CASE-STUDY

COMMUNITY PHARMACIST IMPACTS ON SELF-MEDICATION MANAGEMENT AMONG RURAL DWELLERS, KWARA STATE CENTRAL, NIGERIA

Shakirat I. Bello[1*] and Ibrahim K Bello[2]

1. Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmaceutical Sciences, University of Ilorin, Ilorin, Nigeria.

2. Department of Pharmacy, University of Ilorin Teaching Hospital, Ilorin, Nigeria

*Corresponding Author: Email sibello10@yahoo.com

ABSTRACT

The role of pharmacist has not only advanced from traditional medication dispensing but also to direct patient care and pharmaceutical interventions aiming at enhancing the populace wellbeing.

Objective: The objective of this research was to assess the impact of rural community pharmacist on drug self-medications and disease prevalence among rural settings in the Kwara State Central, Nigeria. .

Method: This study was conducted between September, 2011 and February, 2013 in eight rural communities on 730 respondents, following a six-week pilot study on 50 respondents. Respondents aged 30 years and over and regular clients of the community pharmacy were included into the study. Self-medications were assessed using pre-tested and validated questionnaire. Pharmaceutical interventions were carried out on the respondents by the clinical pharmacist at every two months for eighteen months. Descriptive statistics and regression analysis were for the computation of the data.

Results: Male respondents were one third of the population studied, while female had the highest percentage of 69.9%. Respondents between the age of 40 and 50 years dominated with 42.3% and majority (88.1%) of the rural residents were illiterates. Farming was the core livelihood of the respondents and survived on less than ten thousand naira Nigeria money ($63) per month. Among the combinations of drugs abused by the respondents, the regimen containing combination of (prednisolone, diclofenac and paracetamol) had the highest users. The least used combination was (Ibuprofen, Diclofenac plus Prednisolone). These combinations were taken two times daily by the majority participants. The most common reasons given for self-medications were osteoarthritis (31.1%), poverty (17.4%), general body pain (14.3%), lack of health facilities (4.6%), ignorance (4.3%) among others. The intervention offered by the pharmacist had reduced the mean systolic blood pressure significantly ($p<0.05$) from 161mmhg to 129 mmhg and diastolic blood pressure from 104mmhg at baseline to 86 mmhg. Post-intervention evaluation revealed the impact of the pharmacist, as the respondents with dyspepsia at baseline significantly ($p<0.05$) reduced from 220 to 53 participants.

Conclusion: Pharmacist interventions on self-medication of drugs greatly enhanced patient healthcare in the rural communities.

Keywords: Pharmacist interventions, drug combinations, prevalent diseases, Oke-Oyi, metropolis**.**

INTRODUCTION

Rural community pharmacy is the retail or sole provider of pharmaceutical services in underserved rural settings with prevalence burden of chronic diseases without adequate health care services. Community pharmacists in rural/remote areas are the logical health professional that have intimate knowledge of their local communities and their health needs (Ross and Bloodworth, 2012). They are usually the first point of call for patients' complaints on health matters, thus, providing opportunity for pharmacists to make appropriate recommendations, including referral to hospitals. The knowledge base of the pharmacists in providing appropriate advice to patients on prescribed medications, and possibly making rational drug recommendations has been shown to influence the level of confidence expressed by the patient in

the pharmacy (Ballantyne, 2007; Fakeye et al., 2012). In the rural areas, pharmacists also provide a range of clinical services, including blood pressure checks; diabetes counselling and blood glucose testing; immunizations; educational classes; screening tests for osteoporosis, asthma, hearing, and cholesterol; and tobacco cessation programmes (Radford et al 2009; Ross and Bloodworth, 2012; Kelli et al., 2013)

