

A Study of the Drug-Holding Pattern Among Female Students in a Nigerian University

Kanayo P. Osemene and Adebayo O. Olaniran
Faculty of Pharmacy, Obafemi Awolowo University,
Ile-Ife, Osun State, Nigeria

Author for Correspondence
Kanayo P. Osemene
E-mail: osemenekanayo@yahoo.com
Tel: +234 (0) 803-716-1268

ABSTRACT

Background: There is paucity of information on the drug-holding pattern among female university students in Nigeria. The study objectives are; to examine the types, and sources of drugs used by female university students for self-care; and evaluate the association between the students' drug-holding pattern and their demographics.

Methods: Pre-tested questionnaire was used to collect data from 680 respondents using a simple random sampling technique. Descriptive statistics was used to analyse the demographic variables. Logistic regression analyses were performed to evaluate the association between the students' drug-holding pattern and their demographics at 95% Confidence Intervals.

Results: The classes of drugs with the students were; antibiotics (24.4%), antimalarials (22%), analgesics (20%), vitamins (9.6%), contraceptives (5%), among others. Sources of drugs were pharmacy shops (41.0%), patent medicine store (30.8%), hospitals (15.6%), and leftover drugs (12.6%). The quantity of drugs held was found to be high and significantly associated with students of age 21-25 years (OR: 3.8; 2.4-6.1), single female students (OR: 4.3; 1.3-5.2); divorced (OR: 0.19; 0.11-0.28) and widows (OR: 0.08; 0.04-0.12).

Conclusion: The students had a wide variety of drugs. This could cause

serious health problems. Therefore strategies should be put in place to enlighten them on the dangers associated with self-care practices.

Keywords: Drug-use, Female students, University.

INTRODUCTION

Drug utilization is an issue which calls for careful monitoring and close control especially when one considers the immense benefits derivable from rational drug utilization as well as the inherent dangers associated with irrational drug use. The World Health Organization (WHO) has defined drug utilization research as the study of the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economical consequences¹. Drug utilization itself has to do with the act, use, manner in which drugs are taken and this could include the costs of prescribed and non-prescribed medications. Drug-holding pattern is the type/nature of drugs; individuals are holding or have in their possession with the intention to use such drugs for self-diagnosed ailments. The discourse on the medical consequences of irrational drug utilization by students which is on the increase has become prominent not only in academia but also among healthcare practitioners, theorists and researchers²⁻⁴.

Factors that have been adduced for increased use of non-prescribed drugs by University students in Europe and in the

United States of America include but not limited to influence from peers, stress associated with academic work, and lack of adequate education about the consequences of the improper use of drugs^{5, 6}. In developing countries, many studies have shown that the utilization of non-prescribed drugs by University students, was motivated by, assumed knowledge of drugs, prior experience of the use of such drugs, attitude of school clinic staff, lack of time to go for consultations in the school's clinics, drug advertisement, long waiting queues at clinics or hospitals, easy access to drugs, and weak drug regulations, among others⁷⁻¹¹. These being so, most people obtain drugs without prescription from various sources such as pharmacy shops, patent medicine store, left over drugs from previous prescriptions, and even from relatives^{7, 8, 11}.

Generally, the use of non-prescribed antimalarials, and antibiotics among others for self-diagnosed ailments has resulted in the development of resistant microbial strains, increased cost of therapy, time-wasting, incidence of poor therapeutic outcome, increased morbidity and mortality had been copiously discussed in various studies world-wide¹²⁻²⁰. This is not to say that the practice of self-care is devoid of any merit. Self-care to a certain extent is an acceptable practice because its benefits include time saving, reduction of work-load on healthcare givers, prompt management of minor health issues before visiting the hospitals among others^{21, 22}. The WHO advocates responsible self-care especially in the use of Over-the-Counter medications. The major issue about

self-care practice is the level of education of those who are involved in it. They should have adequate knowledge about the use of drugs and the associated problems arising from not using them properly²². Self-care is widely practiced around the world both in developed and developing countries such as Canada, Australia, Zimbabwe, Guatemala, Papua New Guinea among others²³. However, the major concern is the increasing trend of serious side effects, adverse drugs events or reactions, ineffective treatment of ailments, addition, complicated health challenges, masked diagnoses, super infection, and delayed treatment with otherwise known effective prescription drugs^{24,25}.

