

Prevalence and Factors Associated with Self Medication Among People Living in Urban Slums of Sokoto Metropolis, Sokoto State, Nigeria

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Abstract: Self-medication is the selection and use of medicines by individuals to treat self-recognized illness or symptoms and has been on the increase as a result of poverty, ignorance, low educational status among others. This study was conducted to determine the prevalence and factors associated with self-medication among people living in urban slums of Sokoto metropolis. This cross sectional descriptive study was carried out among adult urban slum dwellers in Sokoto metropolis using multistage sampling technique. Semi-structured, interviewer administered questionnaire was used to obtain information from respondents. Data was analyzed using IBM SPSS computer software. The association between categorical variables was tested using bivariate analysis and predictors of self-medication determined using logistic regression. A total 301(91.2%) of the respondents had ever practiced self-medication while 239(77.1%) did so in the last three months. Fever and headache were the commonest conditions for practice of self-medication and paracetamol, ibuprofen and Coartem® (Artemether and lumefantrine) were the commonly used drugs. Being a male ($p<0.007$) and not being educated beyond primary education ($p<0.033$) were the predictors of self-medication practice. Self-medication among urban slum dwellers was high despite their knowledge of its associated harmful effects. This underscores the need for concerted efforts to nip this public health menace in the bud through public enlightenment to help prevent indiscriminate hawking and sale of drugs without prescription.

Keywords: Self Medication, Urban Slums, Awareness, Sokoto

1. Introduction

Whenever people are ill they have the choice of either seeking help, self-medicating or do nothing. The concept of self-medication otherwise called self-treatment has always been in existence since time immemorial and has become a serious public health concern. The World Health Organization (WHO) defines self medication as the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent diseases or symptoms or medication recommended by the source or health workers not entitled to prescribed medicines. [1] It is believed that 70–95% of people do not seek healthcare when they become ill. [2] Self-medication has generally been

seen as an acceptable practice and is considered as a component of self-care. [3] It has also been approved by WHO for effective management of minor ailments especially in rural and underserved communities where the health care services are overstretched or understaffed. [3]

Self-medication has been shown to be on the increase due to a number of factors such as age, advertisement of drugs by manufacturers, poverty, ignorance, low educational status, the prevailing low socio-economic status of people especially among those who stay in urban suburbs, lifestyle, legislation regulating the dispensing and sales of drugs, previous experiences with symptoms or diseases, ready access to drugs and greater availability of medicinal products in the market. [4-8] However, it is worth noting that self-medication must be

carried out by individuals with appropriate health information. [9] When properly carried out self-medication can relieve acute medical symptoms and save time waiting to see a health worker but if inappropriately done would rather lead to serious health hazards such as adverse drug reaction, increased tendency for drug resistance and wastage of resources or even death. [6, 9]

Antimicrobial resistance is a serious global public health challenge largely caused by inappropriate prescription and drug use shown to occur at all socio-economic levels. [10] Slums are heavily populated urban informal neighborhoods, settlements or city regions that do not have access to the basic living conditions necessary for its inhabitants to live in a safe and healthy environment. [11] These city regions harbor persons with varied personal characteristics; those caught up with rural-urban migration but cannot cope with the demands of city life, menial workers and those typically in the lowest ebb of the socio-economic ladder.

Globally, the easy accessibility and availability of a wide variety of drugs coupled with lack of regulatory control has led to problems associated with drug use such as inappropriate self-medication, failure to recognize or report adverse drug reactions, incorrect route of administration, excessive dosage, excessive and prolonged use of drug, risk of dependence and abuse. [4, 10] Self-medication even when inappropriately done often gives temporary, superficial relief and thus masks symptoms which may be indicative of a more serious problem. Secondly, it may be ineffective as in taking antibiotics for viral illness. [12, 13]

Studies on factors influencing self-medication are important because of the grave dangers associated with the practice. However, very few studies have been carried out in Nigeria on self medication at the Community level to assess the magnitude of the problem and to the knowledge of authors, only three studies have been carried out in Sokoto State amongst government employees, pregnant women and students of higher institutions which did not address the health challenges of people living in slums. [14-16]

Therefore, this study was carried out to provide an insight into self-medication practices amongst people living in urban slums of Sokoto metropolis who do not have access to basic health care and other social amenities, findings of which will assist Nigerian policy makers and other regulatory bodies on rational drug use that will eventually curb this public menace.