According to World Health Organization (WHO), self medication is an element of self care based on selection and use of medicines by individuals to treat self-recognized illnesses or symptoms (WHO, 1998). Self medication is practised for quick and effective relief of symptoms of minor ailments without medical consultations to reduce burden on health care services, most especially in understaffed, inaccessible rural or remote areas (Phalke et al., 2006). High incidence of self medication is widespread with over-the-counter drugs, complementary and sometimes prescribed medicines, ranging from 15.0 to 81.5% in different communities (Phalke et al., 2006; Indermitte et al., 2007; Goh et al., 2009). In an independent studied, Figueiras et al. (2000) and Fakeye et al., 2010 reported that self-medication is more prevalent among women and elites and solitary people. Based on these aforementioned, lack of medication counselling and essential drug information could also lead to unjustified self-medications and non-adherence to drug regime, leading to therapeutic failure or unwanted/dangerous effects and even death in the rural communities.

In Nigeria, low population density, predominance of agricultural related livelihood, poor infrastructural services and health deprivation are criteria for identifying rural areas (Yusuf and Ukoje, 2010). Based on our findings, many studies were conducted on community pharmacy practice were conducted in Nigerian urban settings such as Abuja (Okonkwo et al. 2010), Calabar (Arikpo et al. 2011), Ibadan (Adisa and Fakeye (2006). and Aba, Benin and Ilorin (Faduyile et al. (2004). Information of health related issues of people in rural areas however is lacking. Against these backgrounds, research on the pharmacist-delivered medication therapy management of diseases and peculiar health needs of rural dwellers is very imperative. This study was therefore conducted to assess the impact of rural community pharmacist on drug self-medications and disease prevalence among rural settings in the Kwara State Central, Nigeria.

MATERIALS AND METHOD

Study site

Ilorin East Local Government Area with headquarters in Oke Oyi, Kwara State, Nigeria, is located between Latitude 8 degree 5′ N and Longitude 4 degree 5′ E. It is situated in the transitional zone between the Northern and Southern parts of Nigeria. The Local Government is one of the Sixteen Local Government Areas created in October, 1991 under the administration of Retired president, General Ibrahim Babangida. It has an area of 486 km² and a population of 204,310 as at the 2006 Census. The Local Government which shares boundaries with Ilorin South, Ilorin West, Moro and Ifelodun Local Government Areas, has two districts namely, Iponrin, and Gambari. The Local Government also has twelve (12) political wards.

The Study Design

The study was carried out in eight rural communities within Ilorin East Local Government Area of Kwara State, Nigeria. These were Baba Dudu, Okeemi, Ibudo Oyo, Elesin meta, Gbadamu, Onikoko, Korowa Ologi and Loosa. These communities had no basic health facilities except medicine hawkers. The medicine hawkers had little education but none had any professional training in the medical field. A rural community pharmacy is located in Oke Oyi, and serves all the surrounding communities in the Local Government Area. The community pharmacy was established in October, 1998 by a Clinical Pharmacist.

Method of Data Collection

Cross sectional survey was conducted between September, 2011 and February, 2013 with 730 participants aged between 30 years and over. The participants have been regular clients, patronizing the rural community pharmacy (the researcher) over ten years on drug purchases. Pre-tested and validated questionnaire were employed to obtain the necessary information on demographic, socioeconomic and medical characteristics of the studied population. The survey form included 32 items covering three sections; demographic characteristics of the respondents, history of medication use and general medical history. Previously, a pilot study was carried out on 50 respondents for 6 weeks to validate the

research instrument. One on- one interview and filling in the survey forms was done because most participants were unschooled. The interview was conducted in Yoruba, Hausa and Pidgin English. Pharmaceutical interventions were applied by providing adequate drug information and counselling on appropriate health management including hypertension, osteoarthritis, dyspepsia, malaria and nutritional deficiency. The intervention was conducted at baseline and bi-monthly for eighteen months. During the period of the study, 3,112 interventions were made with 818 pharmaceutical interventions on 176 hypertensive respondents and 801 interventions on 220 participants with dyspepsia. Respondents with ostearthritis, malaria, anaemia and insomnia were given 678, 522, 122 and 171 interventions respectively. In addition, body weight, height, body temperature and blood pressure measurements were carried out routinely at every visit of participants to the pharmacy by the researcher.