Students have been identified as major culprits in the use of non-prescribed drugs despite the fact that they have little understanding of common medication information²⁶⁻³⁰. Many university students assume that prescription drugs are safe because they are legal and originally obtained from a physician³¹. A study conducted in Europe revealed that younger age, higher educational level, and presence of a chronic disease were all significantly associated with self-care³². Other ailments that predisposed people to treat themselves were pain, headache, toothache, sore throat, eye infections, urogenital infections, bronchitis and diarrhea³². Previous studies have shown that women were more involved in the use of non-prescribed medications than men in the treatment of recurrent migraines, urinary tract infections among others^{7,33-35}. Also similar studies had shown that self-medication among women university students were high in Iran, United Arab Emirate, Brazil and Nigeria³⁶⁻³⁹. Furthermore, independent studies conducted in Slovenia⁴⁰ and Pakistan⁴¹ revealed that a lot of university students especially the females had non-prescribed medications with them at school. Moreover, in most developing countries in Africa and Asia, the use of herbal medicines for

self-care appears to be a thing of culture irrespective of the people's educational background. At times herbal medicines are co-administered with orthodox drugs especially among females^{42, 43}. Hence, this study was undertaken with special focus on only female students. Focusing on female students is appropriate because of their more complex and fragile nature^{26-28, 33}.

The main objective of this study is to evaluate the drug-holding pattern of female university students. This is with a view to identifying the sources; types of drugs used and evaluate the association between drug-holding pattern of female students with their demographic variables such as age, class level, and marital status. Results from this study will serve as a template for further research in drug utilization studies. It would also provide some information on how the rational drug use could be achieved.

METHODS

Design/Setting

The study adopted the methodologies used for conducting similar studies elsewhere^{11, 44}. The study was a cross sectional study conducted using the list of female students obtained from the Hall porters who manage the hostels where the students reside. This list served as the sample frame for the study. The study was conducted in June; 2013 in a Federal-owned University in Southwestern Nigeria. The study was carried out when new and old students had just arrived, to commence a new academic session. Expectedly, at that time, the students would come back to school either with reasonable amount of money for their upkeep including purchasing of some medications or they would come along with a variety of medications from their respective homes for the semester.

Population

The study covered all female students' hostels in the University campus. From the sample frame, a

total of 680 female students were identified. Then the sample size was obtained using Cochran 1977 formula assuming a 5% error and a 90% response rate⁴⁵.

Data collection instrument

Questionnaire containing a 24-item survey was designed to collect data in line with the objectives of the study. The questionnaire mainly contained closed-ended questions which elicited appropriate responses from the respondents. The questionnaire was backed with an oral interview especially on relevant issues not present in the questionnaire. The questionnaire was divided into two sections. The first section contained the socio-demographic information of the female students such as age, class/level, and marital status. The second section of the questionnaire was on core issues which had to do with information on the use of drugs by the female students. In this section, respondents were asked among other things; to provide answers to the following posers: Do you take drugs for self cure without doctors' prescription? List the particular drugs in your possession. Name the source(s) of the prescriptions that were given to you? Where do you normally buy the drugs? Do you consider the drugs as cheap or expensive? How often do you use the drugs? How long have you had the drugs? What is (are) the purpose(s) of using these drugs? Have you experienced any side effects with your drugs? If yes, what are these effects? Did you have to stop taking your drugs because of unacceptable levels of side effects? It was easier to quantify these questions because they were in closed-ended forms. The questionnaire was designed using current information obtained from various literature search and discussions with professional colleagues with significant experience of drug utilization studies.

Validity and reliability of research instrument

The survey instruments were pretested on 25 female students who did not take part in the final study. Results obtained were only used

either to modify or correct the questions where necessary in order to establish face validity. To establish stability reliability for the entire survey instrument, a test-retest reliability coefficient was calculated and was found to be > 0.93 . Content validity was assured by administering the questionnaire to experts in survey research and therapeutics. Their suggestions were incorporated into the final draft of the questionnaire.

Questionnaire administration

Having obtained approval from the Institute of Public Health Ethical Committee of Obafemi Awolowo University, Ile-Ife, to embark on the study, the pre-tested survey instruments were administered on female students through a simple random sampling technique. On administration of the questionnaire, respondents, were clearly briefed on

the purpose of the study, the voluntary nature of the survey and were assured that their responses would be kept anonymous and confidential.

