



# Medicines in Pharmacy Students' Residence and Self-medication Practices

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## ABSTRACT

This study was aimed at identifying the types of medicines in pharmacy students' residence and to determine if a relationship exists between keeping medicines in students' accommodation and self-medication practices. A cross-sectional survey of a random sample of 240 undergraduate pharmacy students of the University of Jos, Jos, Nigeria, was carried out. Participating students were given a self-administered questionnaire, and only 188 students returned their filled questionnaire. The data collected were entered and analyzed using SPSS 16, and the  $\chi^2$ -test was used to determine associations between the variables. The results revealed that 66.0% of respondents had medicines in their room. A total of 318 medicines items (2.56 items per student's room) of which 37.1% were leftover medicines were present in respondents' rooms. Analgesics (34.3%) and antibiotics (25.2%) were the common classes of medicines present in respondents' rooms. Respondents reported getting these medicines on prescription (25.8%) and self-medication (56.5%) or both (17.7%). Self-medication practice was common among respondents (53.2%); however, no significant relationship ( $P > 0.05$ ) existed between having medicine in students' room and self-medication practices. Common reasons given by respondents for having medicines in their rooms were that they were leftover medicines and that they were keeping them for emergency use or for use in an event of a similar illness. Most respondents (72.2%) reported disposing of their unused medicines in a trash can/dust bin. This study demonstrated that the prevalence of medicine storage in students' room and self-medication practice is high. Analgesics and antibiotics were the most common types of medicines present in students' residence.

**Key words:** Leftover medicines, self-medication, students' residence

## INTRODUCTION

Medicines availability and distributions have improved over the years in many developing countries, especially with the

introduction of essential drug programmes. However, the availability of information about rational handling and the use of these medicines is inadequate in many developing countries.<sup>[1]</sup>

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Medicines in households lead to medicine wastage which has an economic impact on the health care system. Worldwide, unused (leftover) medicines cost billions of dollars. An estimated cost of unused medicines have been shown to be between NZD \$9 and 11 billion per annum in New Zealand,<sup>[2]</sup> about £38 billion annually in United Kingdom,<sup>[3]</sup> about AU\$ 1308 per patient annually

in Australia and about \$150 million in Saudi Arabia and other Gulf countries.<sup>[4]</sup>

Some reasons identified as causes of unused medicines are over prescribing, a change in the treatment plan, patients no longer in the need of their medicines, adverse drug event, medicines reaching expiry dates, and non-adherence to therapy.<sup>[5,6]</sup> Studies in the UK showed that about 15 million people do not finish their prescribed medicines and about 30–70% of patients do not take their medicines as prescribed.<sup>[3]</sup> These reasons are not exceptions for Africa.

In Nigeria, medicine financing is mainly out-of-pocket, with a few individuals benefiting from the national health insurance scheme. Studies have shown that 23% of weekly household expenditures in Nigeria are on one episode of illness and consumers pay up to 64 times the international reference price for medicines to obtain medications from facilities.<sup>[7]</sup> Hence the economic loss due to unused medicines lies on individuals.

Self-medication practices among students have been shown to be common. Awad and Eltayeb studied self-medication practices with antibiotics and antimalarials among Sudanese undergraduate students and concluded that the prevalence of self-medication among students was high.<sup>[8]</sup> McCabe *et al.* demonstrated that the non-medical use of prescription drugs is a major problem among secondary school students.<sup>[9]</sup> Abey and Amelo assessed self-medication practices among medical and para-medical students and concluded that drug authorities and health professionals need to educate students about the pros and cons of self-medication.<sup>[10]</sup> Verma *et al.* demonstrated that the prevalence of self-medication among professional students in North India is high.<sup>[11]</sup> Self-medication was found to be very prevalent (94%) among university students in Hong Kong.<sup>[12]</sup> In Nigeria, the antibiotics self-medication pattern among undergraduate students was studied, and the study showed that 56.9% of respondents reported self-medicating with antibiotics.<sup>[13]</sup>

This study was aimed at identifying the types of medicines found in pharmacy students' residence and to determine if a relationship exists between keeping medicines in students' accommodation and self-medication practices.