Data Analyses

The data obtained from respondents were analyzed using Statistical Package for Social Science software version 2. Frequencies, means, standard deviations and percentages were used as descriptive statistics. Regression analysis was applied to establish a linear relationship between two quantitative variables.

RESULTS

Table 1 reveals that male respondents were one third of the population studied, while females had the highest percentage of 69.9%. Respondents between the age of 40 and 50 years dominated with 42.3%, followed by 51-60 years (28.4%) and 30-39 years (20.1%). Two-thirds of the respondents were married and 24.8% single. Majority of the rural residents were unschooled (88.1%), primary and secondary school certificate holders were 6.9% and 5.0% respectively. None of the respondents attended tertiary institution. More than half of the studied participants engaged in farming. One fifth of the respondents were business men and women, while few engage in fishing and cattle rearing.. Almost all the participants speak Yoruba language, followed by Hausa, Fulani and Bassa languages. Larger parts of the respondents were Muslims, less than five percent were Christians, while others were traditional worshippers. More than half of the participants self-

medicating for over ten years, one third between one and five years, while less than one fifth were on drug abuse for one year. More than half of respondents were habitual kola nut consumers, followed by snuff inhalers, cigarette smoker while very few were alcohol drinkers. Half of the rural residents in the stuy earned less than ten thousand Nigeria money ($63) per month.

Among the combination of drugs abused by the respondents are presented in Table 2. The regimen containing prednisolone plus diclofenac and paracetamol had the highest users (31.1%). This was followed by tramadol plus ibuprofen plus paracetamol) combination (25.0%), ibuprofen plus prednisolone plus paracetamol (18.1%) and piroxicam plus ibuprofen plus paracetamol (15.4%). The least abused drug combination was ibuprofen plus diclofenac plus prednisolone (10.4%). More than half of the respondents had two times dose frequency (morning and afternoon) for their abused medications. The once daily regimen was commonly used by 25% of the respondents. Only few participants were on once daily cocktail (Table 3). Table 4 shows the rationale behind self-medications. The foremost reason was osteoarthritis. Other justifications were poverty, general body pain, fever, low back pain, lack of health facilities and ignorance. Malaria was the most prevalent disease in the communities, with Dyspepsia ranking second and high blood pressure third. Others were insomnia and anaemia (Table 5).

At baseline of the present study, the mean systolic blood pressure of respondents was 161mmhg. The intervention offered by the pharmacist had reduced the value significantly ($p<0.05$) to 129 mmhg. The diastolic blood pressure also diminished from 104mmhg at baseline to 86 mmhg at post-intervention. Also, at baseline, two hundred and twenty (220) respondents had dyspepsia due to self medication of analgesics. Post-intervention evaluation showed the drastic improvement impacted by the pharmacist as the respondents with dyspepsia had significantly ($p<0.05$) reduced to 53. Insomnia was recognised as a medical problem among the respondents (42) at baseline study, but at post-intervention, this value was dropped to 5 (Table 6).

DISCUSSION

The pharmacist's role has evolved over time, moving from traditional medication dispensing to involvement in direct

Table 1: Demographic characteristics of respondents.

Characteristics	Status	Number =730 (%)
GENDER	Male	222(30.4%)
	Female	508 (69.6%)
AGE (YEARS)	30-39	147 (20.1%)
	40-50	309 (42.3%)
	51-60	207 (28.4%)
	61 and above	67 (9.2%)
MARITAL STATUS	Married	549 (75.2%)
	Unmarried	181 (24.8 %)
EDUCATION	Tertiary	None
	Secondary	36 (5.0%)
	Primary	51 (6.9%)
	Illiterates	643 (88.1%)
OCCUPATION	Agriculture	502 (68.8%)
	Businessmen/women	149 (20.4%)
	Others	79 (10.8)
ETHNICITY	Yoruba	669 (91.7%)
	Hausa/Fulani	47 (6.4%)
	Bassa	14 (1.9%)
RELIGION	Islam	688 (94.3%)
	Christianity	34 (4.6%)
	Others	8 (1.1%)
DURATION OF MEDICATION (YEARS)	< 1	(13.3%)
	1-5	(34.5%)
	6-10	(52.2%)
LIFESTYLE HABITS	Kolanut consumers	(56.7%)
	Snuff inhalers/suckers	(15.8%)
	Smokers	(4.9%)
	Alcoholics	(2.1%)
	None of above	(10.5%)
INCOME /MONTH (NAIRA)	< 10,000	374 (51.3%)
	10,000-20,000	236 (32.3%)
	Above 20,000	120 (16.4%)

