Journal of Advances in Medical and Pharmaceutical Sciences
2(3): 89-97, 2015, Article no.JAMPS.2015.012

SCIENCEDOMAIN *international*
www.sciencedomain.org

SCIENCEDOMAIN

Self-Medication with Antibiotics amongst Civil Servants in Uyo, Southern Nigeria

Eshiet Unyime Israel[1], Essien Grace Emmanuel[1], Effiong Grace Sylvester[1*] and Ekwueme Chukuma

[1]Department of Clinical Pharmacy and Biopharmacy, Faculty of Pharmacy, University of Uyo, P.M.B. 1017, Uyo, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Author EUI designed the study and wrote the protocol. Author EGE performed the statistical analysis; author EGS wrote the first draft of the manuscript and collected all data. Author EC did the literature search and also wrote part of the manuscript. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMPS/2015/15147
Editor(s):
(1) Faiyaz Shakeel, Department of Pharmaceutics, King Saud University, Riyadh, Saudi Arabia.
Reviewers:
(1) Fatima Betul Basturk, Department of Endodontics, Marmara University, Turkey.
(2) Salvatore Virdis, Veterinary Medicine, University of Sassari, Italy.
Complete Peer review History: http://www.sciencedomain.org/review-history.php?iid=887&id=36&aid=7357

Original Research Article

Received 10th November 2014
Accepted 22nd November 2014
Published 16th December 2014

ABSTRACT

Background: Self-medication with antibiotics constitute a major form of irrational use of medicines and can cause significant adverse effects such as resistant microorganisms, treatment failure, drug toxicity, increase in treatment costs, prolong hospitalization period and increase in morbidity.
Objective: To estimate the prevalence of self-medication with antibiotics and evaluate the socio-demographic factors associated with the practice of self-medication with antibiotics among civil servants in Uyo, southern Nigeria.
Methods: A cross sectional survey using self-administered, structured, validated and pre-tested questionnaires consisting of open and closed ended questions. 526 of these questionnaires were randomly distributed to civil servants working in the Akwa Ibom state civil service secretariat, Uyo.
Results: The prevalence of self-medication observed in this study is 93.9%. The most commonly used antibiotics in self-medication were ampicillin/cloxacillin 133 (28.3%), metronidazole 130 (27.6%), co-trimoxazole 70 (14.9%), ciprofloxacin 69 (14.6%), and amoxicillin 46 (10%).
The most frequent reason given by respondents for indulging in self-medication with antibiotics was

**Corresponding author: E-mail: graceffiong2007@yahoo.com;*

the claim that illness was mild and hence did not require the attention of a physician 146(31%). Patent medicine store was the most common source of these antibiotics used in self-medication and patent medicine dealers were the most consulted for choice of antibiotics to use in self-medication. A significant number of respondents 183 (38.8%) were of the opinion that self-medication with antibiotics is safe and thus should be encouraged.
Conclusion: The prevalence of self-medication with antibiotics is high among civil servants in Uyo. There is an urgent need to educate the public on the rational use of antibiotics and enforce laws restricting access to antibiotics in Nigeria.

Keywords: Self-medication; antibiotics; civil servants; questionnaires; Patent medicine; respondents.

1. INTRODUCTION

Self-medication can be defined as the selection and use of medicine by individuals to treat self-recognized or self-diagnosed conditions or symptoms [1]. It is also defined in a broader sense as the utilization of drugs to treat self-diagnosed disorders or symptoms, or the irregular or continuous use of prescribed drugs for chronic or recurrent diseases or symptoms [2]. A major deficit of self-medication is the lack of clinical assessment of the condition by a qualified medical professional, which could result in overlooked diagnosis and hindrance of appropriate treatment [3]. Self-medication with antibiotics is a practice in which people use antibiotics to treat self -diagnosed infection. Although antibiotics are generally considered to be safe and useful for the treatment of common health problems, their excessive use can also lead to serious side effects and unfavourable reactions [4]. For instance, the therapy may be poorly suited for the illness in question, delay diagnosis and the beginning of effective therapy, increase inorganic risk due to inadequate drug therapy or of unnecessary expenses [5]. Self-medication with antibiotics constitute a major form of irrational use of medicine and can cause significant adverse effects such as resistant microorganism, treatment failure, drug toxicity, increase in treatment cost, prolong hospitalization period and increase in morbidity [6]. The practice of self-medication with antibiotics has led to the high prevalence of misuse and abuse of antibiotics which directly is responsible for the increase in antibiotics resistance and rapid exhaustion of the available antibiotics [7].

