Research Article

EVALUATION OF COMMUNITY PHARMACISTS' INVOLVEMENT IN THE TREATMENT OF MALARIA IN NIGERIA

[1]OSEMENE KANAYO PATRICK, [2]AWOGBEMI KAYODE JOSHUA, [3]AKINYEMI OLUWAFUNMI

[1,2,3]Department of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. Email:osemenekanayo@yahoo.com, joshgbemi@yahoo.com, moskolad@yahoo.com

ABSTRACT

Objectives —To evaluate community pharmacists' involvement in the treatment of malaria in Nigeria.

Method — A self–completed questionnaire, including 16 attitudinal statements was analysed using descriptive statistical analysis.

Setting —The study group comprised pharmacists working in 612 registered community pharmacies in Nigeria.

Key findings —The response rate was 92.7 per cent. Analysis using a 5-item variable on a 5-point scale with a critical value of 15 revealed that there was a little involvement (15.27±5.63) of community pharmacists in preventive services against malaria attack. Seventy-seven per cent of the respondents agreed to this. No appreciable impact (12.83±4.4) at p= 0.0312 was made by community pharmacists as observed by 46 per cent of the respondents in the area of pharmaceutical care and services to malaria patients. Using a 6-item variable on a 5-point scale with a critical value of 18, 80 per cent of the respondents agreed that notable impact on curative services (20.61±3.33) by community pharmacists to malaria patients was made.

Conclusion—Community pharmacists are willing to participate in the management of disease conditions including malaria if they are exposed to more clinical training and provided that government amends the existing pharmacy practice laws to allow such.

Keywords: Community pharmacists, Malaria management, Nigeria

INTRODUCTION

Community pharmacists represent that segment of health professionals saddled with the responsibility of providing primary health care services, public health education, appropriate drug procurement, storage, dispensing medications, patients counseling on the use of prescription and over-the-counter medications, provision of total pharmaceutical care, especially in the forms of effective prescribing and specialized services in community pharmacies. Community pharmacists have also been described as health professionals that are most accessible to the public [1, 2]. Apart from the traditional role of compounding, dispensing, labeling and record keeping of medications, pharmacists in general are regarded as sources of professional advice in the management of common symptoms and long-term medical challenges. Services of pharmacists presently centre on pharmaceutical care which is more or less an extended role where pharmacists assume responsibility for pharmaceutical and health outcomes which must identify and resolve potential drug- related problems in order to improve the quality of life of patients[3]. Newer roles have even emerged for pharmacists and these include pharmacists prescribing, medication review especially in repeated prescriptions, drug tracking and monitoring. Pharmacy profession is designed to promote the safe and appropriate use of drugs. This is influenced by a variety of factors, such as changes in the national drug policy, the pattern of health care, the quality of health information, and the conflicting beliefs in health care provisions with respect to the use of herbal and orthodox medicines. All these efforts are geared towards the attainment of Good Pharmacy Practice (GPD) especially in developing countries where infectious specific bacterial and parasitic diseases such as typhoid fever, diarrhea, malaria among others have made short walks on the hapless population[4].

Malaria is the commonest cause of hospital attendance in all age groups in all parts of Nigeria. It is also one of the four commonest causes of childhood mortality in the country, the other three being acute respiratory infection (pneumonia), diarrhea and measles. It is estimated that 50% of the population has at least one episode of malaria each year while children under 5 have on the average of 2-4 attacks in a year. About 4,500 pregnant women die of malaria annually in Nigeria. An estimated 300,000 deaths occur each year in Nigeria due to malaria [5]. Malaria has severe negative effects on maternal health and birth outcomes. It causes maternal anaemia, increases miscarriage and low birth weight. *P. falciparum* is the most predominant parasite specie accounting for about 98% of malaria cases in the country. *P. malariae* usually occurs as a mixed infection with *P. falciparum*. *Anopheles gambiae* is the main vector of malaria in Nigeria, but An. *finesses* and *An. arabiensis* are also commonly encountered. *An. melas* is found in the coastal areas. Malaria is characterized by a stable, perennial, transmission in all parts of the country. Transmission is higher in the wet season than in the dry season. This seasonal difference is more striking in the northern part of the country[6]. Some experts even claim that malaria kills more than the dreaded HIV/AIDS, especially in Sub-Saharan Africa.

