

Original Research Article

Self-medication with antibiotics amongst civil servants in Uyo, Southern Nigeria

Abstact:

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 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

26 **significant number of respondents 183 (38.8%) were of the opinion that self-**
27 **medication with antibiotics is safe and thus should be encouraged.**

28 **Conclusion: The prevalence of self-medication with antibiotics is high among**
29 **civil servants in uyo. There is an urgent need to educate the public on the**
30 **rational use of antibiotics and enforce laws restricting access to antibiotics in**
31 **Nigeria.**

32 **INTRODUCTION**

33 Self-medication can be defined as the selection and use of medicine by individuals to
34 treat self-recognized or self-diagnosed conditions or symptoms (Ruiz, 2010).

35 Self-medication is also defined in a broader sense as the utilization of drugs to treat
36 self-diagnosed disorders or symptoms, or the irregular or continuous use of prescribed
37 drugs for chronic or recurrent diseases or symptoms (WHO, 2011). A major deficit of
38 self-medication is the lack of clinical assessment of the condition by a qualified
39 medical professional, which could result in overlooked diagnosis and hindrance of
40 appropriate treatment (Hamel *et al.*, 2010).

41 Self-medication with antibiotics is a practice in which people use antibiotics to treat
42 self -diagnosed infection. Although antibiotics are generally considered to be safe and
43 useful for the treatment of common health problems, their excessive use can also lead
44 to serious side effects and unfavourable reactions (Jain, 2011). For instance, the
45 therapy may be poorly suited for the illness in question, delay diagnosis and the
46 beginning of effective therapy, increase inorganic risk due to inadequate drug therapy
47 or of unnecessary expenses (Queneau *et al.*, 2005). Self-medication with antibiotics
48 constitute a major form of irrational use of medicine and can cause significant adverse
49 effects such as resistant microorganism, treatment failure, drug toxicity, increase in

50 treatment cost, prolong hospitalization period and increase in morbidity (World
51 Health Day, 2014).

52 The practice of self-medication with antibiotics has led to the high prevalence of
53 misuse and abuse of antibiotics which directly is responsible for the increase in
54 antibiotics resistance and rapid exhaustion of the available antibiotics (Omolase *et al.*,
55 2007).

56 Antibiotics resistance is a serious and growing phenomenon in contemporary
57 medicine, and has emerged as one of the pre-eminent public health concerns of the
58 21st century. A WHO report, 2014 states “this serious threat is no longer a prediction
59 for the future, it is happening right now in every region of the world and has the
60 potential to affect anyone, of any age, in any country”. There were low levels of pre-
61 existing antibiotics resistance bacteria before the widespread use of antibiotics
62 (Omolase *et al.*, 2007).

63 Evolutionary pressure from their use has played a role in the development of multi-
64 drug resistant varieties and the spread of resistance between bacterial species
65 (Maragakis, 2008 and Hawkey, 2009). Certain factors like economic, politics,
66 doctor’s knowledge/experience, diagnostic uncertainty and pharmaceutical marketing
67 could lead to the irrational use of antibiotics (Howell, 2013).

68 Antibiotics resistance is a current problem worldwide, particularly in developing
69 countries where antibiotics are available without prescription (Olayemi *et al.*, 2010).

70 The important public health threat of antibiotics resistance depends on antibiotics
71 overuse and misuse. Studies on prevalence and factors associated with self-
72 medication in Nigeria are necessary to help with the planning of intervention to
73 improve the use of medicine in the country. For such intervention to be effective there
74 is need to understand the underlying socio-demographic factors that contribute to

75 antibiotics misuse and the subsequent amplification of resistance in our population.
76 This study is thus aimed at estimating the prevalence of self-medication with
77 antibiotics and evaluating the socio-demographic factors associated with the practice
78 of self-medication with antibiotics among civil servants in Uyo, Southern Nigeria.