Antibiotics resistance is a serious and growing phenomenon in contemporary medicine, and has emerged as one of the pre-eminent public health concerns of the 21st century. A WHO report, 2014 [8] states “this serious threat is no longer a prediction for the future; it is happening right now in every region of the world and has the potential to affect anyone, of any age, in any country”. There were low levels of pre-existing antibiotics resistance bacteria before the widespread use of antibiotics [7]. Evolutionary pressure from their use has played a role in the development of multi-drug resistant varieties and the spread of resistance between bacterial species [9,10]. Certain factors like economic, politics, doctor’s knowledge/experience, diagnostic uncertainty and pharmaceutical marketing could lead to the irrational use of antibiotics [11].

Antibiotics resistance is a current problem worldwide, particularly in developing countries where antibiotics are available without prescription [12]. The important public health threat of antibiotics resistance depends on antibiotics overuse and misuse. Studies on prevalence and factors associated with self-medication in Nigeria are necessary to help with the planning of intervention to improve the use of medicine in the country. For such intervention to be effective there is need to understand the underlying socio-demographic factors that contribute to antibiotics misuse and the subsequent amplification of resistance in our population. This study is thus aimed at estimating the prevalence of self-medication with antibiotics and evaluating the socio-demographic factors associated with the practice of self-medication with antibiotics among civil servants in Uyo, Southern Nigeria.

METHODS

A cross sectional survey using self-administered, structured, validated, and pre-tested questionnaires. The target populations considered were civil servants working in the Akwa Ibom State Secretariat, Uyo. Sample

selection was done based on a set inclusion criteria. The sample size (n) was calculated according to the formula described by Badiger and his colleagues [13]. The questionnaires were randomly distributed to 526 civil servants based on the various ministries, departments, and units.

The questionnaires consisted of both open and closed ended questions. The information on the questionnaire included socio-demographic data such as age, sex, religion, marital status etc. In addition to questions on demographic information, the questionnaire included questions on involvement in self-medication practice, frequency of self-medication, sources of antibiotics used in self-medication, reasons for self-prescribing of antibiotics, names of antibiotics used amongst other information. Ethical clearance and formal approval was obtained from the Ethical review board of the Akwa Ibom state ministry of health, Nigeria.

2.1 Statistical Analysis

The information or data was analyzed using Statistical Program for Social Science (SPSS) version 17.0 computer package. The results were analyzed by one-way ANOVA, using SPSS statistical package. All data were expressed as Mean ± SE and difference between groups considered significant at P=.05.

3. RESULTS

Out of the 526 questionnaires distributed, 471 were completely filled yielding a completion rate of 89.5%. Twenty four were incorrectly filled, and thirty one questionnaires were not recovered. The mean age of the respondents was 45.5 years. Most of the respondents were female 260 (55.2%), while the males were 211 (44.8%). The respondents were mostly Christians 463 (98.3%), few Muslims 7(1.5%), and then 1 (0.2%) traditional religion practitioner. More than half of the respondents were singles 363 (57.1%), while 198 (42.1%) were married, the rest 4(0.8%) were separated from their spouses. One hundred and ninety seven (41.8%) of the respondents earned between 31,000-50,000 NGN, followed by 116 (24.7%) earning between 51,000-70,000 NGN, then 69 (14.8%) earning between 71,000-100,000 NGN, the rest earned between 17,000-30,000 NGN 57 (12.1%) and above 100,000 NGN 32 (7%).