Over 100 million Nigerians are believed to be at risk of malaria attack because over 110 million clinically diagnosed cases of malaria occur annually in Nigeria[5]. The resultant economic loss to the nation from incessant malaria attacks has been put at about $0.85Billion arising from the cost of treatment, transport to source of treatment, loss of man-hours, absenteeism from schools, work place and other indirect costs[6]. These losses have reduced the country's income, rate of economic growth and development. Hence various interventions such as Roll Back Malaria (RBM) initiative, the Global Malaria Action Plan (GMAP) and other policy guidelines which emphasized that, at least, 60% of patients with malaria attack must have access to appropriate anti-malaria drugs that are of good quality, yet affordable and efficacious within 24 hours of the onset of the symptoms. All these efforts are geared towards delivering Nigeria from the shackles of malaria. Therefore, to facilitate this, it is logical that the pharmacists who have been widely reported in literature to have easy and unlimited access to patients yet, whose roles in the treatment of malaria have been grossly understudied and under-reported, should be brought into the picture[1,7]. This becomes very important because many researchers had identified factors that aid malaria infections such as inappropriate anti-malarial drug use, irrational prescribing, incidence of resistance to anti-malarial drugs by malaria parasites, inability of many families to access preventive facilities, presence of stagnant water, improper disposal of refuge, and limitation of pharmacy service provisions[8,9,10]. Other researchers advocated for drastic changes in pharmacy services and practices in view of the potential conflict between professional and business

interests which is skewed in favour of the later in Nigeria[11]. Meanwhile, a number of research papers have acknowledged the potential for an enhanced contribution by pharmacists to primary healthcare especially in areas of pharmaceutical care and clinical pharmacy[8,12,13,14]. Incidentally, clinical pharmacy is a new area in most pharmacy school's curriculum in Nigeria. Pharmaceutical care is anchored on the ability of the pharmacists to patiently acquire clinical problem-solving skills, through an increased understanding of therapeutics and drug information skills, combined with appropriate training and practice[2]. However, pharmacy students in Nigerian universities are expected to undergo at least two semesters externship/ clerkship programmes as part of the requirements for the award of Bachelor of Pharmacy degrees. Nevertheless, the duration of these programmes are too short for a comprehensive understanding of the rudiments of clinical pharmacy practice. Besides, little or no attention has been paid to the role the community pharmacist in combating the malaria pandemic in Nigeria. Hence, this study. The implicated research question is what is the extent of community pharmacists' involvement in the treatment of malaria? The main objective of the study is to quantitatively evaluate community pharmacists' involvement in malaria treatment in Nigeria. While the specific objectives are to determine the extent of involvement of the community pharmacists in the preventive and curative services in the treatment of malaria, as well as assess the quality of pharmaceutical care rendered by the community pharmacist to patients in the treatment of malaria.