79 **METHODS**

80 A cross sectional survey using self-administered, structured, validated, and pre-tested
81 questionnaires. The target populations considered were civil servants working in the
82 Akwa Ibom State Secretariat, Uyo. Sample selection was done based on a set
83 inclusion criteria. The sample size (n) was calculated according to the formula
84 described by Yamane (1967; 886). The questionnaires were randomly distributed to
85 526 civil servants based on the various ministries, departments, and units.

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

94 **STATISTICAL ANALYSIS**

95 The information or data was analyzed using Statistical Program for Social Science
96 (SPSS) version 17.0 computer package. The results were analyzed by one-way
97 ANOVA, using SPSS statistical package. All data were expressed as Mean $\pm$ SE and
98 difference between groups considered significant at $P=0.05$.

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100 **RESULT**

101 Out of the 526 questionnaires distributed, 471 were completely filled yielding a
 102 completion rate of 89.5%. Twenty four were incorrectly filled, and thirty one
 103 questionnaires were not recovered. The mean age of the respondents was 45.5 years.
 104 Most of the respondents were female 260 (55.2%), while the males were 211 (44.8%).
 105 The respondents were mostly Christians 463 (98.3%), few Muslims 7(1.5%), and then
 106 1 (0.2%) traditional religion practitioner. More than half of the respondents were
 107 singles 363 (57.1%), while 198 (42.1%) were married, the rest 4(0.8%) were
 108 separated from their spouses. 197 (41.8%) of the respondents earned between 31,000-
 109 50,000 NGN, followed by 116 (24.7%) earning between 51,000-70,000 NGN, then 69
 110 (14.8%) earning between 71,000-100,000 NGN, the rest earned between 17,000-
 111 30,000 NGN 57 (12.1%) and above 100,000 NGN 32 (7%).
 112 Most of the respondent had university/polytechnic degrees 185 (39.2%), followed by
 113 secondary school education 169 (35.9%), then primary school education 109 (23.1%),
 114 the rest were graduates of civil service training 5 (1.1%). 443 (93.9%) of the
 115 respondents practiced self-medication with antibiotics. Respondents with
 116 university/polytechnic degrees showed a higher prevalence of the practice of self-
 117 medication with antibiotics (35.2%) than respondents with secondary education
 118 (32.9%), primary education (23.1%), and graduates of civil service training (1.1%).
 119 The result showed that majority of the respondents were not on National Health
 120 Insurance Scheme (NHIS) 464 (98.6%), while only 7 (1.4%) were on NHIS.
 121 The 5 most commonly used antibiotics without prescription by the respondents were
 122 ampicillin/cloxacillin 133 (28.3%), metronidazole 130 (27.6%), co-trimoxazole 70
 123 (14.9%), ciprofloxacin 69 (14.6%), amoxicillin 46 (10%). Only 9 (1.8%) and 14

124 (3.1%) responded that they have self-medicated with cefuroxime and tetracycline
125 respectively.

126 The most common reason given by respondents for indulgence in self-medication
127 with antibiotics was the claim that illness was mild and hence did not require the
128 attention of a physician 146 (31%). Other reasons given were; same antibiotics were
129 used previously for a similar symptom 74 (15.9%), no time for hospital visits 67
130 (14.2%), no money for hospital bills 64 (13.6%), frustrated with hospital protocols 45
131 (9.5%), no confidence in doctors and the health care system 3 (0.6%), while 29
132 (6.1%) claimed that either themselves or their relation is a health care professional.

133 The most common illness for which antibiotics was used through self-medication
134 were; cough 117 (24.9%), stomach pain 94 (19.9%), fever 78 (16.6%), running nose
135 64 (13.6%), sore throat 57 (12.1%), 28 (5.9%) headache, 23 (4.8%) toothache, 8
136 (1.7%) prevention of STI, then 2 (0.4%) skin infection.