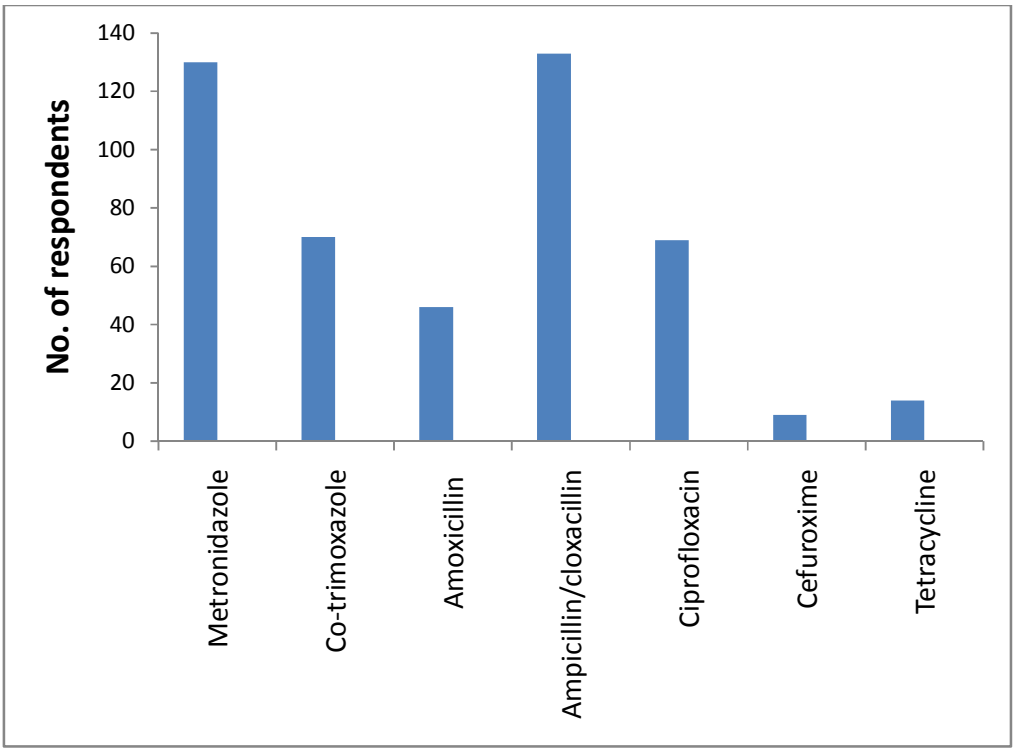

Fig. 1. Antibiotics used in self medication

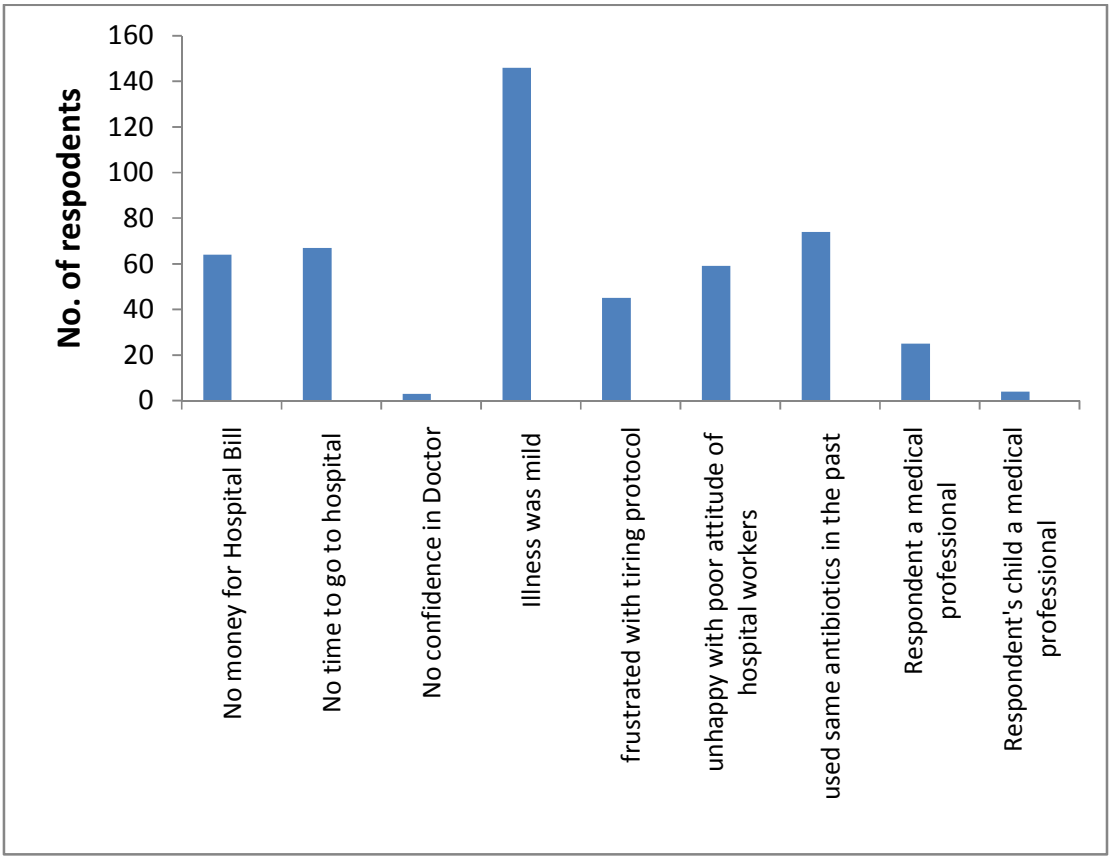

Fig. 2. Reasons for self medicaton with antibiotics

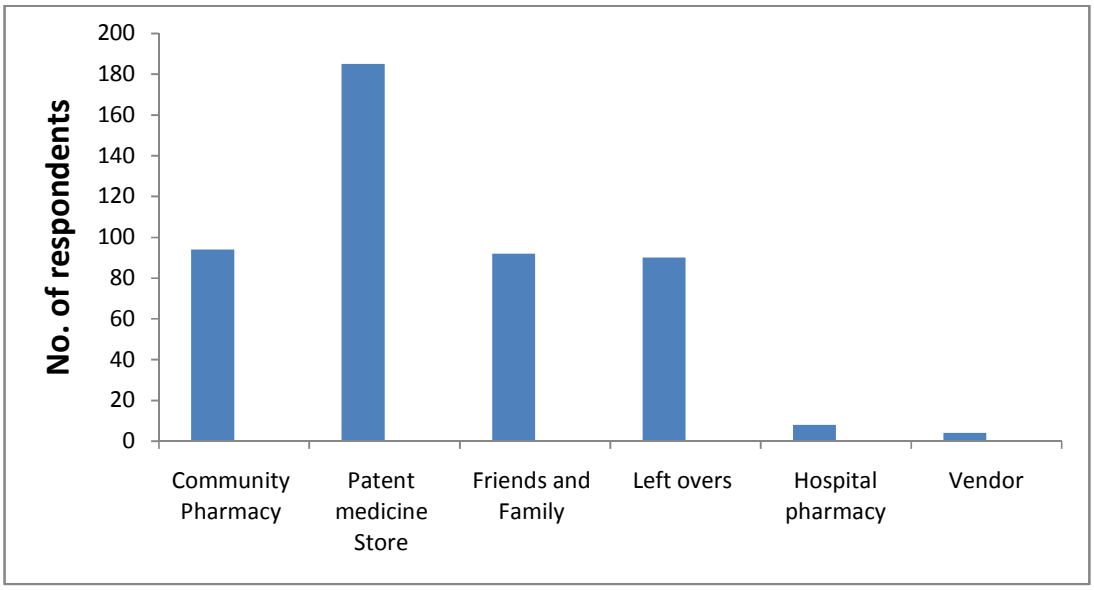

Fig. 3. Sources of antibiotics used in self medication

Most of the respondent had university/polytechnic degrees 185 (39.2%), followed by secondary school education 169 (35.9%), then primary school education 109 (23.1%), the rest were graduates of civil service training 5 (1.1%). The number of respondents who practice self medication with antibiotics were 443. Respondents with university/polytechnic degrees showed a higher prevalence of the practice of self-medication with antibiotics (35.2%) than respondents with secondary education (32.9%), primary education (23.1%), and graduates of civil service training (1.1%).

The result showed that majority of the respondents were not on National Health Insurance Scheme (NHIS) 464 (98.6%), while only 7 (1.4%) were on NHIS.