Data analysis

Analysis of the data was carried out using Statistical Package for Social Sciences (SPSS) Version 20 for windows. An in-depth analysis of the different categories of drugs in the possession of the female students was done based on age groups distribution. Frequency distributions in numbers and percentages were used to describe the demographic variables. Also, the above-listed descriptive statistics were employed to determine the types of drugs the female university students had in their possession,

and the sources of such drugs and prescriptions. An alpha level of .05 was chosen as the level of significance. Logistic regression analyses were performed to determine whether drug-holding pattern among female university students differed on the bases of their age, marital status, and class/level in the university at 95% Confidence Intervals. The confidence intervals were computed using EpiCalc 2000.

RESULTS

A total of 680 questionnaires were administered. Of these, only 600(88.2%) were properly filled, returned, and evaluated. In all, 460(76.7%) of the female University students had drugs in their possession. The demographic characteristics are presented in Table 1

Survey Item	No of female students with drugs (n=460)	No of female students without drugs (n=140)	P-Value
Age(Yrs)			
16-20	101(22.0%)	19(13.6%)	.001
26-30	113(24.6%)	84(60%)	.001
31-35	28(6.08%)	12(8.6%)	.001
>35	16(3.5%)	14(10%)	.001
Level			
100	64(13.9%)	22(15.7%)	.006
200	93(20.2%)	13(9.3%)	.001
300	112(24.4%)	43(30.7%)	.008
400	101(22.0%)	30(21.4%)	.009
500	55(12.0%)	12(8.6%)	.002
>500(PG students)	35(7.6%)	20(14.3%)	.001
Marital Status			
Single	441(95.9%)	135(96.4%)	.001
Married	12(2.6%)	3(2.1%)	.001
Divorced	4(0.87%)	1(0.7%)	.007
Widow	3(0.7%)	1 (0.7%)	.003

The mean age of the respondents was 25.5 ± 1.9 years. The categories of drugs the female students had in their possession were antibiotics 112(24.4%), antimalarials 101(22%), analgesics 92(20%), vitamins and supplements 44 (9.6%), contraceptives 23(5%), and

antifungal 21(4.6%). Drugs that were in lower percentage possession include antiulcer drugs 15(3.3%) antihypertensive agents 11(2.4%), antihistamines 11(2.4%), antispasmodics 10(2.2%), anti-asthmatic agents 5(1.09%), herbal medicines

5(1.09%) sedatives 4(0.4%), and eye drops 6 (1.3%).

On oral interview and on the spot check, names of some of the drugs the students were keeping include analgesics such as, paracetamol, dipyron, piroxicam, ibuprofen, and aspirin. Among the

vitamins and blood supplements were vitamins B-co, vitamin C, multivitamins and folic acid. Most of the drugs were in the solid dosage forms except mist magnesium trisilicate. The antimalarials were sulphadoxine-pyrimethamine combinations and the artemisinin-based combination therapies (ACTs). The antibiotics and antimicrobial agents were ampiclox, amoxicillin, ampicillin, ciprofloxacin, co-trimoxazole, tetracycline and metronidazole. The antihistamines were chlorpheniramine and prednisolone. The commonest used antispasmodic was hyoscine-N-butyl bromide. While mist magnesium trisilicate and gelusil

prescriptions. On oral interview, 78% of the respondents agreed that the advertisement of drugs in the print and in the electronic media was responsible for their involvement in keeping drugs for their personal use in case the need to use the drugs arose at any time. Peer group influence especially roommates, classmates, friends, and even relatives were revealed by 31% of the female university students as other major factors that not only influence but also encouraged and sustained their self-medication seeking behaviour. Most of the female university students 290 (63%) revealed that their parents were aware that they were taking some medications for their personal use to school.

student age group 31 to >35 years was also low (OR: 1.2 (1.0-2.8) and insignificant at $P=.085$. Educational levels were associated with the habit and risk of keeping non-prescribed drugs. Students in upper educational levels (300-500) were at a higher risk for keeping and using non-prescribed medication than those in lower educational levels. The female post graduate students were at lower risk of keeping and using non-prescribed drugs because the computed adjusted odds ratio for indulging in such risky behaviour, was low 1.0 (0.5-2.8) and insignificant at $P=.071$. Marital status was significant and strongly associated with the habit of keeping non-prescribed drugs for self-care. In this regard, results obtained for