137 29 (6.1%) of the respondents claimed never to have taken antibiotics without
138 prescription, 34 (49.7%) of the respondents took antibiotics without prescription
139 rarely, while 138 (29.2%) and 69 (14.7%) took antibiotics without a prescription
140 sometimes or always respectively.

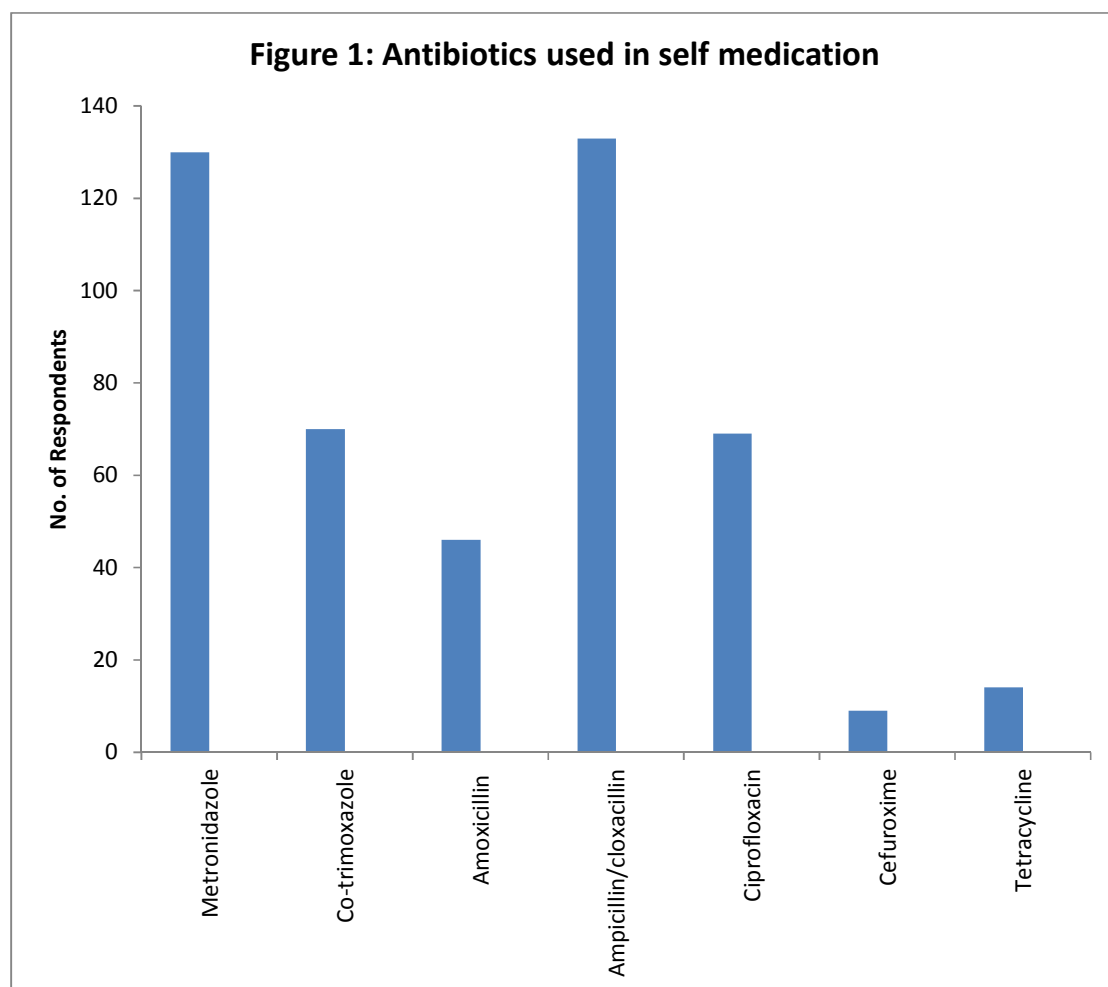
141 The source of antibiotics were patent medicine store 185 (39.3%), family and friends
142 92 (19.5%), leftovers from previous use 90 (19%), community pharmacy 94 (19.9%),
143 obtained from a hospital pharmacy 8 (1.6%), then the rest 4 (0.8%) respondents
144 obtained from drug vendors.