The 5 most commonly used antibiotics without prescription by the respondents were ampicillin/cloxacillin 133 (28.3%), metronidazole 130 (27.6%), co-trimoxazole 70 (14.9%), ciprofloxacin 69 (14.6%), amoxicillin 46 (10%). Only 9 (1.8%) and14 (3.1%) responded that they have self-medicated with cefuroxime and tetracycline respectively (Fig. 1).

The most common reason given by respondents for indulgence in self-medication with antibiotics was the claim that illness was mild and hence did not require the attention of a physician 146 (31%). Other reasons given were; same antibiotics were used previously for a similar symptom 74 (15.9%), no time for hospital visits 67 (14.2%), no money for hospital bills 64 (13.6%), frustrated with hospital protocols 45 (9.5%), no confidence in doctors and the health care system 3 (0.6%), while 29 (6.1%) claimed that either themselves or their relation is a health care professional (Fig. 2).

The most common illness for which antibiotics was used through self-medication were; cough 117 (24.9%), stomach pain 94 (19.9%), fever 78 (16.6%), running nose 64 (13.6%), sore throat 57 (12.1%), 28 (5.9%) headache, 23 (4.8%) toothache, 8 (1.7%) prevention of STI, then 2 (0.4%) skin infection.

Twenty nine (6.1%) of the respondents claimed never to have taken antibiotics without prescription, 34 (49.7%) of the respondents took antibiotics without prescription rarely, while 138 (29.2%) and 69 (14.7%) took antibiotics without a prescription sometimes or always respectively.

The source of antibiotics were patent medicine store 185 (39.3%), family and friends 92 (19.5%), leftovers from previous use 90 (19%), community pharmacy 94 (19.9%), obtained from a hospital pharmacy 8 (1.6%), then the rest 4 (0.8%) respondents obtained from drug vendors (Fig. 3).

The patent medicine dealers were the most consulted for the choice of antibiotics to use in self-medication 219 (46.5%), followed by family and friends 144 (30.6%), 69 (21%) of the respondent made the choice on their own, while 9 (1.8%) relied on drug vendors (Fig. 3).

Most of the respondents 453 (96.2%) had never had an adverse reaction due to self-medication with antibiotics, 18 (3.7%) have had an adverse reactions. Most of the bad reactions seen by the 18 respondents were skin rash (72.2%) and diarrhea (27.8%).

The result showed that 277 (58.8%) were aware of the dangers of self-medication with antibiotics, while 194 (41.2%) claimed they were unaware of the dangers of the practice. Majority 288 (61.2%) of respondents said that self-medication with antibiotics should be discouraged, while 183 (38.8%) were of the opinion that self-medication is safe and thus should be encouraged.

4. DISCUSSION

The practice of self-medication has long been in existence worldwide. The situation continues to increase particularly in developing countries where high prevalence has been reported [14]. The prevalence of self-medication with antibiotics as observed in this study is 93.9%. A study carried out among adults living in Odo-Ado, Ekiti State revealed that about 80.8% of the respondent practiced self-medication with antibiotics [15]. The prevalence of self-medication with antibiotics appears to be much lower in Ethiopia (42%) [16], Ghana (39%) [17], South Africa (38%) [18].

This lower prevalence may be associated with improved access to health facilities, health personnel, health insurance scheme, and a higher regard for health and safety in these countries. The high prevalence observed in this study (93.9%) is similar to results from a previous study by Akanbi in 2005 which showed a prevalence of 73% [19]. Another study by the Ifedil's in 2008 showed a prevalence of 98% [20]. Both Akanbi and Ifedil observed a high prevalence of self-medication with antibiotics in the southern parts of Nigeria. This high

prevalence is largely due to the fact that antibiotics can be gotten readily without prescription, and possibly due to the tendency of people wanting to play a role in their health. Similar prevalence was observed in several other African countries [14]. The prevalent trend of self-medication in the developing world has been associated with several factors, particularly lack of access to health care, availability of antibiotics as Over-the-Counter (OTC) drugs, poor regulatory practice and the relatively higher prevalence of infectious disease [21].