2. Methodology

2.1. Study Design and Sampling

This study was carried out in Sokoto metropolis, the capital city of Sokoto State. Sokoto State has a land area of about 26,595,000m² with a population of about 4.2 million people in 2016. It shares boundaries with Niger Republic to the north, Zamfara State to the south east and Kebbi State to the south west. Sokoto town is host to several educational and tertiary health institutions and serves as a sub-regional centre to the neighbouring states of Zamfara and Kebbi states and parts of

Niger Republic leading to almost daily influx of people for educational or health related pursuits and even commercial activities. This has given rise to several slums scattered around the city due to population growth increasing at a rate beyond the normal growth of the city. These slums have poor road networks, lack durable housing of a permanent nature, lack security, lack easy access to adequate and safe water, poor sewage disposal and sanitation. These slums include Mabera, Diplomat-Rijiya, Bello way, Old Airport, Arkilla, Tudun wada and Unguwar Rogo.

There are about 30 registered pharmaceutical stores, about 240 patent medicine stores and several more drug vendors who are more readily seen in these slums. Pharmaceutical stores require prescription before dispensing most drugs especially prescription only drugs while most patent medicine stores, dispensaries and drug vendors do not require prescriptions before dispensing drugs.

This was a cross-sectional descriptive study among residents of urban slums in Sokoto metropolis. All individuals greater than 18 years of age in the selected areas were eligible to be recruited into the study. Using the sample size formula for a descriptive study for a population greater than 100,000 ($n = Z^2pq/d^2$) and allowing for 10% non-response rate, a sample size of 330 was obtained. A multistage sampling technique was employed in recruiting the study participants after identifying seven slum areas within Sokoto metropolis.

In stage 1, using a simple random sampling by balloting three urban slums were selected out of the seven identified.

In stage 2, a line list of all the selected settlements was obtained from the WHO office and using a Simple random sampling by balloting, three settlements in each slum area were selected. Finally, line listing and numbering of all the houses in the selected settlements was carried out. Proportional to size of population was done for each settlement and using systematic sampling method after obtaining a sampling fraction, the desired numbers of houses were selected. For each household, one eligible adult was selected by simple random sampling using balloting and where there was no eligible person, the next household with eligible respondent was selected. This was continued until the desired sample size was achieved.

2.2. Data Collection and Analysis

Data was collected using an interviewer administered, semi-structured questionnaire, which contained both open and close-ended questions and consisted of information on socio-demographic characteristics, prevalence, pattern and factors associated with self medication among the participants. Data was cleaned, entered into and analyzed using IBM Statistical Package for Social Sciences (SPSS) version 23.0. Frequencies of the various variables were determined and tabulated. Chi-square test was used to test significance of the associations between variables. Confidence level was set at 95%, i.e. $\alpha = 0.05$ significance level. Ethical clearance was obtained from Ethics and Research Committee, Ministry of Health Sokoto State. Verbal informed consent was obtained from the respondents after explaining the objectives of the

study to them and were given the option to opt out at any stage of the study.

Operational definition

Within the context of this study, self-medication is defined as use of any pharmaceutical or medicinal products to treat self-recognized disorders or symptoms in the last three months prior to this study.

3. Results

3.1. Socio-demographic Characteristics

The age of the respondents ranged from 20 to 65 years (Mean = 32.7 ± 9.0 years). Most of the respondents, 251 (76.1%) were in the 20-39 years age group. Males accounted for the majority 242 (73.3%) of the respondents and most, 203 (61.5%) of the respondents were married while Hausa/Fulani tribe accounted for almost three-quarters 234 (70.9%) of the respondents. A total 159 (48.2%) of the respondents attained secondary school education and more than half 190 (57.6%) of them engaged in business (Table 1). Less than half 132 (40%), of the respondents were aware of self medication with friends and relations accounting for the commonest source of information regarding it.