145 The patent medicine dealers were the most consulted for the choice of antibiotics to
146 use in self-medication 219 (46.5%), followed by family and friends 144 (30.6%), 69
147 (21%) of the respondent made the choice on their own, while 9 (1.8%) relied on drug
148 vendors.

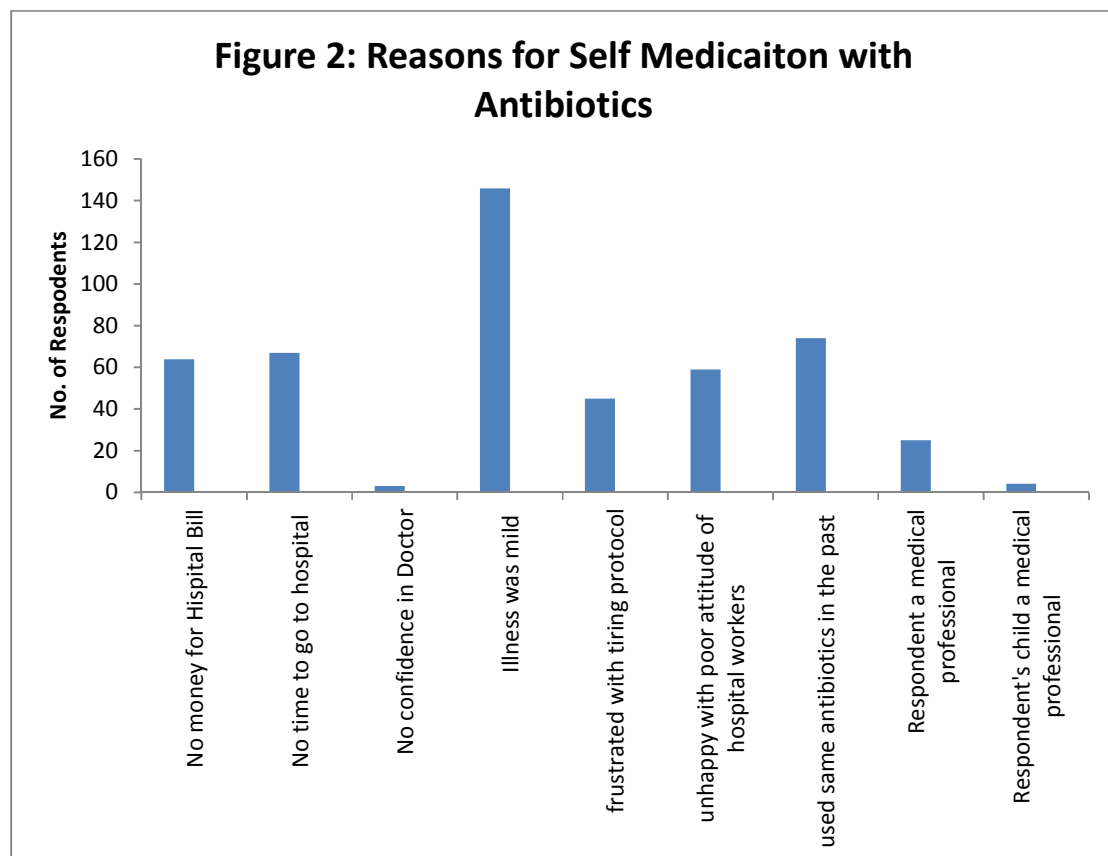
149 Most of the respondents 453 (96.2%) had never had a bad reaction due to self-
150 medication with antibiotics, 18 (3.7%) have had bad reactions. Most of the bad
151 reactions seen by the 18 respondents were skin rash (72.2%) and diarrhea (27.8%).