The practice of self-medication with antibiotics was found to be higher in females (55.2%) than males (44.8%). This finding is similar to a previous report by Figueiras in 2000, in which a higher prevalence was found in women (61%) than in men (39%) [22]. This could be due to the fact that women tend to be symptomatic to many infections, unlike the males, and also the higher susceptibility of women to urinary tract infections and sexually transmitted infections. A study in 2008, reported that women use antibiotics for different symptoms before, during, and after menses, this may contribute to the higher prevalence of the practice of self-medication with antibiotics in females than in males [23].

Singles (57.1%) showed higher prevalence of the practice of self-medication with antibiotics than the married (42.1%) respondents. This is similar to the findings in 2000 [22]. This could be due to the tendency of this group of people to make careless and reckless decisions.

The association between respondents' income and the practice of self-medication was not establish in this study. However, a report in 2010 [24], showed that socioeconomic factor plays a role in the practice of self-medication with antibiotics as individuals with low income practiced self-medication with antibiotics more [24].

Respondents with higher educational level showed higher prevalence of self-medication with antibiotics than those with lower educational qualification. A similar trend was reported in 2010 [12], whose study in Ahmadu Bello university campus, Zaria, showed that students of health related faculties practiced self-medication more than students of non-health related faculties [12], this may be due to misplaced self-confidence.

In Nigeria and other developing African counties, the poor health sector contributes to the high prevalence of self-medication. For instance in Nigeria, the national health insurance scheme (NHIS) is poorly publicized and trusted [20]. In this study, 98.6% of the study population was not on the NHIS program, thus leading to 13.6% of the respondents self-medicating with antibiotics because of lack of funds to purchase drugs or pay hospital bills.

The beta lactam antibiotics were the most common class of antibiotics used in self-medication with a combined frequency of 40.1%. In 2011 it was reported that the beta lactams were the most commonly used antibiotics in practices of self- medication [21]. This could be due to the relatively lower costs of these medicines, as they appear to be much cheaper than other classes of antibiotics. It is also believed that since the beta lactams antibiotics were the first class to be developed, familiarity of the population to this class of antibiotics could contribute to their misuse and abuse.

The most frequent reason given by respondents for the practice of self-medication with antibiotics was the claim that illness was mild and thus did not require consultation with a physician (31%). In contrast, Bamgboye and his colleagues in 2006, reported inaccessibility of healthcare facilities as the leading promoter of self-medication with antibiotics [14].

39.3% of our respondents who practiced self-medication with antibiotics purchased their antibiotic from a patent medicine store. A possible reason is the high number of patent medicine stores which out-numbers the number of registered community pharmacies. This may also explain why most of the respondent (46.5%) consulted patent medicine dealers for information about the choice of antibiotics to use in self-medication. The high consultation of patent medicine dealers for drug and health information as observed in this study is appalling and should be discouraged. Patent medicine dealers have limited knowledge of drugs and pharmacotherapeutics and hence cannot provide reliable drug information.

The irrational use of antibiotics contributes to progressive loss of bacterial sensitivity [25]. Antibiotic misuse can lead to imbalance in normal flora causing pathogenic bacterial growth. There are many disadvantages and possible risk of the practice of self-medication with antibiotics. The risks of self-medication with antibiotics includes the misdiagnosing of illnesses, delay in

seeking medical attention when needed, addiction, adverse drug reactions, dangerous drug interactions, wrong dosage, failure to recognize that same active substance has been already taken under a different brand name, and the development of bacterial resistance [26].

Self-medication with antibiotics is the leading promoter of the growing resistance exhibited by some bacteria to many antibiotics. Antibiotics resistance is a serious and growing phenomenon in contemporary medicine, and has emerged as one of the pre-eminent public health concerns of the 21st century. Resistance to antibiotics has been reported in Nigeria. In 2009 [27], Ghebremedhin and his team reported the emergence of a community-associated Methicillin-Resistance *Staphylococcus aureus* (MRSA) in Southwest Nigeria and Lamikanra and his colleagues reported the rapid evolution of fluoroquinolone-resistant *Echerishae coli* in Nigerian communities [28]. Also reported in 2009 was a high antibiotics resistance rates among common Gram-positive and Gram-negative isolate from various clinical specimen in a tertiary hospital in Nigeria [29].