Table 1. Socio demographic characteristics of the respondents.

Variable	Frequency (%) (n=330)
Age groups (in years)	
20-39	251 (76.1)
≥40	79 (23.9)
Gender	
Male	242 (73.3)
Female	88 (26.7)
Educational status	
Informal	42 (12.7)
Primary	27 (8.2)
Secondary	159 (48.2)
Tertiary	102 (30.9)
Tribe	
Hausa/Fulani	234 (70.9)
Yoruba	50 (15.2)
Igbo	23 (7.0)
Others	23 (7.0)
Marital status	
Single	125 (37.9)
Married	203 (61.5)
Divorced	2 (0.6)
Occupation	
Student	64 (19.4)
Business	190 (57.6)
Civil servant	56 (17.0)
Farming	9 (2.7)
Others	11 (3.3)
Monthly income (#)	
<15,000	86 (26.1)
15,000-29,000	113 (34.2)
30,000-44,000	37 (11.2)
45,000-60,000	46 (13.9)
>60,000	48 (14.5)

3.2. Practice of Self Medication

Life time practice of self medication was reported

amongst 301 (91.2%) of the respondents with 239 (77.1%) of the respondents practicing self-medication 3 months prior to this study and more than half, 122 (51.1%) who practiced self medication in the last three months, did so 2-4 times (Table 2).

Table 2. Practice of self medication.

Variable	Frequency (%)
Ever practiced self-medication (n=330)	
Yes	301 (91.2)
No	29 (8.8)
Practice of self medication in the last 3 months	
Yes	239 (77.1)
No	71 (22.9)
Frequency of self medication in last 3 months	
Once	86 (36.0)
2-4	122 (51.1)
5-9	30 (12.6)
≥10	1 (0.4)

3.3. Pattern of Practice of Self Medication

Malaria fever 146 (44.2%), headache 146 (44.2%) and body pains/aches 130 (39.4%) were the commonly self-treated ailments. A good number of our respondents used paracetamol 157 (47.4%), ibuprofen 110 (33.3%), antimalarials 108 (32.7%) and antibiotics 82 (24.8%), while 15 (4.5%) could not remember the drugs that they had used. The commonest antimalarial used was Coartem®, an artemisinin combination therapy of artemether and lumefantrine. More than one-third (39.5%) took the decision for their self-medication based on previous experience. Two-thirds of the respondents sourced their medication from either a patent medicine store or a chemist (Table 3).

Table 3. Pattern of self-medication among respondents.

Variable	Frequency (%)
Ailments treated by respondents	
Fever	146 (44.2)
Headache	146 (44.2)
Body Pain	130 (39.4)
Cough	89 (27.0)
Diarrhea	48 (14.5)
Others	10 (3.0)
Drugs frequently used by respondents	
Paracetamol	157 (47.4)
Ibuprofen	110 (33.3)
Antimalarials	108 (32.7)
Panadol extra	68 (20.6)
Procold	34 (10.3)
Pentazocin	32 (9.7)
Actifed	23 (7.0)
Diclofenac	16 (4.8)
Cough mixtures	16 (4.8)
Antibiotics	82 (24.8)
Penic/Aspirin	5 (1.5)
Can't remember	5 (1.5)
Source of information about self medication	
Previous experience	116 (39.5)
Chemist	89 (30.3)
Health personnel	38 (12.9)
Friends	20 (6.8)
Relatives	16 (5.4)
Previous prescription	13 (4.4)
Others	2 (0.7)

Variable	Frequency (%)
Source of drugs by respondents	
Patent medicine store	105 (35.7)
Chemist	94(32.0)
Pharmacy store	43 (14.6)
Drug vendors	40 (13.6)
Relatives	5 (1.7)
Health workers	5 (1.7)
Friends	2 (0.7)

3.4. Self Medication Related Factors

More than half of the respondents 201 (63.1%) were aware about the harmful effects of self-medication though only one-quarter 84(25.4%) were aware it could lead to development of drug resistance. Majority of the respondents 238(71.9%) preferred to self-medicate rather than see a doctor because they perceived their illness as a minor one. About half 167 (50.5%) of the respondents stated that cheaper cost of the drugs was responsible for the practice of self-medication. Only 52(15.8%) of the respondents had ever experienced side effects including nausea/vomiting, rashes and diarrhea (Table 4).

