**ABSTRACT**

**Objective:** Self-medication refers to selection and use of medicines by individuals to treat self-recognized illness and symptoms. It is widely practiced globally and often regarded as part of self-care. Though, unlike the other elements of self-care, it acts as a double-edged sword with the ability to do good as well as exposure to hazards because it employs use of drugs. The objective of this study was to assess prevalence of antibiotic self-medication among paramedical students of Usman Danfodiyo Sokoto, Nigeria.

**Methods:** It was questionnaire-based, cross-sectional study involving undergraduate paramedical students in a Nigerian University. Participants were selected by multistage sampling technique and data generated was analyzed using SPSS version 20. Majority of the respondents were males and singles, 64(68%) and 84(89.4%) respectively. Age ranged 18-25 years for majority of respondents, 87(92.6%).

**Results:** Total 81.9% self-medicate with antimicrobials and penicillin was the most used antibiotic group 58(61.7%), and among the penicillin group, amoxicillin was the commonly used, 17(18.1%). There was no statistically significant association between gender, marital status and course of study with self-medication ($X^2=0.06$, $P=0.81$; $X^2=0.028$, $P=0.87$ and $X^2=2.28$, $P=0.52$ respectively).

**Conclusion:** A high proportion of self-medication with antimicrobials was observed among the respondents of the study. However there was no statistically significant association of the medication with gender, marital status or course of study.

**Keywords:** Antimicrobials, Nigeria, paramedical students, self-medication, University.

**INTRODUCTION**

Self-medication refers to selection and use of medicines by individuals to treat self-recognized illness and symptoms\(^1\). It is widely practiced globally and often regarded as a part of self-care. Though, unlike the other elements of self-care, it acts as a double-edged sword with the ability to do good as well as exposure to hazards because it employs use of drugs\(^2\). It is much easier, to circumvent the trouble of seeing a medical doctor and the cost involved by self-medication, especially in financial and human resources constrained circumstances such as low and middle income countries. In most parts of the world, it is commonly practiced as over 50% of antibiotics are purchased without prescription\(^3\). Exorbitant costs of health care services, poor accessibility to health facilities, unregulated distribution of drugs, and inequality in the spread of health care services provide fertile grounds for self-medication\(^4,5\). Self medications for whichever purpose poses a serious public health challenge worldwide and contribute immensely to development of deadly antimicrobial resistance irrespective of age or gender\(^1\).

The magnitude of antibiotics self-medication is higher with population in developing countries among the young and literates\(^6,7\). Use of antibiotics for self-medication is considered as a injudicious use of antibiotics\(^8\). Antibiotics resistance which may arise from self-medication currently poses one of the most important health issue globally\(^8\). This is more common in developing countries, where antibiotics are freely purchased over the counter without prescription\(^9\). Reasons for antibiotics resistance are multifaceted which include human factors such as self-medication\(^10\). Socioeconomic status, life styles and easy accessibility to drugs have been shown to influence self-
mediation. Widespread use of antibiotics in agriculture as growth promoters and prophylaxis in livestock has been implicated in promoting resistance. The consumption of antibiotics via these processes account for 63,000 to 240,000 tons of annual global use and through food chain, resistance can be transmitted from animals to humans. In Nigeria, antibiotics are purchased over the counter. It is however, unfortunately not without attendant dire consequences. These penalties include but not limited to masking symptoms of serious illness, fatal adverse drug reactions, wrong diagnosis, and susceptibility to addiction, risks of under or over dosage and poly pharmacy. This is more so, with emerging more worrisome—the antimicrobial resistance. This has started rearing its ugly head years ago. If left unchecked, it will take this generation back to pre antibiotics era of course with deadly outcome. This study therefore, aimed at assessing the prevalence of antibiotic self-medication among paramedical students of Usmanu Danfodiyo Sokoto as future key players in healthcare delivery.