In medicine, the major problem of the emergence of resistant bacteria is due to misuse and overuse of antibiotics. In some countries including Nigeria antibiotics are sold over the counter without prescription which is a leading contributor to the high prevalence of antibiotic misuse and consequently high prevalence of bacterial resistance [30].

Some interventions are set to address the antibiotic-resistance crisis. It is important and urgent to encourage health education. Some authors suggest that children need to be educated about antibiotics and several educational programs have been developed [30]. In 1998, the US pharmacopeia established ten guiding principles for teaching children and adolescent about medicine. In their point of view, schools are one of the ideal places to promote health education, such as education on bacterial antibiotics resistance. Schools have access to a large population of students, and parents, and are respected institute of learning within the community [31]. At the policy-making level, there is an urgent need to legislate and enforce laws restricting access to antibiotics in Nigeria, ensuring that antibiotics become a strict prescription-only-medicine.
Also the existing programs and policies aimed at providing solutions to this practice should re-assessed to ensure effectiveness, especially the policy preventing patent medicine stores from stocking and selling antibiotics. Most importantly, there is a need for a robust public enlightenment campaign to educate the populace about the improved role of a pharmacist in addressing this problem to provide adequate self-care practice. Self-medication is a major component of self-care and the role of the pharmacist in self-care and self-medication is well recognized by the World Health Organization and many other organization and health authorities [32,2]. Pharmacist can contribute in all aspect of self-care including dispensing drugs without prescription in response to their customer's symptoms and participation in management of their chronic conditions [33].

The roles of community pharmacists in management of diabetes, epilepsy, depression, HIV and hepatitis B and C are well documented [34,35,36]. Hence, Pharmacists should play a pivotal role in ensuring the safe and rational use of antibiotics. This role includes but not limited to training, supervision, and health promotion.

5. CONCLUSION

The prevalence of self-medication with antibiotics is high among civil servants in Uyo, southern Nigeria. Thus, there is need to review the educational programs on rational use of medicines. At the policy-making level, there is an urgent need to legislate and enforce laws restricting access to antibiotics in Nigeria. There should also be a robust enlightenment campaign to educate the public about the role of a pharmacist in curbing this problem in the society.

CONSENT

Not applicable.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Ruiz ME. Current drug safety. Bentham science publishers. 2010;5(4):315-323.