Table 4. Self medication related factors.

Variable	Frequency (%)
Awareness of harmful effect of self medication	
Yes	209 (63.1)
No	61 (18.4)
I don't know	26 (7.9)
Awareness of occurrence of drug resistance	
Yes	84 (25.4)
No	54 (16.3)
I don't know	159 (48.0)
Reasons for not seeing a doctor	
Minor illness	238 (71.9)
Long waiting hours	143 (43.2)
Money constraint	108 (32.6)

Variable	Frequency (%)
Far place	87 (26.3)
Attitude of health workers	17 (5.1)
Others	3 (0.9)
Reasons for self-medication	
Cheaper cost of drugs	167 (50.5)
Limited access to medical care services	135 (40.8)
Easy accessibility of cheaper drugs	103 (31.1)
More efficient	37 (11.2)
Traditional and cultural believe about health	13 (3.9)
Experienced side effects	
Yes	52 (15.8)
No	278 (84.2)
Side effects experienced	
Nausea/Vomiting	17 (32.0)
Itching	13(24.0)
Rashes	8(16.0)
Diarrhea	2 (4.0)
Headache	2 (4.0)
Others	10(20.0)

3.5. Factors Associated with Practice and Predictors of Self Medication

The proportion of males (75.7%) that practiced self-medication was statistically significantly higher than that of females (42.3%) ($p < 0.01$). Similarly, the less educated the respondent, the higher the chances of self-medicating ($p < 0.049$). The proportion of respondents engaged in business activities that self-medicate (65.4%) was statistically significantly higher than the other occupations ($p < 0.000$) (Table 5). Being a male ($p < 0.007$) and not being educated beyond primary education ($p < 0.033$) were found to be predictors of self-medication practice (Table 6).

Table 5. Factors associated with practice of self-medication.

Variable	Practice of self-medication		Test statistics & p-value
	Yes (%)	No (%)	
Age (years)			
20–39	231 (76.7)	25 (86.2)	$\chi^2 = 1.399$
≥40	70 (23.3)	4 (13.8)	$p < 0.497$
Sex			
Male	228 (75.7)	14 (48.3)	$\chi^2 = 10.208$
Female	73 (42.3)	15 (51.7)	$p < 0.01$
Educational status			
At most Primary	68 (22.6)	1 (3.4)	$\chi^2 = 7.855$
Secondary	145 (48.2)	14 (48.3)	$p < 0.049$
Tertiary	88 (29.2)	14 (48.3)	
Marital status			
Single	106 (35.2)	19 (65.5)	$\chi^2 = 10.381$
Married	195 (64.8)	10 (34.5)	$p < 0.06$
Occupation			
Student	46 (15.3)	18 (62.1)	
Business	197 (65.4)	2 (6.9)	$\chi^2 = 47.019$
Civil servant	48 (15.9)	8 (27.6)	$p < 0.000$
Others	10 (3.3)	1 (3.4)	
Monthly income			
<15,000	71 (23.6)	15 (51.7)	
15,000–29,000	108 (35.9)	5 (17.2)	$\chi^2 = 13.409$
30,000–44,000	34 (11.3)	3 (10.3)	$p < 0.09$
45,000–60,000	45 (15.0)	1 (3.4)	
≥60,000	43 (14.3)	5 (17.2)	

Table 6. Predictors of self-medication.

Variable	B	SE	p-value	95% confidence interval	
				Lower limit	Upper limit
Sex	0.098	0.036	0.007*	0.026	0.17
Educational status	0.037	0.017	0.033*	0.003	0.071
Marital status	-0.059	0.035	0.098	-0.129	0.011
Occupation	-0.015	0.019	0.446	-0.052	0.023
Monthly income	-0.007	0.013	0.586	-0.032	0.018

4. Discussion

The highest proportion of study subjects who practiced self medication was in the age group 20-39 years. This is in agreement with findings from another study in Nepal India, [17] but in contrast to other studies where the highest prevalence of self medication was amongst the subjects aged 15-49 and 35-60 years respectively. [18] This age group in our study is the most productive age and considering their ever busy schedules are most unlikely to go to health facilities where the waiting times are often too long for them to bear.