Table 2: Self-medication combinations utilized by rural communities in Oke Oyi metropolis

Drug combinations(Tablets/strength/dose)	Number =730 (%)
Ibuprofen 400mg(2) + Prednisolone 5mg (2) + Paracetamol 500mg (3)	132 (18.1%)
Prednisolone 5mg (2) + Diclofenac Sodium 50mg (2) + Paracetamol 500mg (3)	227 (31.1%)
Piroxicam 20mg(1) + Ibuprofen 400mg(2) + Paracetamol 500mg (3)	112 (15.4%)
Ibuprofen 400mg(2) + Diclofenac Sodium 50mg (1) + Paracetamol 500mg (2)	76 (10.4%)
Tramadol 100mg (1) + Ibuprofen 400mg(2) + Paracetamol 500mg (3)	183 (25.0%)

Table 3: Dose frequency of self-medication combinations utilized by rural communities in Oke Oyi metropolis.

Dose frequency	Number =7 30 (%)
Once daily	180 (24.6%)
Twice daily	499 (68.4%)
Thrice daily	51 (7.0%)

Table 4: Reasons for self-medications among rural communities in Oke Oyi metropolis

Reasons	Number = 730 (%)
General body pain	104 (14.3%)
Lack of health facilities	34 (4.6%)
Headache	38 (5.2%)
Fever	91 (12.5%)
Low back pain	77 (10.6%)
Osteoarthritis	227 (31.1%)
Poverty	127 (17.4%)
Ignorance	31 (4.3%)

Table 5: Other prevalent illnesses among rural communities in Oke Oyi metropolis

Illnesses	Number = 730 (%)
Dyspepsia	220 (30.1%)
Anaemia	44 (6.0%)
High blood pressure	176 (24.1%)
Malaria	248 (34.1%)
Insomnia	42 (5.7%)

Table 6: Blood pressure before and after pharmacist's intervention in the rural communities of Oke Oyi metropolis

Parameter studied	Mean (standard deviation)		P-value
	Pre-intervention	Post-intervention	
Systolic BP (mmHg)	161 (26)	129 (18)	< 0.05
Diastolic BP (mmHg)	104 (13)	86 (10)	<0.001
Number of respondents with dyspepsia	220	53	<0.05
Number of respondents with insomnia	42	5	<0.05

BP= Blood Pressure

focus on enhancing medication appropriateness and preventing drug-related problems (West et al. 2012). In the present study, more than three quarter of the respondents were illiterates. This is in line with the findings of Yusuf and Ukoje, (2010) that low level of literacy on many rural communities can be extremely arduous Majority of the rural residents in the present work were married women, signified that women consult medical experts for their ailments than the men. Felicity (2004) also reported that in most communities and households across the world, women are the principal carers. Respondents between the age of 40 years and over dominated the present study. This is an attribute of rural communities which are known to be populated by the elderly in Nigeria probably rural urban drift by the youth. The aged people have co-morbidities due to physiological changes in the body system as the age advances. These anomalies probably necessitated frequent patronage of the community pharmacy by the aged.