2. World Health Organization. The role of pharmacist in self-care and self-medication; 2011.
3. Hamel MJ, Odhacha A, Roberts JM. Control in Bungoma District Kenya: A survey of home treatment of children with fever, bed net use and attendance at ante natal clinics. Bull of World Health Organ. 2010;79:1014-23.
4. Jain S. Concept of self medication: A review. International Journal of Pharmaceutical & Biological Archive. 2011;2(3):831-836.
5. Queneau P, Deco-Usus H, Jourlin M, Laurent H, Perpoint B. Self-medication in rheumatologic consultation. Apropos of a study of 895 patients. Rev Rheumal Osteoartic. 2005;52(2):79-84.
6. World Health Day. Antibiotic resistance: No action today means no cure tomorrow statement by who director general-margaret chan; 2014. Accessed 1st April 2014.
7. Omolase CO, Adeleke OE, Afolabi AO, Afolabi OT. Self-medication amongst general outpatients in a Nigerian community hospital, annals of Ibadan postgraduate medicine. 2007;5(2):64.
8. World Health Organization. The role of pharmacist in self-care and self-medication; 2011.
9. Maragakis LL, Perencevich EN, Cosgrove SE. Clinical and economic burden of antimicrobial resistance. Expert Review of Anti-Infective Therapy. 2008;6:751-763.
10. Hawkey PM. The origins and molecular basis of antibiotic Resistance. BMJ. 2009;317(7159):657–660.
11. Howell L. Economic forum. In: Global risks 2013, 8th edition: an initiative of the Risk Response Network. 2013;30:43-6.
12. Olayemi OJ, Olayinka BO, Musa AJ. Evaluation of antibiotic Self-medication: Pattern amongst undergraduate students of ABU (main campus), Zaria. J Appl Sci Res. 2010;2(1):35-38.
13. Badiger S, Kundapur R, Jain A, Kumar A, Pattanshetty S, et al. Self-medication patterns among medical students in South India. Australas Med J. 2010;5(4):217–220.
14. Bamgboye EA, Amoran OE, Yusuf OB. Self-medication practices among workers in tertiary hospitals in Nigeria. Afr J. Med Sci. 2006;35(4):411-415.
15. Arikpo GE, Eje ME, Enyi-udo KH. Self-medication practice in Rural Africa: The Internet Journal of Health. 2010;8:1.
16. Worku SG, Mariam A. Practice of self-medication in Jimma Town. Ethiop J. Health Dev. 2003;17(2):111-116.
17. Peltzer K, Mohlala G, Phaswana-Mafuya N, Ramlagan S. Household surveys on the pattern of utilization of medicines in selected communities in South Africa. African. J Phys Health Educ Recreation Dance. 2008;14:163–77.
18. Buabeng KO, Duwiejua M, Dodoo AN, Matowe LK, Enlund H. Self reported use of antimalarial drugs and health facility management in Ghana. Malar J. 2010;6:85.
19. Akanbi OM, Odaibo AB, Afolabi KA, Ademowo OG. Effects of self-medication with antimalarial drugs on malarial infection in pregnant women in South Western Nigeria. Med. Prin. Pract; 2005. Pubmed.
20. Ifedil CJ, Ifedil CA, Self-medication among academicians in a Nigerian University of Benin: Are there gender or age difference? J Coll Med. 2008;13:29–33.
21. Fadare JO, Tamuno I. Antibiotic self-medication among University Medical Undergraduates in Northern Nigeria. J Public Health Epidemiology. 2011;3(5):217–220.
22. Figueiras A, Caamano F, Gestal-Otero J. Socio-demographic factors related to self-medication in Spain. Eur J. Epidemiol. 2000;16(1):19-26.
23. Odeye T. Prevalence, knowledge and treatment practices among female sex workers in a cosmopolitan city in Nigeria. 2008;17(1):94-102.
24. Durgawale PM. Practice of self-medication among slum-dwellers. Indian J. Public Health. 2010;42:53–5.
25. CDC. National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS): Human isolates final report, 2008. US Department of Health and Human Services, Atlanta, Georgia. 2010;50:1171-83.
26. Suppiah L. Dangers of self-medication with antibiotics. 2012;4(1):144.
27. Ghebremedhin B, Olugbosi MO, Raji AM, Layer F, Bakare RA, Konig B. Emergence of a community-associated methicillin-resistant *Staphylococcus aureus* strain with a unique resistance profile in Southwest Nigeria. 2009;47:2975-2980.

28. Lamikanra A, Okeke IN. Quality and bioavailability of tetracycline capsules in a Nigerian Semiurban Community. 2006;11:312.
29. Okesola AO, Oni AA. Antimicrobial resistance among common bacterial pathogen in southern western Nigeria. American-Eurasian J Agric Environ Sci. 2009;5(3):327-330.
30. Cebotarenco N, Bush PJ. Reducing antibiotics for colds and flu: A student taught program. Health Education Research. 2008;23:146-157.
31. United States Pharmacopoeia; 2002.
32. McCormick W. Assessment of the florida pharmacist self-care consultant law using patient profile and prescription audit methods. 1990;82(4):243-250.
33. McAuley JW, Miller MA, Klatte E, Shneker BF. Patients with epilepsy's perception on community pharmacist's current and potential role in their care. 2009;15(1):25-30.
34. Berg J, Dodd S. The role of a community pharmacist in diabetes education. 2010;37:197–201.
35. Scheerder G, Coster ID, Audenhove CV. Community pharmacist's attitude toward depression: A pilot study. Research in social and Administrative Pharmacy. 2009;5(3):242-52.
36. Watson L, Bond C, Gault C. A survey of community pharmacists on prevention of HIV and hepatitis B and C: Current practice and attitude. 2003;24(12):929-938.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history.php?iid=887&id=36&aid=7357