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

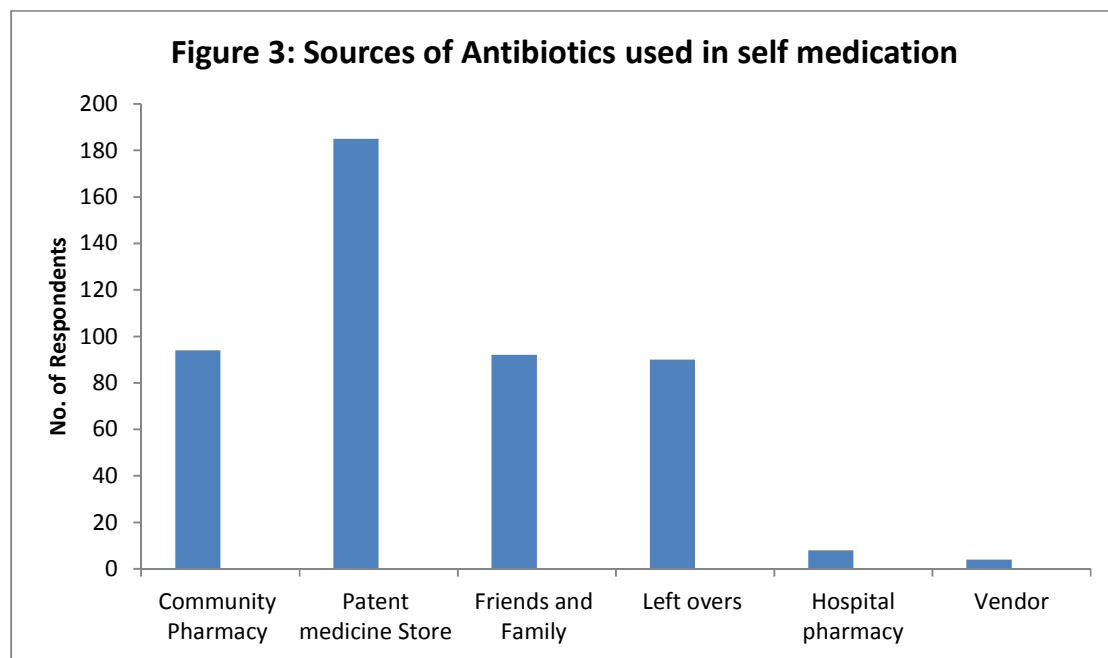
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165 **DISCUSSION**

166 The practice of self-medication has long been in existence worldwide. The situation
 167 continues to increase particularly in developing countries where high prevalence has
 168 been reported (Bangboye *et al.*, 2006). The prevalence of self-medication with
 169 antibiotics as observed in this study is 93.9%. A study carried out among adults living
 170 in Odo-Ado, Ekiti State revealed that about 80.8% of the respondent practiced self-
 171 medication with antibiotics (Arikpo *et al.*, 2010). The prevalence of self-medication
 172 with antibiotics appears to be much lower in Ethiopia (42%), Ghana (39%), and South
 173 Africa (38%) (Worku and Mariam, 2003; Peltzer *et al.*, 2008; Buabeng *et al.*, 2010)
 174 This lower prevalence may be associated with improved access to health facilities,
 175 health personnel, health insurance scheme, and a higher regard for health and safety in
 176 these countries. The high prevalence observed in this study (93.9%) is similar to
 177 results from a previous study by Akanbi in 2010 which showed a prevalence of 73%
 178 (Akanbi *et al.*, 2005). Another study by Ifedil in 2008 showed a prevalence of 98%
 179 (Ifedil and Ifedil, 2008). Both Akanbi and Ifedil observed a high prevalence of self-
 180 medication with antibiotics in the southern parts of Nigeria. This high prevalence is
 181 largely due to the fact that antibiotics can be gotten readily without prescription, and
 182 possibly due to the tendency of people wanting to play a role in their health. Similar
 183 prevalence was observed in several other African countries (Bangboye *et al.*, 2006).
 184 The prevalent trend of self-medication in the developing world has been associated
 185 with several factors, particularly lack of access to health care, availability of
 186 antibiotics as Over-the-Counter (OTC) drugs, poor regulatory practice and the
 187 relatively higher prevalence of infectious disease (Fadare and Tamuno, 2011).
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189 The practice of self-medication with antibiotics was found to be higher in females
190 (55.2%) than males (44.8%). This finding is similar to a previous report by Figueiras
191 in 2006, in which a higher prevalence was found in women (61%) than in men (39%)
192 (Figueiras *et al.*, 2000). This could be due to the fact that women tend to be
193 symptomatic to many infections, unlike the males. Also the higher susceptibility of
194 women to urinary tract infections and sexually transmitted infections. A study by
195 Odeye et al. in 2008, reported that women use antibiotics for different symptoms
196 before, during, and after menses, this may contribute to the higher prevalence of the
197 practice of self-medication with antibiotics in females than in males.