## MATERIALS AND METHODS

The study was conducted at the Faculty of Pharmaceutical Sciences, University of Jos, Jos, Nigeria. The faculty has about 450 pharmacy students studying in the four professional years of the pharmacy programme.

A total of 240 students were chosen randomly with at least 50 from each professional level/year to participate in the study. A pre-tested, self-administered questionnaire was distributed among participants after explaining the purpose of the study and obtaining oral informed consent.

The questionnaire used for this study consisted of 20 questions, and it was divided into four domains. The first domain consisted of the demographic details of the respondent; the second domain consisted of questions related to the medicines present in the respondent room; the third domain consisted of questions related to the self-medication practice by respondent; while the fourth domain consisted of questions related to disposal practices. Respondents were asked to take their questionnaires to their residence to enable them record the names of medicines in their residence. Medicines present in students' room were classified according to their pharmacological groups.

Data collected were entered into the statistical package for social sciences (SPSS) for windows version 16.0 (SPSS Inc, Chicago IL) to generate descriptive statistics. Data were analyzed using  $\chi^2$ -test to establish associations between variables.

## RESULTS

A total of 188 of the 240 (representing 78.3%) questionnaire administered were completely filled and returned by respondents. The respondents consisted of 55.3% males and 44.7% females with the majority of the respondents between the ages of 21 and 25 years [Table 1].

The results revealed that 124 respondents had medicines in their room representing 66% of respondents. Respondents

**Table 1: Demographic characteristics of respondents**

Variables	Frequency (%)
Gender	
Male	104 (55.3)
Female	84 (44.7)
Age in years	
15–20	32 (17.0)
21–25	69 (36.9)
26–30	45 (23.9)
31–35	3 (1.6)
Accommodation	
University accommodation	77 (41.0)
Private accommodation	111 (59)
Professional year	
First	52 (27.7)
Second	48 (25.5)
Third	38 (20.2)
Fourth	50 (26.6)

reported getting the medicines in their room on prescription (25.8%), self-medication (56.5%), and 17.7% of respondents reported getting their medicines on both prescription and self-medication. The self-medication practice was common among respondents (53.2%); however, no significant relationship ( $\chi^2$ -value obtained was 2.718, at 1 degree of freedom with a resultant *P* value of 0.099) exists between having medicine in the room and self-medication practice when  $\chi^2$ -test was applied to the data collected. In addition, there were no associations (*P*>0.05) between these variables and any of the demographic variable studied [Table 2]. About 26.9% of medicines used for self-medication were obtained from the medicines available in respondents' rooms [Figure 1]. Only 44.1% of the medicines items present in respondents' rooms were in their original pack, and about 60.0% of the respondents reported checking the expiry date of their medicines prior to use.

Respondents reported having about 318 medicines items (representing 2.56 items per student's room) in all, with the tablets (62.3%) being the most common dosage form [Table 3] and analgesics and antibiotics being the common classes of medicines present in their rooms [Table 4]. The common sources of these medicines were community pharmacy and the patent medicine stores [Figure 2].

Common reasons given by respondents for having the medicines in their rooms were that the medicines were leftover medicines and that they were keeping the medicine for emergency use or in an event of a similar illness [Table 5].

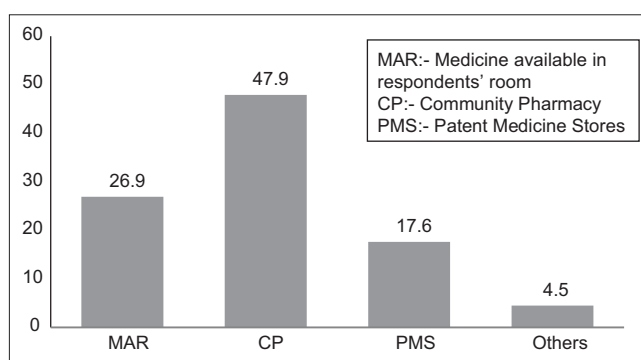
**Table 2: Proportion of respondents that had medicines in their room and those that self-medicate**