Varying estimates of self medication practices ranging from 17.9-91.4% have been observed from several studies conducted from different locations in Nigeria. [19-24] These variations could be due to regional differences in healthcare seeking behaviors, socio-economic factors, and the availability and accessibility to health care facilities and services. This study showed that majority of the respondents (91.2%) had ever practiced self-medication While 77.1% did so in the last three months. In Nigeria where the bulk of household health care expenditure is usually out of pocket (OOP) and individuals' financial resources are often scarce, whenever people become ill, healthcare utilization is usually not the highest priority [2] but rather people consider self-medication among other options. Our findings were in consonance with a study done in an urban slum area of Lagos, Nigeria where 91.6% of the respondents said that they had ever taken medication without doctor's prescription. [10] The high prevalence (77.1%) of self medication in the last three months observed in our study is in consonance with findings from two studies in urban slums of India where prevalence of 73 and 68% respectively were recorded. [25, 26] In contrast, lower figures have been observed in other studies. [27-29]

Self-medication is commonly practiced in developed countries like Canada and USA with prevalence being up to 92%. [6] Similarly, high prevalence of self medication have been reported from other studies. [8, 30] In other developing countries, prevalence of self medication ranged from 12 to 95%. [17, 31-33] However, various studies in Nigeria have shown varied prevalence rates of self-medication ranging from 17.9%-91.4%; the different study settings, methodology and socio-demographics could have accounted for the wide variations in the prevalences noticed. [19-23] The high prevalence of self medication in developing countries could be attributed to inadequate and mal-distribution of health facilities and dearth of qualified healthworkers which ultimately lead to high doctor-patient ratio and hence long waiting times in health facilities. These discourages patients

from attending public health facilities and invariably results in self medication by prospective patients who have easy access to over the counter drugs without the ritual of all the long waiting times.

About three-quarters (77.1%) of our respondents had managed some illnesses by self-medication within the last 3 months, this also is similar to findings in another study done among urban slum dwellers in Puduchery, India where the prevalence of self-medication was 71%. [29]

The commonly used drugs were the relatively cheaper analgesics/antipyretics (paracetamol, Ibuprofen) and antimalarial (coartem®) which were used for headache, body pain and fever. This compares favourably with findings from similar studies. [24, 29, 34, 35] A similar study conducted in Opokuma, Bayelsa State, Nigeria also reported Ibuprofen as the most frequently used drug for self medication. [36] Paracetamol is the commonest analgesic found in most communities sold even by itinerant drug hawkers and this may not be unrelated to the fact that the regulatory agencies have not been able to bear their weight on the many itinerant medicine sellers commonly found in the nooks and crannies of our communities thus giving members of the public unfettered access to these common analgesics and antimalarials.

Anecdotal evidence has shown that the vast majority of the population of slums work in the unorganized sectors of the economy involving strenuous physical activities compared to organized sector which sometimes results in body ache, pain and headache. These slum workers invariably want quick recovery from their illnesses to enable them return to their duty posts. Also, the long waiting time in health facilities coupled with the high cost of services and drugs makes it imperative to seek for alternative means of health care hence the resort to self medication. This lays credence to the fact that financial accessibility (cost and affordability) plays an important role in self-medication.

