice from healthcare worker on how to use them					
No			1		
Yes	-2.554	0.078	0.018	0.333	0.001*

*****Statistically significant variable

condition of the user. In this study, obtaining antibiotics from friends and family significantly increased the odds of antibiotics misuse by about eleven times.

In this study, antibiotics purchase took place mostly at community pharmacies and from patent medicine stores. In Nigeria, community pharmacies and patent medicine stores, serve as accessible outlets for obtaining over-the-counter (OTC) drugs by the public Accessing health care in these facilities, is often seen as an economical choice for treating illnesses because the patient boycotts cost of consultation and laboratory investigation requirements in established hospitals. Self-medication with antibiotics is associated with the ease of purchase of antibiotics over the counter without a physician's prescription. By the Nigerian law and regulation, antibiotics are classified as 'prescription-only' medicines and not over-the-counter drugs, but majority of the public are unaware of these classifications. It therefore follows that patent medicine stores are not authorized to stock antibiotics, but studies have shown they usually exceed the limit of their practice.[21,22] A primary target for limiting antibiotic resistance is therefore an effective regulation of sales of prescription drugs.

Respondents within the higher age bracket and those with higher level of education formed the larger proportion of those who used antibiotics rationally, but the high proportion of those with primary education who had better knowledge of antibiotics use, neither translated to a positive attitude nor rational antibiotics use among them compared to those with higher educational level. It is therefore not surprising that overall good knowledge of antibiotic use increased the odds of its rational use by about four times and follows that education is important in combating irrational antibiotic use.

Prescribers play an important role in limiting irrational antibiotic use. Patients who demand antibiotics when not needed should be counseled properly on their disease conditions and reasons for excluding antibiotic therapy. Antibiotic stewardship programs should be a priority for healthcare workers to ensure rational prescribing and dispensing of antibiotics. Pharmacists should uphold the responsibility of educating their clients on the dangers of misusing antibiotics as they are mostly in contact with consumers at the community level. To overcome the problem of misuse and resistance, the prevalence and frequency of antibiotics consumption within a specified time is crucial and highly relevant in public campaigns against antibiotic misuse.

Of the total respondents, 48% failed to seek advice from the healthcare provider on how to take the antibiotics, which is lower than the 56.9% from a similar study [23] in North Central, Nigeria. It is important to provide relevant drug information and counseling to patients purchasing antibiotics so they are better informed on the proper course of treatment and possible side effects of the medication. This service cannot be provided by proprietary medicine vendors as they lack the training and expertise needed to provide such services. Documented evidence has shown that many pharmacists provide patient counseling and education in their premises although

some deficiencies exist as some premises are run illegally by quacks or by registered Pharmacists who are not available in their premises.[24] This study reported Ciprofloxacin as the most common antibiotics consumed in contrast with Penicillin reported in some studies within and outside Nigeria.[6,11,25] Staphylococcus species have been reported to show variable degree of resistance of up to 73.4% to Ciprofloxacin in some parts of the country.[26] This is worrisome and calls for the urgent need to sensitize the public on the dangers of emerging antibiotics resistance.

Conclusion

Despite an average score for both knowledge of, and positive attitude towards antibiotic use, a majority of the respondents practiced self-medication with antibiotics. There is need for education and public awareness campaigns to improve knowledge, attitude, perception and use of antibiotics which will bring about behavioral change especially at the community level. This will curtail the dangers of self-medicating with antibiotics and its irrational use, thus reducing spread of antibiotic-resistant bacteria.

List of abbreviations

OTC, Over-the-counter.

Declarations

Ethical approval

Ethical approval (CMS/REC/2021/196) was obtained from the Research Ethics Committee of the College of Medical Sciences, University of Benin, Benin City, Nigeria and written informed consent obtained from each respondent before commencement of the study.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

No conflict of interest associated with this work.

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Contribution of Authors

We declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. Osamagbe Tasie conceptualized the study, literature review, design of the questionnaire, participated in data collection, analysis and write up of the paper. Essy Clementina Isah was involved in questionnaire design, literature review, the write up and critical review of the manuscript and the supervision of the work from conception to publication. Both authors read and approved the final draft of the manuscript.

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