Malaria situation analysis in Nigeria

The Federal Ministry of Health (FMOH) painted a gory picture of the situation analysis of malaria in Nigeria as follows: That the perception of the cause of malaria by the community is not only poor but also that only very few people in the community have been able to link mosquito to malaria, in spite of the plethora of seminars, conferences, symposia and public lectures organized at various times on malaria in the country even at community levels. Hence the incidence of reporting of cases of malaria is poor in the country. Nevertheless, in Nigeria for instance, pharmacists at all levels are rarely involved in public health campaigns in cases of common diseases such as diarrhea, typhoid fever, whooping cough, yellow fever, malaria among others. It has been an exclusive preserve of the medical doctors, nurses, midwives, sanitary inspectors and other healthcare givers [14]. Again, about 80% of malaria cases are inadequately managed at community level by the facility and home based Caregivers because only 15% of the actions of the Caregivers are appropriate due to inadequate dosage, improper use of parenteral antimalarials, poor laboratory support in diagnosis of malaria and non-availability of treatment guidelines in most health facilities whose out-of–stock levels at best have been put at 85% [15]. This may be why 40% of patients with severe malaria die due to poverty and poor quality care. This is also compounded by the fact that 60% of mothers had no knowledge of the current management of convulsions caused by high body temperature due to malaria attack. In addition patients either go to traditional healers or use traditional home made concoctions whose efficacy remains subject of intense debate[15]. While 51% of mothers obtain drugs from Patent Medicine Vendors of which 89% of these drugs were found to be substandard and 43% of syrups unsatisfactory. Even some pregnant women still patronize Traditional Birth Attendance (TBAs). In all, only 5% of antimalarial drugs are produced in Nigeria[15].

Based on the above–mentioned submission, one may be tempted to conclude that the disease malaria, which many claimed knows no boundary, will remain an enigma in Nigeria if drastic interventions are not put in place by the government and all Caregivers to curtail its spread as is done in most developing countries.

Expected roles of community pharmacists' in malaria control

The Commonwealth Pharmaceutical Association (CPA) in 2008 advocated for regional collaboration in the fight against malaria in view of the nature and economic consequences precipitated by the scourge. In addition, the body identified certain variables that contributed to the spread of malaria, beyond endemic areas such as; climatic variations, natural disasters and population relocation which could lead to the exposure of non-immune population to endemic malaria. They also opined that improved mapping of regional data could help governments predict natural malaria outbreaks with high degree of accuracy. Furthermore, pharmacists are generally regarded as drug custodians and are widely believed to have the capacity to play key roles in assisting government in implementing public health control strategies at community levels in view of their vast knowledge in local attitudes and conditions[16]. In this regard, the expected roles of community pharmacists in the prevention and management of Malaria were anchored on a tripod namely, prevention, care and treatment (PTC). Preventive measures include raising awareness of malaria itself, giving advice on the protection against malaria, advice on drug of choice for treating pregnant women, promoting ways of detecting early signs and symptoms of malaria attack and promoting the use of insecticide treated nets (ITNS).Pharmaceutical care entails promoting prompt action on first signs of malaria attack and promoting equitable access to essential information to the communities. Treatment guidelines are expected to include rational use of antimalarials, use of prophylaxis where indicated, managing malaria/HIV co-infection and recording/reporting drug resistance[5,17]. Generally, pharmacists are expected to be deeply involved in collection, analysis and correction of health data which will be used to provide essential information to government on cost-effective and evidence based policy decisions [18].

In this regard, a sectoral analysis of how some community pharmacists in developing countries performed notable roles in combating malaria may help reshape opinions or thinking of people about the capabilities of community pharmacists.

In Ghana for instance, the Pharmaceutical Society of Ghana (PSGH) not only launched a nation-wide campaign asking communities to seek early treatment at first signs of malaria attack but also insisted that patients must consult the pharmacists before taking any anti-malaria medicines. This is with the view to enhancing the position of the pharmacist in counseling the public on disease prevention and health promotion[19]. PSGH also organized series of interactive regional symposia, radio programmes and television discussion panels in order to ensure authoritative and up-to-date advice on the treatment, prophylaxis and prevention of malaria. They lead public health work on drugs safety, monitoring and quality assessment of anti-malaria. The PSGH made significant input in the development of the new Ghanaian National Malaria Policy including forecasting Ghana's' artermesinin combination therapy (ACT) requirements over the next few years. At the moment, patients are benefiting from the improved communication system in Ghana which has been able to facilitate improved interactions between the pharmacists with prescribers in hospitals and clinics. An intranet link between the community pharmacists and wholesalers has been developed. This would facilitate prompt and efficient service delivery that would hopefully improve patients' outcome. The activities of PSGH are contained in the Ghanaian Pharmacy Laws[19]. Meanwhile, the Nigeria Pharmacy laws are not explicit in this regard[20].