Table 2

Survey Item	No of female students with drugs (n=460)	No of female students without drugs (n=140)	Drug-holding pattern OR(95% CI)	P-Value
Age (yrs)			Reference	
16-20	101(22.0%)	19(13.6%)	1.1(1.0-2.6)	.062(Not sig)
21-25	202(43.9%)	11(7.9%)	3.8(2.4-6.1)	.003(sig)
26-30	113(24.6%)	84(60%)	2.5(1.8-3.93)	.001(sig)
31-35	28(6.08%)	12(8.6%)	1.3(1.1-2.9)	.061(Not sig)
>35	16(3.5%)	14(10%)	1.2(1.0-2.8)	.085(Not sig)
Level				
100	64(13.9%)	22(15.7%)	0.28(0.19-0.37)	.067(Not sig)
200	93(20.2%)	13(9.3%)	0.08(0.05-0.12)	.064(Not sig)
300	112(24.4%)	43(30.7%)	2.4 (1.7-3.0)	.001(sig)
400	101(22.0%)	30(21.4%)	2.7 (1.9-3.8)	.001(sig)
500	55(12.0%)	12(8.6%)	2.1 (2.0-3.3)	.001(sig)
>500(PG students)	35(7.6%)	20(14.3%)	1.0 (0.5-2.8)	.071(Not sig.)
Marital Status				
Single	441(95.9%)	135(96.4%)	4.3(1.3-5.2)	.004(sig)
Married	12(2.6%)	3(2.1%)	0.16(0.11-1.23)	.063(Not sig)
Divorced	4(0.87%)	1(0.7%)	0.19(0.11-0.28)	.002(sig)
Widow	3(0.7%)		0.08(0.04-0.12)	.001(sig)
	1(0.7%)			

which are anti-acids, were the main antiulcer drugs in the students' possession. Diazepam (valium) and bromazepam (lexotan) were the only sedatives the students had. Ventolin inhaler (Salbutamol) was the asthmatic drug found with the students. No injectables were in the possession of the female students.

About (41%) of the students procured drugs from pharmacy shops while 30.8% bought drugs from patent medicine stores. Other sources were hospitals (15.6%) and left over drugs from previous

Table 2 shows the adjusted odds ratios and 95% confidence intervals that quantified the association between demographic characteristics of the respondents and their drug-holding habits.

The risk of keeping non-prescribed drugs by the respondent for self-care, was highest among age group 21-25 years OR: 3.8 (2.4-6.1) and lowest among age group 16-20 years OR: 1.1(1.0-2.6). The adjusted odds ratio for drug-holding habit among the female

female university students who were not yet married and therefore single, were higher (OR: 4.3; 1.3-5.2) than results obtained for divorcees (OR: 0.19; 0.11-0.28) and widows (OR: 0.08; 0.04-0.12). The reverse was the case for married female students 0.16(0.11-1.23).

DISCUSSION

In the demographic characteristics of the students (Table 1) the mean age of 25.5 ± 1.9 years was obtained from the age range of 16 to >35 years. The drug possession

percentage (76.7%) of the female University students was found to be high. Even from their demographic characteristics, 460 out of 600 students had in their custody, various types of drugs. Prominent among these drugs were antibiotics, antimalarials and analgesics. Antibiotics belong to the class of drug that is regulated and should only be obtained on prescription after a thorough diagnosis of ailment type by a qualified healthcare practitioner. However, the high drug possession percentage in the hands of the respondents has revealed the ease with which drugs are obtained from authorized and unauthorized sources due to weak drug regulation policy in Nigeria. This result is comparable with the finding of a similar study carried out elsewhere⁷. The use of antibiotics for self-care without prior diagnoses and prescription by qualified health personnel could have far reaching negative effects such as masked diagnoses, events of adverse drug reactions, ineffective treatment of ailments, emergence of resistant microbial strains^{24, 25} on the health of the female university students. Such health hazards have been found to raise the cost of cure because more expensive drugs would then be needed to obtain the desired cure¹². Furthermore, the abuse of sedatives such as diazepam (valium), and bromazepam (lexotan) though in small percentage 4(0.4%) in the hands of the respondents could lead to addiction which is a major health issue^{2, 3, 4, 24}. Although only 5(1.09%) of the female students had herbal drugs in their possession, such finding is expected because the use of herbal medicines is a way life of the people especially in the developing nations of Africa and Asia⁴². Even in-patients in hospital admission in Nigeria surreptitiously co-administer non-prescribed herbal medications with orthodox prescription-only medicines⁴³. The usual thinking is that both the herbal and orthodox medicines would act synergistically to produce a more desired therapeutic outcome. Meanwhile, it has been argued that the efficacy of most herbal medicines