Findings from our study showed that malaria fever was one of the commonest ailment for self medication and this is in agreement with findings from other studies. Also, the finding in our study corroborated the fact that Malaria is responsible for at least 60% of presentations made at most out-patient health facilities in Nigeria. [37, 38] In contrast to the findings from our study, a similar study observed pain as the commonest indication for self medication. [29] On the other hand a study from Khartoum, Sudan showed that cough and common cold were the commonest indications for self medication. [39]

More than one-third (39.5%) of the respondents opined that their decision to engage in self-medication was based on

prescriptions that they were given for a previous similar experience for which they had seen a healthcare worker for. This was also observed by Gupta and colleagues in their study amongst urban slums in India. [29] This practice, undoubtedly is being encouraged by the frequent “out of stock” syndrome of basic essential drugs commonly seen in our public health facilities whence patients are given prescriptions to source for the drugs outside the health facility. This was happening despite the fact that most of the respondents (63.1%) were aware of the harmful effects associated with inappropriate self-medication; however their continued practice may not be unconnected with the fact that only about one-quarter had ever experienced unwanted side effects. In agreement with the findings in this study, Katkuri and his colleagues also observed that more than half of their respondents were aware of the deleterious effects of self medication. [25] On the contrary, a similar study conducted in Lagos Nigeria revealed that most of the respondents got information influencing self-medication practice from patent medicine dealers. [40] Patent medicine vendors (PMVs) and chemists were the most patronized outlets for self medication by the study subjects. This is largely because anecdotal evidence has shown that PMVs and chemists are the drug retail outlets that are readily accessible to urban slum dwellers. Secondly, it is also believed that the drugs sold there are cheaper and the clients do not have to wait for long to access care and services.

This study revealed that the predictors for self-medication were, being a male and not being educated beyond primary school level. This was corroborated by a similar study in Lagos which showed a strong relationship between educational level and tendency to self-medicate with the uneducated having a higher tendency to self-medicate and the educated respondents having a greater tendency to obtain drugs from hospitals/pharmacies. [40] This underscores the need for all relevant regulatory bodies including the National Agency for Food and Drug Administration and Control (NAFDAC) to regularly educate the general public on the dangers inherent in the practice of self-medication and also enforcing all relevant laws pertaining to indiscriminate hawking of drugs on the street and sale of drugs without the doctors’ prescriptions over the counter.

5. Conclusion

Findings from this study revealed that less than half of the respondents were aware of self medication. Despite the low level of awareness, the practice of self medication was very high with fever and headache responsible for the commonest reason to self medicate. Although, a greater proportion of the respondents were aware of the dangers inherent in the practice of self medication, they opted for it because they perceived their illness as minor and not very serious. . The commonly used drugs were the relatively cheaper analgesics/antipyretics (paracetamol, Ibuprofen) and antimalarial (coartem®) which were used for headache, body pain and fever while malaria was the commonest ailment that warranted self medication. This underscores the need for

relevant regulatory bodies like National Agency for Food and drug administration control (NAFDAC) to educate the general public on the dangers posed by this practice and also enforcement of relevant laws against indiscriminate hawking of drugs and the sale of drugs without prescription. Government has to improve on the staffing of health facilities to reducing waiting time and also provide essential drugs at affordable prices if the goals of universal health coverage are to be attained.

6. Limitations of the Study

Findings in this study are based on self reporting and some respondents may inadvertently hoard useful information. However, they were reassured before the commencement of the study on confidentiality of all information so volunteered.

Conflict of Interest

The Authors declare that they have no competing interests.

Contributions of Authors

All the authors participated in all the phases of the study which include conceptualization of the study, protocol development, data collection, analysis and manuscript preparation and have all gone through the final manuscript.

References

- [1] World Health Organization (2000) Guidelines for the Regulatory Assessment of Medicinal Products for Use in Self-Medication., Geneva. Available: <http://apps.who.int/medicinedocs/pdf/s2218e/s2218e.pdf>. Accessed December 10, 2018).
- [2] Yuefeng L, Keqin R, Xiaowei R, Use of and factors associated with self-treatment in China, BMC Public Health 2012; 12: 995.
- [3] Fakeye T O, Adisa R, Olatunji E. Self-medication among hospitalized patients in selected secondary health facilities in South Western Nigeria, Pharmacy Practice (Internet) 2010; 8 (4): 233-237.
- [4] Chouhan K, Prasad B S. Self-medication and their consequences: a challenge to health professional. Asian Journal of Pharmaceutical and Clinical Research, 2016; 9 (2): 314-317.
- [5] Naidu A S, Kiran P, Madhavi S. Prevalence of self-medication and Drug use behaviour among housewives in an urban slum area, Visakhapatnam. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). 2015; 14 (10): 55-59.
- [6] James H, Handu SS, Al Khaja KA, Otoom S, Sequeira RP. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. Med Princ Pract, 2006; 15 (4): 270–75.
- [7] Pan H, Cui B, Zhang D, Farrar J, Law F, Ba-Thein W Prior Knowledge, Older Age, and Higher Allowance Are Risk Factors for Self-Medication with Antibiotics among University Students in Southern China. PLoS ONE 2012; 7 (7): e41314. doi: 10.1371.