The Pharmaceutical Society of South Africa (PSSA) encouraged community pharmacists to provide to consumers up-to-date information on malaria prophylaxis and treatment. Pharmacists provide education to local communities on more effective malaria preventive measures. Early treatments that improve therapeutic outcomes are embarked upon while efficient community access to essential information on malaria was ensured through South Africans "malaria helpline".

Community pharmacists in South America, work very closely with their ministry of health in forecasting periodic malaria requirements using the quantified programme, which is an electronic data base of morbidity data and treatment guidelines that are configured to National Malaria Programme Project Assumption.

The Health Protection Agency (HPA) in 2007 gave guidelines for malaria prevention in travelers from the UK and expects the community pharmacists to be familiar with such guidelines in order to help advice on measures to prevent malaria infection. The HPAs guidelines were hinged on the ABCD rule namely, awareness of the risks of malaria; bit avoidance; chemoprophylaxis; diagnosis and treatment. Under awareness creation on risks associated with

malaria attack, the community Pharmacists are expected to be familiar with general pathophysiology of malaria; factors that might influence a risk assessment; sources of information that can be consulted to determine levels of risk and choice of chemoprophylaxis. Bite avoidance is the key area that pharmacists in general can supply appropriate products as well as offer useful advice on minimizing mosquito bites such as general advice on mosquito behaviour; need for applying mosquito repellants to the skin and strategies to be adopted during retirement when people are predisposed to sedentary life style. In terms of insect repellant the HPA recommends products containing at least 50 percent DEET. Higher concentrations would cause longer-lasting effects. The use of insecticide treated nets was equally emphasized. Chemoprophylaxis centered on the use certain range of drugs and bite avoidance. The later is apt for low risk areas while little or no drug-resistant cases could be handled with chloroquine plus proquanil plus drug avoidance. Resistant cases could be handled with a choice of prescription medications such as mefloquine, deoxycycline or atovaquone/proquanil plus bite avoidance. However, certain malaria parasites have exhibited resistance to the above listed drugs in some part of South East Asia and in Africa. According to HPA, 2007, between 1500-2000 travelers return to the UK every year having contracted malaria. Most require hospitalization and 5-12 die of the disease. The interval from initial symptoms to a life-threatening condition can be short, in some cases as little as 24hours [21]. Hence, it is very important that the community pharmacists respond to early symptoms of malaria as they manifest. Such symptoms are usually fever, malaise, gastrointestinal pains, and respiratory problems, among others.

The treatment of malaria in Nigeria

Chemotherapy has been the major way of treating malaria for almost three and half centuries in Nigeria. Early strategies include the use of herbal medicines in the form of decoction, maceration or powder mixed with certain foods either as sauce in soups, or incorporated into creams or soaps as adjuncts for external use or taken orally with fluid. At times patients cover themselves with thick cloths over steaming pots containing herbal preparations-roots, leaves and barks of medicinal plants for considerable periods of time. This was undertaken so as to generate enough sweat from the body and hopefully crash the high body temperature associated with fever. This practice is still very much in vogue in Nigeria. In addition, some pre-packed antimalarial herbal preparations especially in liquid dosage forms such as Iba mixture, Gbomoro herbal remedy, Conquer mixture among others are sold in some retail pharmacies.