Rural residents engaged mostly in agricultural activities as revealed by the present study. In upkeep with present study was the report of Adebisi (1998) that agriculture remains the predominant rural occupation in Nigeria. Contrary, in Europe and America, agriculture has been eroded as the determiner of economic and social relations of rural areas (Redclift and Whatmore, 1990). Farming, being labour intensive and due to inadequacy of agricultural machineries to support the respondents, had predisposed them to incessant and excessive consumptions of various classes of analgesics over a long period of time.

Only a small portion of the participants take alcohol in all the studied communities. The reason given by the respondents was that alcohol consumption is forbidden by their religion of

Islam. They claimed alcohol could result in memory impairment which reduces concentration needed to observe their five daily prayers as ordained in Islam. Kola nut is known to be socially acceptable among the respondents and hence more than half were involved in its consumption. This was supported by Absolute herbal health (2013) that kola nut is preferred among African Muslims, who are forbidden to drink alcohol. The caffeine component of kola nut could induce insomnia, dyspepsia and transient high blood pressure. In line with present study, McPhilips (2012) reported that Kola nut should not be used by patients with a history of high blood pressure, heart trouble, palpitations, seizures, insomnia, heart disease, high cholesterol, stroke and stomach or duodenal ulcers because it increases gastric juice production. To avail the respondents of the chronic adverse effects of kola nut, the pharmacist counselled on gradual withdrawal from habitual chewing of kola nut to bitter kola. Brai (2012) earlier reported that no recorded side effect to the regular intake of bitter kola, and it was all round medicinal. Another author, Amaechi (2012), also reported that bitter kola has antioxidant properties, used as tonic for the liver and gall bladder as it detoxifies the body system.

The means of sustenance among the participants is mainly farming, which is seasonal. The respondents were financially buoyant during raining season when the sales of their farm products were actively on. In dry season, they were financially handicapped because nothing to offer for sale but preparation of lands for next planting season. This phenomenon justified why rural residents were in abject poverty living on less than ten thousand naira per month ($63). In agreement with present research, Food and Agriculture Organization, (2010) has focused special attention on developing rural areas, where most of world's poor and hungry people are living, not only to carry its mandate to raise the levels of nutrition, but also to improve agricultural productivity and living conditions of rural populations. In Nigeria, available evidences showed that income from farming activities has continued to decline due to economic shock and environmental uncertainties. Level of poverty among families solely dependent on farming is reportedly high compared to families with diversified livelihood opportunities (Yusuf and Ukoje, 2010). The respondents were involved in self medications most

especially analgesics in the classes of Non-Steroidal Anti-inflammatory Drugs (NSAIDs), aniline and opioids. These drugs were consumed in excess with overlapping side effects. NSAIDs when taking within normal range are useful in the treatment of chronic disease accompanied by pain and inflammation. The overdose and prolong use could result into dyspepsia, insomnia, depression, headache, fluid retention and high blood pressure as demonstrated in this study. Overviews of clinical trial data indicates that the blood pressure of patients with controlled hypertension can be raised by 3 to 6 mm Hg during concurrent treatment with NSAIDs, which can produce a significant increase in subsequent stroke, end-stage renal disease, or congestive heart failure (Ruoff, 1998: Smith, 2009).). The use of these drugs has been linked to an unexpectedly high incidence of ulcer complications, and a history of peptic ulcer disease is common in such cases (Soll, 1991). This study was further supported by Walter (2010) who demonstrated the adverse effects of renal failure and hypertension among the users. Indefinite use of paracetamol, a class of aniline analgesic was indulged by the respondents to be a daily routine drug without medical need. They consumed an overdose of 4.5g per day (three tablets three times daily). The respondents claimed that two tablets of paracetamol as a dose is inefficacious for the type of task they performed. The rational was that habitual use of paracetamol leads to decrease in threshold for pain (endurance level for pain) among the rural residents. Further problems arising from paracetamol abuse are upper gastro intestinal tract bleeding, liver failure, kidney dysfunction and untimely death. Though these symptoms developed gradually, as failure of these organs appear at advance stage of the disease. The mechanism of multiple organ damage particularly the liver and kidney from excessive use of paracetamol, is not from the drug itself but from one of its metabolites, N-acetyl-p-benzoquinoneimine (NAPQI) (Bender et al. 2004).