198 Singles (57.1%) showed higher prevalence of the practice of self-medication with
199 antibiotics than the married (42.1%) respondents. This is similar to Figueiras' findings
200 in 2006 (Figueiras *et al.*, 2000). This could be due to the tendency of this group of
201 people to make careless and reckless decisions.

202 The association between respondents' income and the practice of self-medication was
203 not establish in this study. However, a report by Durgawale in 2010, showed that
204 socioeconomic factor plays a role in the practice of self-medication with antibiotics as
205 individuals with low income practiced self-medication with antibiotics more
206 (Durgawale, 2010).

207 Respondents with higher educational level showed higher prevalence of self-
208 medication with antibiotics than those with lower educational qualification. A similar
209 trend was reported by Olayemi in 2010, whose study in Ahmadu Bello university
210 campus, Zaria, showed that students of health related faculties practiced self-
211 medication more than students of non-health related faculties (Olayemi *et al.*, 2010).
212 this may be due to misplaced self-confidence.

213 In Nigeria and other developing African counties, the poor health sector contributes to
214 the high prevalence of self-medication. For instance in Nigeria, the national health
215 insurance scheme (NHIS) is poorly publicized and trusted (Ifedil and Ifedil, 2008). In
216 this study, 98.6% of the study population was not on the NHIS program, thus leading
217 to 13.6% of the respondents self-medicating with antibiotics because of lack of funds
218 to purchase drugs or pay hospital bills.

219 The beta lactam antibiotics were the most common class of antibiotics used in self-
220 medication with a combined frequency of 40.1%. Fadare in 2011 reported that the
221 beta lactams were the most commonly used antibiotics in practices of self- medication
222 (Fadare and Tamuno, 2011). This could be due to the relatively lower costs of these
223 medicines, as they appear to be much cheaper than other classes of antibiotics. It is
224 also believed that since the beta lactams antibiotics were the first class to be
225 developed, familiarity of the population to this class of antibiotics could contribute to
226 their misuse and abuse.

227 The most frequent reason given by respondents for the practice of self-medication
228 with antibiotics was the claim that illness was mild and thus did not require
229 consultation with a physician (31%). In contrast, Bamgboye and his colleagues in
230 2006, reported inaccessibility of healthcare facilities as the leading promoter of self-
231 medication with antibiotics (Bamgboye *et al.*, 2006).

232 39.3% of our respondents who practiced self-medication with antibiotics purchased
233 their antibiotic from a patent medicine store. A possible reason is the high number of
234 patent medicine stores which out-numbers the number of registered community
235 pharmacies. This may also explain why most of the respondent (46.5%) consulted
236 patent medicine dealers for information about the choice of antibiotics to use in self-
237 medication. The high consultation of patent medicine dealers for drug and health

238 information as observed in this study is appalling and should be discouraged. Patent
239 medicine dealers have limited knowledge of drugs and pharmacotherapeutics and
240 hence cannot provide reliable drug information.