were due to the presence of orthodox medicines as adulterants in herbal mixtures⁴³. The major sources of purchase of non-prescribed drugs were the pharmacy (41%) and the patent medicine store (30.8%). Among other sources were drugs obtained from hospitals (15.6%) and left over drugs from previous prescriptions (12.6%). These findings are in line with what was obtained from similar studies conducted independently by other researchers^{7, 8, 11, 32}. Specifically, a study conducted in Iran³⁶ revealed that self-medication among university students was high and that the sources of self-medication were through friends and families (54.7%), previously prescribed medication (30.1%), medication knowledge (13.3%) and pharmacies (1.9%). Furthermore, results from similar studies conducted in United Arab Emirates³⁷, Brazil³⁸, Nigeria³⁹, Slovenia⁴⁰ and Pakistan⁴¹ revealed that the knowledge of self-medication among university students was inadequate. Since most of the female students obtained their drugs from pharmacy shops, it is expected that they may have interacted with the pharmacists in such outfits who would have provided professional advice to them on rational drug use before buying their medications. Again, that majority of them procured their drugs from pharmacy shops may be ascribed to the respondents' high level of education and exposure. Those who bought their medications from patent medicine stores should not be vilified because patent medicine stores still remain approved sources for the sales of drugs especially the Over-The-Counter medications (OTCs) in Nigeria. The main issue is the type and category of drugs purchased by the female students from such outfits. In addition, that drugs could be procured from just anywhere portends the obvious lack of adequate control by drug regulating agencies in Nigeria. Furthermore, there were significant differences in the drug-holding

pattern among the female students' age groups, educational levels, and marital status except in the case of postgraduate students and those in lower classes (100 and 200 levels) where such associations were not significant with respect to their class/level, and status as being married. This finding is comparable with the results obtained elsewhere when the frequency of self-medication among students was assessed in an international cross-sectional survey in developed and developing economies^{11, 20, 32}.

Since non-prescribed drugs were many in the hands of the students with their potential health hazards, pharmacists in the campus pharmacies should render to students, pharmaceutical care services especially for minor ailments²⁷. The pharmacists can also provide real service at the time of a non-prescription drug purchase by calling the consumers attention to labeling, particularly to important directions or warnings especially for drugs recently switched from prescription to OTC marketing status. In addition, pharmacists can increase their relevance by fulfilling their key role in providing health information. Thus, pharmacists will improve their status and the students will definitely see the reasons to consult them every time they need drug information. This will improve the quality and safety of drug utilization in the university community.

Results from this study will serve as a template for further research in drug utilization studies. It would provide some information on how rational drug use could be achieved. The study also represents a novel effort that looked into the drug-use pattern among the university female gender in developing economy. However, the survey instrument was a self reported one. Therefore, the chances of some elements of bias and under-reporting cannot be completely ruled out. The questionnaires were administered using a convenience sampling process which is inferior to probability sampling technique.

However, our fairly large sample size would have taken care of such limitation. The study only covered the drug-holding pattern among female students in a university community. It did not cover the pattern of drug-use in several universities located in different parts of the country. Therefore, the findings of the study cannot be generalized. However, replicating this study in other universities would be of immense academic benefit.

CONCLUSION

The drug possession percentage of the female University students was found to be very high. Some of these drugs had a high dependence potential while some others had a high resistant potential. Also, most of these drugs were bought from the patent medicine store and others obtained from left over drugs from previous prescriptions. These lapses represent a great indictment on the country's health policy because they negate the World Health Organization prescription of responsible self-medication. Therefore, strategies must be put in place to minimize self-care practices among the students. In this regard, health educators in the University could embark on health advocacy programme which would highlight the benefits of rational drug-use and at the same time enlighten the students on the dangers associated with self-care practices.

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