In the near future the respondents would be victims of major organ damage (especially liver) if not for pharmacist intervention that encourages the respondents' consultation before purchasing paracetamol. This result was also supported by Food and Drug Administration (FDA), (2012) who reported that paracetamol tablets used in excess

(overdose or continuous use) can prove fatal due to its many side effects some of which are very dangerous leading to failure of liver and kidney and ultimately death. In June 2009, an advisory committee of FDA recommended that new restrictions should be placed on paracetamol to help protect people from the potential toxic effects. The present study would sensitize Nigeria government to place such restrictions on paracetamol utilization by the general populace. Tramadol, an opioid analgesic approved for the relief of moderate to severe pain is associated with adverse effects of hypertension, paraesthesia, gastro intestinal disturbances, respiratory depression and psychiatric disorder. Tramadol is commonly abused at higher doses by these set of people and they claimed to energise them for vigorous activities. Prednisolone, also is frequently abused by the studied population. The outcome of such misused could cause the side effects of peptic ulcers, hypertension, congestive heart failure and liver failure.

The additive effects of these drugs explained the rationale for the symptoms and other illnesses prevailing within the rural communities. The respondents gave the reasons for self medication as due to lack of health facilities, poverty and ignorance. The clinical pharmacist was able to play a versatile role in counselling the rural populace on the danger of self-medication. The intervention imparted on the respondents by the pharmacist had greatly improved the overall health status of the rural dwellers that represent more than one half of Nigeria citizens. National Population Commission, (2009) previously reported that approximately two-thirds of the population live in rural areas.

Both systolic and diastolic blood pressure of the respondents had significantly reduced at $P<0.05$ and well controlled to a manageable level after pharmacist intervention. To achieve this, pharmacist repeatedly counselled respondents on life style modifications such as reduction in dietary salt, seasoning foods and fatty meat. They were encouraged to engage in high consumption of fresh fruits, vegetable, non-saturated fatty milk, sea foods, enough rest and regular exercise. Similar nutritional advice were made by Sharon et al. (1999). This study is in agreement with Carter, (1997) that when community pharmacists are trained and included as members of the primary care team, significant improvements in blood pressure control, quality of life, and patient satisfaction can be achieved in the health sector. The number of respondents with dyspepsia had declined after pharmacist intervention. The people were made to know that excessive consumption and prolonged use of analgesics was responsible for the development of dyspepsia, hypertension, insomnia and headache. They were also advised to stop self medication, and consult the pharmacist for their drug requirements.

As a result of consistent drug counselling and advice on lifestyle modifications embarked upon by the community pharmacist, the respondents had developed confidence in the pharmacist, in that rarely will they purchase drugs (even Over The Counter drugs) at the premise without the pharmacist's consent. However, several studies have highlighted that availability of pharmacist and provision of counselling to the patients can increase patient compliance with the therapy (Sinclair et al.2001, Westerlung et al. 2003). The present research study shows the relevance of rural pharmacist in improving the health status of the people at the grassroots. For pharmacists to contribute immensely to development of healthcare system in Nigeria, the Federal Government of Nigeria should create more schools of pharmacy in both federal and state universities. The study of Hassel and Eden, (2006 (2006) reported that the low availability of pharmacists in many developing countries is exacerbated by geographical distribution disparity between the rural and urban areas. As further reported by Akhimien, (2012) that there's manpower shortage in pharmacy profession in Nigeria.

CONCLUSION:

Pharmacist interventions on self-medication of drugs greatly enhanced patient healthcare in the rural communities. More schools of pharmacy are recommended to enhance quality of healthcare in Nigeria.