METHODS
Usmanu Danfodiyo University is among the second generation Universities created in 1975. It is located in Sokoto seat of Usmaniyya caliphate. Paramedical students include Nursing, Radiography, Medical laboratory Science and Pharmacy. The first three are located in the College of Health Sciences while the last one is a faculty on its own. The trainings involve preclinical and clinical phases. At the preclinical stage, students are taught mainly basic medical courses, and proceed to the clinical levels at the Teaching Hospital which serves as referral centre for the neighboring states of Kebbi, Zamfara, Kano, Katsina and even Niger republic. The hospital is managed by various cadres of health professionals. The present study is a cross sectional descriptive study. The respondents were selected by multistage sampling technique as follows:

Stage 1: Respondents were stratified based on course of study into nursing, pharmacy and radiography
Stage 2: Total number of students was obtained from in each department/faculty by their study levels
Stage 3: Total number of respondents to be selected from each department and level by proportionate allocation
Stage 4: Actual respondents who participated in the study from the department/level were selected by sampling interval

Questionnaire design, Validation and Data collection
The semi-structured questionnaire was derived from previous studies. It was reviewed by experts and tests were carried out for construct and content validity among students of faculty of Medical Laboratory Science. Areas of ambiguity were identified and addressed appropriately before administering. It comprised of 3 sections. Section A, contained questions on demographic characteristics, section B focused on reasons for self-medication and section C awareness of hazards associated with self-medication. The questionnaires were distributed to the volunteers and asked to fill and collected on the spot by one of the researchers (Fidelis). Those that could not fill promptly were given the next day to complete.

Study population
Only registered students duly confirmed by the respective administrative offices of the concerned departments were recruited for the survey. Participation in this study was purely voluntary. This was clearly mentioned to the participants.

Statistical analysis
Crude descriptive statistics was calculated for the components of the questionnaire. We used Chi-square Pearson’s test to ascertain association of antimicrobial self-medications with gender, marital status and course of study. Analyses were based on P<0.05 and SPSS version 20 was used.

RESULTS
One hundred and fifteen questionnaires were administered and retrieved. After data cleaning, 94 were analyzed, of whom majority were males and singles, 64(68%) and 84(89.4%) respectively. The mean age was 22±0.1 years and most of the respondents’ age ranged 18-25 years, 87(92.6%). As a group, penicillin was the most used antibiotic group, 58(61.7%), and among the penicillin group, amoxicillin was the commonly used and recorded as, 17(18.1%). Respondents using metronidazole accounted for 17(18.1%) shown in Table 1.

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin+ Cloxacillin</td>
<td>12(12.8)</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>7(7.5)</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>17(18.1)</td>
</tr>
<tr>
<td>Penicillin G procaine</td>
<td>13(13.8)</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>13(13.8)</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>17(18.1)</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>5(5.3)</td>
</tr>
<tr>
<td>Co-trimoxazole</td>
<td>4(4.3)</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>4(4.3)</td>
</tr>
<tr>
<td>Ceftriazone</td>
<td>3(3.2)</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>1(1.1)</td>
</tr>
</tbody>
</table>

NB: Some respondents mentioned more than 1 drug

On where the respondents purchased drugs, 44(46.8%) bought from Pharmacists’ store while 24(25.5%) from ‘Chemists’ and only 1(1.5%) from street hawkers. The rest obtained drugs from hospital pharmacy and patent medicine stores 7(7.5%) and 18(19.2%) respectively. Headaches, skin rashes and dizziness were the serious adverse effects experienced by the respondents (52.9%) each and 17.7% respectively. Association between gender, marital status and course of study with self-medications were recorded. (X2=0.06, P=0.807, df=1; X2=0.28, P=0.868, df=1; X2=2.281, P=0.516, df=3 respectively).

DISCUSSION
A high response rate recorded which could be attributed to on spot administration and collection of data. Female respondents constituted minority in our study which differs from the findings of similar works. Girl child education is still an obstacle in this part and most part of northern Nigeria and always reflects in enrolments in tertiary level of education and other...
formal sectors of economy. The proportion of respondents who self-medicate with antibiotics observed in this study was quite higher than Southern India and China where it was reported as 39.3 and 47.9% respectively. Antibiotics are sold over the counter in Nigeria and may be responsible for the high percentage recorded in the study. This is really worrisome and regulatory bodies saddled with the responsibility of monitoring drugs need to develop a policy frame work to curtail this menace by striking a balance between control and access to antimicrobials to vast majority especially in areas where healthcare manpower is overstretched.