- [8] Klemenc-Ketis Z, Kersnik J Sources and predictors of home-kept prescription drugs. *Int J Clin Pharmacol Ther* 2010; 48: 705–7.).
- [9] Pankaj G, Bobhate S P, Shrivastava R S. Determinants of self-medication practices in an urban slum community. *Asian Journal of Pharmaceutical and Clinical Research*. 2011; 4 (3): 54-57.
- [10] Kehinde O O, Ogunnowo E B. The pattern of antibiotic use in an urban slum in Lagos State, Nigeria, West African Journal of Pharmacy. 2013; 24: 49-57.
- [11] Badaru Y M, Olayemi I K, Spencer O., Yakubu M. Analysis of urban slum diseases using geo-spatial and temporal techniques: Case study federal capital city of Nigeria. *Ethiopian Journal of Environmental Studies & Management*. 2015; 8 (2): 171-181.
- [12] Phalke VD, Phalke DB, Durgawale PM. Selfmedication practices in rural Maharashtra. *Indian J Community Med*. 2006; 31 (1): 34-5.
- [13] Auta A, Shalkur D, Omale S, Abiodun A H, Medicine Knowledge and Self-Medication Practice Among Students. *African Journal of Pharmaceutical Research & Development*. 2012; 4 (1): 6-11.
- [14] Kaoje AU., Bello A., Gana G., Raji MO., Ango UM, Abubakar A. self medication practices and perception among the government employees in Sokoto, Nigeria. *International Journal of Medical Research and Pharmaceutical Sciences* 2017; 4 (10).
- [15] Nkwoka I. J., Eguu M. O., Abubakar S. A. Self Medication among Students. *International Journal of Scientific & Engineering Research*, 2017; 6 (8): 168-1633.
- [16] Attahiru A, Awosan KJ, Hassan M, Arisegi SA, Awareness, risk perception and practice of self-medication among pregnant women attending ante-natal clinics in Sokoto, Nigeria, *Journal of Drug Delivery and Therapeutics*. 2018; 8 (4): 256-262.
- [17] Shankar PR, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: A questionnaire-based study. *BMC Fam Pract*. 2002; 3: 17.
- [18] You JH, Wong FY, Chan FW, Wong EL, Yeoh EK. Public perception on the role of community pharmacists in self-medication and self-care in Hong Kong. *BMC Clin Pharmacol*. 2011; 11: 19.
- [19] Auta A, Banwat SB, Dayom DW, Shalkur D, Aru MO. Occurance and treatment of common health problems in a Nigerian community. *J Young Pharm*. 2012; 4 (1): 49–53.
- [20] Osemene KP, Lamikanra A. A study of the prevalence of self-medication practice among university students in Southwestern Nigeria. *Trop J Pharmaceut Res*. 2012; 11 (4): 683–9.
- [21] Oyetunde OO, Olugbake OA, Famudehin KF. Evaluation of use of antibiotics without prescription among young adults. *Afr J Pharm Pharmacol*. 2010; 4 (10): 760–2.
- [22] Onanuga A, Temedie TC. Multidrug-resistant intestinal *Staphylococcus aureus* among self-medicated Healthy Adults in Amassoma, South-South Nigeria. *J Health Popul Nutr*. 2011; 29 (5): 446–53.
- [23] Onohwosafe PS, Olaseha IO. Factors influencing self-medication among students of Abadina College, Ibadan, Nigeria. *Int J Health Promot Educ*. 2013; 42 (1): 27–32.
- [24] Enato EF, Sounyo AA, Einarson TR. Medication utilization and illness management study in Nigeria. *Ann Pharmacother*. 2011; 45: 924–30.