REFERENCES:

1. Absolute Herbal Health, (2012). The benefits of kola nut/Jamaican dried bizzy. http:www.absoluteherbal health.com/ the –benefit- of nut/ amaican-dried- bizzy

2. Adebisi AD (1998). An evaluation of public policies for rural development in Nigeria. Afric:. Revista do Centro Estudos Africanos. USP,S Paulo, 20-21: 146-152.

3. Adisa R and Fakeye T (2006). Assessment of the knowledge of community pharmacists regarding common phytopharmaceuticals sold in South Western Nigeria. Trop. J. Pharm. Res., 5(2): 619-625.

4. Akhimien A, (2013). There's manpower shortage in pharmacy profession in Nigeria –Ex PSN President. http:www.toboremitovuorie.wordpress.com/2013/01/18/ there's-manpower-shortage-in-pharmacy-profession-in- nigeria –ex –psn-president/.

5. Amaechi E (2012). Vanguard Mobile Edition. Intake of bitter kola makes medication ineffective-experts. http:www.vangardngr.com/2012/09/ intake-of bitter-kola-makes medication-ineffective-experts/

6. Arikpo GE, Eja ME, Enyi-idoh KH, Akubuenyi f, Ngang U, Akam C. and Ekomabasi I (2011). Patterns of antibiotic drug use in Southern Nigeria communities. World J. Applied Sci. Tech., 3. (1). 86-92.

7. Ballantyne PJ (2007). The role of pharmacists in primary care. BMJ; 334: 1066-1067.

8. Bender RP, Lindsey RH Jr, Burden DA, Osheroff N, (2004). N-acetyl-p-benzoquinone imine, the toxic metabolite of acetaminophen, is a topoisomerase II poison. Biochemistry; 30;43(12):3731-9.

9. Brai B (2012). Vanguard Mobile Edition. Intake of bitter kola makes medication ineffective-experts. http:www.vangardngr.com/2012/09/ intake-of bitter-kola-makes medication-ineffective-experts/

10. Carter B and Barnette D (1997). Evaluation of hypertensive patients after care provided by community pharmacists in a rural setting. Pharmacotherapy, 17(6):1274-1285.

11. Faduyile T, Oparah AC and Oreagba IA, (2012). Potentials of community pharmacists to Improve maternal, newborn and child health. West Afri. J. Pharm., 23 (2) 76-86.

12. Fakeye TO, Adisa R, Olatunji E (2010). Self medication among hospitalized patients in selected secondary health facilities in South Western Nigeria. Pharm. Pract., 8(4): 233-237.

13. Fakeye T.O, Adisa R and Showande SJS (2012). Attitude and opinion of Nigerian community pharmacists to self medication practices. Afr. J. Pharm. Pharmacol. 6(15): 1147-1152.

14. Felicity S, (2004). Community pharmacy in Ghana: enhancing the contribution to primary health care. Health Policy and Planning, 19 (4): 234-241.

15. Figueiras A, Caamano F, Gestal-Otero JJ (2000). Sociodemographic factors related to self-medication in Spain. European J Epidem., 16 (1): 19-26.

16. Food Agricultural Organization (2010). World Programme for the Census of Agriculture 2010. A System of Integrated Agricultural Censuses and Surveys, FAO, Rome, Italy. Pp 236-239

17. Food Drug Administration (2012). Limits Acetaminophen in Combination Prescription Products Settlement Solutions. http://www.fda.gov/NewsEvents/Newsroom/press /Announcements/ucm239894.htm.

18. Goh LY, Vitry AI, Semple SJ, Esterman A, Luszcz MA (2009). Self-medication with over-the-counter drugs and complementary medications in South Australia's elderly population. BMC Complement Altern. Med., 9:42. http://www.biomedcentral.com/1472-6882/9/42

19. Hassel K and Eden M, (2006). Workforce update - Joiners, leavers, and practising and non-practising pharmacists on the 2005 register. The Pharm. J., 276: 40-42.

20. Holloway K and Green T (2011). Drug and therapeutics committees: A practical guide http://www.who.int/ medicinedocs/ collect/ medicinedocs/pdf/s4882e/s4882e.pdf.