Variables	No. having medicine in their room (%)	<i>P</i> value	No. that self-medicated	<i>P</i> value
Gender		0.1548		0.3380
Male	64 (61.5)		53 (51.0)	
Female	60 (71.4)		47 (56.0)	
Age in years		0.3424		0.2659
15–20	25 (78.1)		23 (71.9)	
21–25	69 (63.9)		53 (76.8)	
26–30	28 (62.2)		21 (46.7)	
31–35	2 (66.7)		3 (100)	
Accommodation		0.8049		0.4666
University accommodation	50 (64.9)		42 (54.5)	
Private accommodation	74 (66.7)		58 (52.3)	
Professional year		0.0617		0.0535
First	37 (71.2)		31 (59.6)	
Second	34 (70.8)		30 (62.5)	
Third	18 (47.3)		11 (28.9)	
Fourth	35 (70.0)		28 (56.0)	
Overall	124 (66.0)		100 (53.2)	

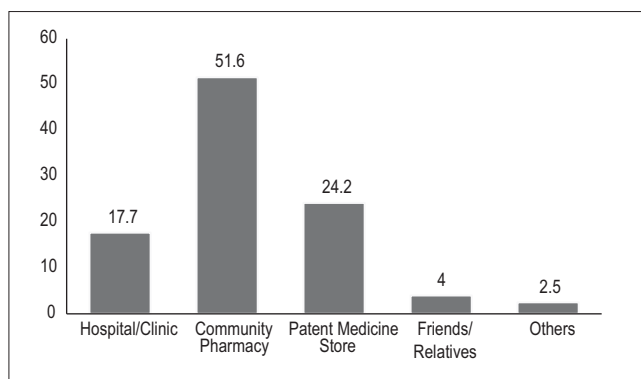
Leftover medicines reported by respondents consisted of about 118 medicine items representing 37.1% of the total medicine items in students' rooms. Common classes of medicines reported as leftover medicines were analgesics (36.4%), antibiotics (33.1%), and antihistamines (11.9%) [Figure 3]. Most respondents (72.2%) reported disposing of their unused medicines in a trash can/dust bin [Table 6].

## DISCUSSION

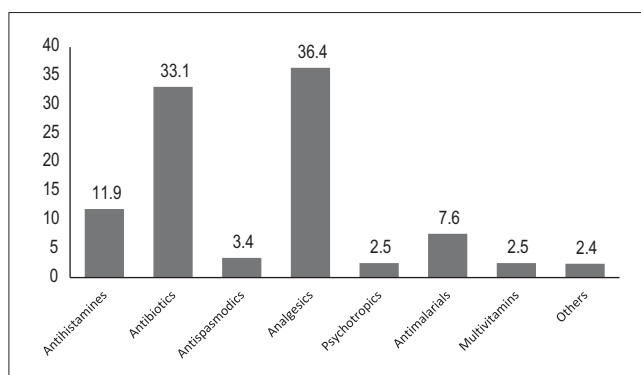
The study revealed that a high proportion of students (66%) had medicines in their rooms with an average of 2.56 medicines per student room. This is not surprising because in developing countries, self-medication is high



**Figure 1:** Sources of medicine used for self-medication by respondents



**Figure 2:** Sources of the medicines present in respondents' room



**Figure 3:** Classes of leftover medicines present in respondents' room

**Table 3: Number of medicine items according to dosage forms in respondents' rooms**

Dosage form	Frequency (%)
Tablets	198 (62.3)
Capsules	52 (16.4)
Injectables	3 (0.9)
Syrups/suspensions	20 (6.3)
Lotions/creams	37 (11.6)
Others	8 (2.5)

**Table 4: Classes of medicines found in respondents' rooms**

Class	Frequency (%)
Antihistamines	38 (11.9)
Antibiotics	80 (25.2)
Antispasmodics	11 (3.5)
Analgesics	109 (34.3)
Psychotropic agents	8 (2.5)
Antimalarials	24 (7.5)
Antacids/antiulcer agents	13 (4.0)
Antidiarrhea	4 (1.3)
Multivitamins	20 (6.3)
Others	11 (3.5)