The advent of civilization came with it orthodox medicines which have been in use in the treatment of the disease. However, the rate of development of resistant strains of the malaria parasites to various drugs such as chloroquine; sulphadoxine-pyrimethamine, pyrimetamine has been an issue of immense concern. Even resistance to these drugs is reported to have spread rapidly through South America, Southeast Asia, East Africa and to West Africa with the associated costs to the communities in terms of increase in morbidity, mortality and delayed therapeutic response[15]. The inadequacies of chloroquine and sulphadoxine-pyrimethamine to handle the malaria problem were revealed by Drug Efficacy Studies in 2004. This led to the use of more effective combination therapy-artemisinin based combination therapy (ACTs) which have demonstrated adequate capability of handling cases of uncomplicated malaria in line with WHO guidelines. Other drugs with adequate clinical and parasitological response to malaria include amodiaquine, halofantrin, and mefloquine. Daily intake of proquanil for prophylactic treatment of malaria especially in pregnant women is still very much encouraged while resistant and cerebral malaria are handled with quinine in spite of its severe side effects such as insomnia, tachycardia, and tinnitus among others. The above-mentioned drugs are listed in the essential drug list which is dynamic and subject to periodic changes or review based on their efficacy and safety[15]. Non drug interventions include the use of insecticide treated nets (ITNs) which are rarely sold in registered pharmacies. Instead they are given freely in most government hospitals which got such supply from the millennium development goals (MDGs) scheme. Ironically, children, pregnant and nursing

women appear to be the major beneficiaries in the distribution of the ITNs. The Pharmacy law in Nigeria is yet to empower pharmacists to carry out curative treatment on patients despite the fact that WHO in 1994 had emphasized the active participation of pharmacists in providing pharmaceutical care, promotion of rational drug use and in the prevention of illness[22]. Pharmacy practice in Nigeria seems to be in line with WHO provision.

MATERIALS AND METHODS

Setting

This study adopted the methodology employed elsewhere to evaluate community pharmacists' involvement in Primary Health Care in Benin-City, Nigeria[23].

This investigation was carried out in November, 2010 during the annual conference of the Pharmaceutical Society of Nigeria (PSN) held in Taraba which is one of the 36 states in Nigeria. Nigeria remains the largest black nation in South Saharan Africa, with a total area of 924,000 square kilometers, bordered by the Gulf of Guinea, Cameroon, Benin, Niger, and Chad. The country has a population of about 150 million people. Average life expectancy at birth is 54 years [24]. Health services in Nigeria are provided by both private and public sectors but the majority of the population cannot afford basic health services. The timing of the study was planned to coincide with the annual PSN conference where majority of the pharmacists in different types of practice such as hospital, academic, industrial, government and community practice in the country, would be in attendance. This facilitated easy access to the targeted would-be respondents.

Sample

In all, from a population of 1,863 participants who attended that years' PSN conference, 612 participants were identified to be in community practice using a stratified random sampling technique. Verbal consent to participate in the study was sought during this initial contact. Self administered, structured and pre-tested questionnaires were distributed to the community pharmacists present in the conference using a purposive and convenient sampling process. The questionnaires were completed in the presence of research assistants. This was backed by interview schedule. The response rate was 92.7%, since only 4 community pharmacists did not properly fill the questionnaire and 41 did not participate, citing lack of time and interest in the study as reasons for non-participation.

Survey Instrument

Questionnaire consisted of both closed and open-ended questions. The questionnaire was divided into three sections. The first section contained questions on core issues and these include questions on the extent and quality of community pharmacists' involvement in rendering preventive measures to patients/inhabitants of their community against malaria. Such measures include raising awareness of malaria itself, giving advice on the protection against malaria, advice on drug of choice for treating malaria in pregnant women, promoting ways of detecting early signs and symptoms of malaria attack and promoting the use of insecticide treated nets (ITNs). The above was presented as a 5-item variable measured on a 5-point scale. Community pharmacists were asked to rate the extent of their involvement in preventive measures against malaria on the 5-point scale. The second section of the questionnaire contained questions on extent of community pharmacists' involvement in rendering pharmaceutical care services to patients. This includes the degree of promptness of such service on first signs of malaria attack and the rate of access to essential information on malaria by patients. Also, a 5-item variable consisting of a 5-point response scale was developed for pharmacists' involvement in pharmaceutical care. The third section of the questionnaire contained questions on treatment /curative guidelines by the community pharmacists' which centered on the rational use of antimalarials for treating patients such as the use of azithromycin and chloroquine for the treatment of uncomplicated plasmodium falciparum malaria[25], use of prophylaxis where indicated, managing malaria/HIV co-infection and the extent of recording/reporting drug resistance and adverse