241 The irrational use of antibiotics contributes to progressive loss of bacterial sensitivity
242 (CDC, 2010). Antibiotic misuse can lead to imbalance in normal flora causing
243 pathogenic bacterial growth. There are many disadvantages and possible risk of the
244 practice of self-medication with antibiotics. The risks of self-medication with
245 antibiotics includes the misdiagnosing of illnesses, delay in seeking medical attention
246 when needed, addiction, adverse drug reactions, dangerous drug interactions, wrong
247 dosage, failure to recognize that same active substance has been already taken under a
248 different brand name, and the development of bacterial resistance (Suppiah, 2012).

249 Self-medication with antibiotics is the leading promoter of the growing resistance
250 exhibited by some bacteria to many antibiotics. Antibiotics resistance is a serious and
251 growing phenomenon in contemporary medicine, and has emerged as one of the pre-
252 eminent public health concerns of the 21st century. Resistance to antibiotics has been
253 reported in Nigeria. Ghebremedhin *et al.* 2009 reported the emergence of a
254 community-associated Methicillin-Resistance *Staphylococcus aureus* (MRSA) in
255 Southwest Nigeria and Lamikanra *et al.*, 2006 reported the rapid evolution of
256 fluoroquinolone-resistant *Echerishae coli* in Nigerian communities. Okesola and Oni
257 (2009) also reported high antibiotics resistance rates among common Gram-positive
258 and Gram-negative isolate from various clinical specimen in a tertiary hospital in
259 Nigeria.

260 In medicine, the major problem of the emergence of resistant bacteria is due to misuse
261 and overuse of antibiotics. In some countries including Nigeria antibiotics are sold
262 over the counter without prescription which is a leading contributor to the high

263 prevalence of antibiotic misuse and consequently high prevalence of bacterial
264 resistance (Cebotarenco and Bush, 2008).

265 Some interventions are set to address the antibiotic-resistance crisis. It is important
266 and urgent to encourage health education. Some authors suggest that children need to
267 be educated about antibiotics and several educational programs have been developed
268 (Cebotarenco and Bush, 2008). In 1998, the US pharmacopeia established ten guiding
269 principles for teaching children and adolescent about medicine. In their point of view,
270 schools are one of the ideal places to promote health education, such as education on
271 bacterial antibiotics resistance. Schools have access to a large population of students,
272 and parents, and are respected institute of learning within the community (United
273 States Pharmacopoeia, 2002). At the policy-making level, there is an urgent need to
274 legislate and enforce laws restricting access to antibiotics in Nigeria, ensuring that
275 antibiotics become a strict prescription-only-medicine.

276 Also the existing programs and policies aimed at providing solutions to this practice
277 should re-assessed to ensure effectiveness, especially the policy preventing patent
278 medicine stores from stocking and selling antibiotics. Most importantly, there is a
279 need for a robust public enlightenment campaign to educate the populace about the
280 improved role of a pharmacist in addressing this problem to provide adequate self-
281 care practice. Self-medication is a major component of self-care and the role of the
282 pharmacist in self-care and self-medication is well recognized by the World Health
283 Organization and many other organization and health authorities (McCormick, 1990
284 and WHO. 2011). Pharmacist can contribute in all aspect of self-care including
285 dispensing drugs without prescription in response to their customer's symptoms and
286 participation in management of their chronic conditions (McAuley *et al.*, 2009).

287 The roles of community pharmacists in management of diabetes, epilepsy, depression,
288 HIV and hepatitis B and C are well documented (Berg and Dodd, 2010; Scheerder *et*
289 *al.*, 2009; Watson *et al.*, 2003). Hence, Pharmacists should play a pivotal role in
290 ensuring the safe and rational use of antibiotics. This role includes but not limited to
291 training, supervision, and health promotion.

292

293 **CONCLUSION**

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

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