**Table 5: Reasons given by respondents for having medicines in their room**

Reason	Frequency (%)
Emergency/first aid	38 (25.9)
Regular medicine	24 (16.3)
Left over medicine	43 (29.3)
Keeping for similar illness	38 (25.9)
Other reasons	4 (2.7)

**Table 6: Medicine disposal practices among respondents**

Medicine disposal site	Frequency (%)
Trash can/dust bin	96 (72.7)
Sink	6 (4.5)
Toilet	17 (12.9)
Burn medicine	13 (9.9)

and medicines are kept for re-use in the event of a similar illness or to give it to someone else who might have a similar problem with them.<sup>[14]</sup> This study also confirms these findings as self-medication among respondents was high (53.2%) and respondents reported keeping medicines at home for re-use in case of similar illness and having leftover medicines as reasons for having medicines in their room. Leftover medicines are due to non-adherence to therapy, change in the treatment plan, or over-supply of medicines and this can result in medicine wastage.<sup>[6]</sup> Therefore, the high percentage (37.1%) of leftover medicines found in this study calls for interventions to reduce medication wastage.

The common classes of medicines found in students' rooms were analgesics and antibiotics. In Nigeria,

analgesics are the most commonly procured medicines and they are usually obtained over the counter. As a result, self-medication with this class of medicines is high. They are usually the first-line medicines used by community members in an event of an illness. This is because most illnesses present with pain and fever and these medicines are mostly used for symptomatic relief. Most households therefore keep analgesics at home for use in an event of any health problem. However, their use can lead to adverse effects. For example, they can contribute to increased risk of liver and kidney damage when taken in high doses.<sup>[15]</sup>

The high amount of antibiotics found in students' rooms is an indication of inappropriate use of antibiotics. These antibiotics could be as a result of noncompliance to prescribed antibiotics, over prescription of antibiotics or antibiotics obtained as a result of self-medication. This is evident in the high amount of antibiotics reported as leftover medicines by respondents [Figure 3]. Inappropriate use and resistance to antibiotics have been reported in developing countries, and this is a major challenge in the treatment of infectious diseases in developing countries where antibiotics are usually obtained without a prescription.<sup>[16,17]</sup>

About 66% of the medicine items present in the students' rooms were not in their original packages. When medicines are stored outside their original packages, individuals may not be able to benefit from the vital medicine information contained in either the medicine leaflets/inserts or in some cases information written on medicine packages and this can result in inappropriate handling and use of medicines. In addition, it can also lead to the administration of expired medicines as some medicines have their expiry date written on their packaging.

In Nigeria, basic education on appropriate disposal of unused medicines is lacking. Unused/expired medications are not returned to pharmacies for appropriate disposal as obtainable in other developed countries. None of the respondents indicated returning unused medications to pharmacies. The majority of respondents reported that they dispose unused and expired medications in dustbin/trash cans. Disposing medicines in refuse dumps can have adverse effects on pets and humans, especially children.<sup>[18]</sup> The accumulations of pharmaceutical compounds in the environment have been reported. Pharmaceuticals have been found in soil, ground water, surface water, and drinking water.<sup>[19,20]</sup> However, no such studies have been done in Nigeria, but it is likely that these compounds are accumulating in the environment, since they are mostly disposed in refuse dumps. Hence there is the need for public education on appropriate disposal of

medicines. In addition, the government should encourage the reverse distribution network in which community members are encouraged to return unwanted medications to pharmacies which then arrange for approved agents or bodies to collect and destroy them.<sup>[21]</sup>

### Study limitation

This study was based on the self-reported presence of medicines in respondents' residence. It is therefore possible that the medicines were under-reported or some names of unidentified medicines were wrongly reported.

### CONCLUSION

This study demonstrated that the prevalence of medicine storage in students' rooms and self-medication practices is high. No relationship exists between keeping of medicine in the student rooms and self-medication practices. Analgesics and antibiotics were the most common types of medicines present in students' residences. There is therefore need for education on appropriate handling and use of medicines by students.

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