21. Indermitte J, Reber D, Beutler M, Brunacher R, Hersberger KE (2007). Prevalence and patient awareness of selected potential drug interactions with self medication. J. Clin. Pharm. Ther., 32 (2): 149-159.

22. Kelli T, Fred U, Keith M (2013).Rural Pharmacy Closures: Implications for Rural Communities. RUPRI Center for Rural Health Policy Analysis, University of Iowa College of Public Health, Department of Health Management and Policy,

23. 105 River St., N232A, Iowa City, IA 52242, (319) 384-3830. Available at

24. http://www.public-health.uiowa.edu/rupri

25. Okonkwo AD and Okonkwo UP, (2010). Patent medicine vendors, community pharmacists and STI management in Abuja, Nigeria. Afr. Health Sci., 10(3): 253–265.

26. McPhilips N, (2012). Kola nut: Nigeria's seed of togetherness. Vanguard, In Special Report on May 4, 2012. Pp.14.

27. National Population Commission (2009). Nigeria demographic and health survey 2008. Abuja, Nigeria: National Population Commission and ICF Macro. Pp 563-571

28. Phalke VD, Phalke DB, Durgawale PM. (2006). Self medication practices in rural Maharashtra. Indian J. Community Med., 31(1): 34-5.

29. Radford A., Richardson I., Mason M., Rutledge S. (March 2009). The key role of sole community pharmacists in their local healthcare delivery systems: Rural Policy Brief

30. A joint publication of the North Carolina Rural Health Research and Policy Analysis Center and The RUPRI Center for Rural Health Policy Analysis. Pp 345-350.

31. Redclift N and Whatmore S (1990). Household consumption and livelihood: Ideologies and issues in rural research. In: Marsden, T., P. Lowell and S.Whatmore, (Eds.), Rural restructuring. global processes and their responses. David Fulton, London. Pp 321-332.

32. Ross LA and Bloodworth LS (2012). Patient-centered health care using pharmacist-delivered medication therapy management in rural Mississippi, J. Am. Pharm. Assoc., 52: 802-809.

33. Ruoff GE, (1998). The impact of nonsteroidal anti-inflammatory drugs on hypertension: alternative analgesics for patients at risk. Clin Ther., 20(3):376-387.

34. Sharon A.C. Boggs, Linda K. Massey1, Jill E. Armstrong, William R. Lassey and Jutta C. Joseph. (1996) Education of Rural Community Pharmacists to Provide Nutrition

35. Information. Am. J. Pharm. Educ., 60, 353-358.

36. Soll AH, Weinstein WM, Kurata J, McCarthy D (1991). Nonsteroidal anti-inflammatory drugs and peptic ulcer disease. Ann. Intern. Med., 114(4):307-19.

37. Smith M (2009). Pharmacists' role in improving diabetes medication management. J. Diabetes Sci. Technol., 3: 175-9.

38. Walter H, (2010). Nonsteroidal Anti-Inflammatory Drugs and the Kidney. Pharmaceuticals, 3, 2291-2321.

39. West LM, Cordina M and Cunningham S (2012). Clinical pharmacist evaluation of medication inappropriateness in the emergency department of a teaching hospital in Malta. Pharmacy Practice 10(4):181-187.

40. Westerlund T, Allebeck P, Marklund B, Andersson IL, Brånstad JO and Sjöblom M, (2003). Evaluation of a model for counselling patients with dyspepsia in Swedish community pharmacies. Am. J. Health Syst. Pharm., 60: 1336-1341.

41. World Health Organisation (1998). The Role of the pharmacist in self-care and self-medication. Reports of the 4th WHO Consultative Group on the Role of the Pharmacist. The Hague, The Netherlands. 26th - 28th August. WHO/DAP/98.13

42. Yusuf RO and Ukoje JA (2010). Recent observations on rural geographic research in Nigeria. Res. J. Environ. Earth Sci., 2(2): 76-81.