- [25] Katkuri S, Chauhan P, Kokiwar P, Gaiki V. Prevalence of self-medication practices among urban slum dwellers in Hyderabad, India; 2016; *Int J Community Med Public Health*. 2016; 3 (7): 1816-9.
- [26] Vargese SS, Durgawale PM, Mathew P. Prevalence of self-medication in an urban slum area in Maharashtra. *J Krishna Institute Med Sci Univ*. 2013; 2: 108-10.
- [27] Jain S, Thakur A, Peepre K, Kaushal S, Kasar P. Prevalence of self-medication practices among the residents of urban slums located near govt. medical college, Jabalpur. *Int J Community Med Public Health* 2018; 5: 811-7.
- [28] Kulkarni PK, Khan M, Chandrasekhar A. Self-medication practices among urban slum dwellers in south Indian city. *International Journal of Pharma and Bio Sciences*. 2012; 3 (3): 81-7.
- [29] Gupta P, Bobhate PS, Shrivastava SR. Determinants of self-medication practices in an urban slum community. *Asian Journal of Pharmaceutical and Clinical Research*. 2011; 4 (3): 54-7.
- [30] Shafie M, Eyasu M, Muzeyin K, Worku Y, MartôÂn-AragoÂn S (2018) Prevalence and determinants of self-medication practice among selected households in Addis Ababa community. *PLoS ONE* 13 (3): e0194122. <https://doi.org/10.1371/journal.pone.0194122>.
- [31] Kasilo OJ, Nhachi CF, Mutangadura EF. Epidemiology of household medications in urban Gweru and Harare. *Cent Afr J Med* 1991; 37: 167-71.
- [32] Hussain A, Khanum A. Self-medication among university student of Islamabad, Pakistan; A preliminary study. *Southern Med Review*. 2008; 1 (1): 14-16. PubMed | Google Scholar.
- [33] Nsagha DS, Njunda AL, Kamga HL, Nsagha SM, Nguedia Assob JC, Wiysonge CS, Tabah EN, Njamnshi AK. Knowledge and practice relating to malaria in a semi-urban area of Cameroun: choices and sources of antimalaria, self-treatment and resistance. *Pan Afr Med J*. 2011; 9: 8. PubMed | Google Scholar.
- [34] Keche Y, Yegnananarayan R, Bhoyar S, Agrawal R, Chavan R, Mahendrakar P. Self-medication pattern in rural areas in Pune, India; 2012; *Int J Med Public Health*. 2012; 2 (4): 7-11.
- [35] Durgawale PM, Shinde MB, Durgawale PP, Agarwal N. Practices of Self-Medication among Tribal Population North Maharashtra (Khandesh). *Int J Sci Res*. 2014; 3 (3): 211-5.
- [36] Owonaro PA, Joshua E. Prevalence, patterns and other Contextual correlates of self medication with pain relievers in Opokuma community in Bayelsa State, Nigeria. *Sch. Ada. J. Pharm* 2015; 5 (2): 34-43.
- [37] Onwujekwe O, Uguru N, Etiaba E, Chikezie I, Uzochukwu B, Adjagba A. The economic burden of malaria on households and the health system in Enugu State Southeast Nigeria. *PLoS One*. 2013; 8 (11): e78362.

- [38] Uzochukwu BS, Ezeoke OP, Emma-Ukaegbu U, Onwujekwe OE, Sibeudu FT. Malaria treatment services in Nigeria: A review. *Niger Med J* 2010; 51: 114-9.
- [39] Awad AI, Eltayeb IB, Capps PA. Self-medication practices in Khartoum state, Sudan. *Eur J Clin Pharmacol.* 2006; 62: 317-24.
- [40] Afolabi A O. Factors influencing the pattern of self-medication in an adult Nigerian population. *Ann Afr Med* 2008; 7: 120-7.