The finding of this study showed that penicillin as a group was the most commonly used for self-medications. This was in accordance with the observations made by Fadare and Tamuno. This may be explained by the fact that Penicillin were among the earlier antibiotic that are still clinically relevant currently because of their broad spectrum antibacterial activities, less side effects, affordability, safety profile and efficacy. Among the penicillin group, amoxicillin was the most frequently cited, a finding reechoing reports in previous studies. Saving money, time and presence of left over drugs as reasons for self-medication were quite higher than 44, 19 and 16% respectively reported in Karachi. This may be explained by prevailing economic recession being experienced in the country. A good proportion of participants admitted lack of confidence in health care providers prompted them to self-medication which differed from finding in Lagos.

On the awareness of dangers associated with self-medication, the finding of this study was higher than 51.2% reported in India. This is really encouraging and strengthens hope of improved rational drug use as the respondents were the future captains of health care delivery system. It was encouraging that majority of respondents procured their drugs from approved designations. Previous study in the study area had documented that non-medical students of University tend to purchase their drugs from unauthorized outlets. There was no association observed between antibiotic self-medication with gender, marital status or course of study. This finding was different from what was documented earlier that female students were more inclined to self-medication than their male counterpart.

**Table 2: Responses of Respondents on Reasons for Self-medication**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes, N(%)</th>
<th>Odds</th>
<th>95% CI lower</th>
<th>95% CI higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM with antibiotics last 1 year</td>
<td>77(81.9)</td>
<td>4.529</td>
<td>2.695</td>
<td>7.614</td>
</tr>
<tr>
<td>To Save time</td>
<td>77(81.9)</td>
<td>4.529</td>
<td>2.695</td>
<td>7.614</td>
</tr>
<tr>
<td>To Save money</td>
<td>52(55.3)</td>
<td>1.238</td>
<td>0.827</td>
<td>1.854</td>
</tr>
<tr>
<td>Past successful use</td>
<td>74(78.7)</td>
<td>3.700</td>
<td>2.269</td>
<td>6.034</td>
</tr>
<tr>
<td>Left over medicines</td>
<td>43(45.7)</td>
<td>0.843</td>
<td>0.564</td>
<td>1.262</td>
</tr>
<tr>
<td>Academic knowledge</td>
<td>75(79.8)</td>
<td>3.947</td>
<td>2.399</td>
<td>6.497</td>
</tr>
<tr>
<td>To avoid stress of seeing a doctor</td>
<td>70(74.5)</td>
<td>2.917</td>
<td>1.482</td>
<td>4.618</td>
</tr>
<tr>
<td>The drug has worked successfully in acquaintances before</td>
<td>74(78.7)</td>
<td>3.700</td>
<td>2.269</td>
<td>6.034</td>
</tr>
<tr>
<td>No need to consult a doctor for minor illness</td>
<td>59(62.8)</td>
<td>1.686</td>
<td>1.113</td>
<td>2.553</td>
</tr>
<tr>
<td>Unfavourable attitudes of health care workers</td>
<td>52(55.3)</td>
<td>1.238</td>
<td>0.827</td>
<td>1.854</td>
</tr>
<tr>
<td>Lack of confidence in health care giver</td>
<td>57(60.6)</td>
<td>1.541</td>
<td>1.022</td>
<td>2.323</td>
</tr>
<tr>
<td>Encounter with adverse drug effects following self-medication</td>
<td>17(18.1)</td>
<td>0.221</td>
<td>0.131</td>
<td>0.371</td>
</tr>
<tr>
<td>Awareness that self-medication can be harmful to health</td>
<td>76(80.9)</td>
<td>4.222</td>
<td>2.539</td>
<td>7.019</td>
</tr>
</tbody>
</table>

**SM= self-medication**

**CONCLUSION**

This study has revealed high prevalence of antimicrobial self-medication among undergraduate paramedical students of Usmanu Danfodiyo University. No association was established of the self-medication with gender, marital status or course of study. There is need for intervention study to stem the tide of self-medication.

**AUTHOR’S CONTRIBUTION**

The manuscript was carried out, written, and approved in collaboration with all authors.

**COMPETING INTERESTS**

The authors declare that they have no competing interests.

**REFERENCES**