drug interaction where ever they occurred. Again, a 6-item variable consisting of a 5-point responds scale was developed and community pharmacists were asked to rate the extent of their involvement in effecting desirable health outcome in terms of achieving cure in the treatment of malaria. The 5 point scale 1-5(lowest to highest) developed for the survey questionnaire was assumed to have a mean value of 2.5. The instrument was pre-faced: very frequent =5, frequent =4, not sure = 3, less frequent = 2, and not at all =1. Since all the instruments were in one direction, a summation of the scores represented the level of performance. The higher the score of the variables, the higher the level of performance; hence a high score correlates with a high level of community pharmacists' involvement, in quality of service, pharmaceutical care and curative treatment of malaria and vice versa. However, this depends on the item being addressed.

Validity and reliability of the instrument

The questionnaire was pre-tested in 30 community pharmacists who the purpose of the study was explained to. The results of the pre-tested questionnaire were used to make necessary modifications and corrections on the questionnaires and interview schedules. A reliability coefficient of 0.85 was calculated using test-retest method for reliability.

Analysis of data

Variables were coded, given sequential numbers, and analyzed using the SPSS version 10 for windows. Since the highest score on a 5-point scale is represented by "5" and the lowest score is represented by "1", the mean score for each variable would be the sum of the difference between the highest score and the lowest score on the 5-point scale. This represents the critical or neutral point on the rating scale. For instance for objective one which is the extent of community pharmacists' involvement in rendering preventive measures to patients who received malaria treatment, a 5 item consisting of 5 points response scale was developed. On a 5-item scale, the lowest possible score would be 5 while the highest possible score would be 25. A logical neutral point therefore would be assumed to be 15 i.e. midpoint between 5 and 25. The same would apply in evaluating the remaining three objectives of the study. Since the summated score correlated with the level of

involvement of community pharmacists in handling cases of malaria, scores above 15 in the above case were taken as positive. This value would vary depending on the number of variables or items generated. The standard deviation was calculated as a measure of item variability from the mean score. Any low standard deviation indicated cluster of responses to the mean while high standard deviation showed high variability of opinions from the mean. Opinions of respondents were also computed in percentages with respect to the number of respondents who scored above the critical or neutral point on the rating scale.

RESULTS

The response rate for the questionnaire administered was 92.7%. Also the reliability of the instrument used was 0.85 using test-retest methods for reliability. The results of the participation of community pharmacists in preventive services against malaria are shown in Table 1. Community pharmacists scored 15.27 ±5.63 on preventive services which is slightly above the critical point of 15. This is not impressive because prevention against malaria represents a fundamental and very important stage of deploying measures that are supposed to nib in the bud the malaria epidemic. Lack of adequate preventive measures against the disease will not hasten its eradication. Ironically, complete eradication of the disease is the cardinal goal of all stakeholders in the Nigerian health sector. However, 77% of the respondents scored above the critical point of 15(Table 1).

Table 2 identified 5 items that can partially measure the quality of pharmaceutical care rendered by community pharmacist to malaria patients in their operational environment. Fourty-six percent of the respondents scored 12.83 ± 4.4. This is less than the critical value of 15. Therefore, it shows that the quality of pharmaceutical care rendered to malaria patients by community pharmacists was very poor, grossly inadequate and insignificant (p =0.0312) based on the 5 item parameters used in this study to measure the quality of pharmaceutical care rendered to malaria patients by practicing community pharmacists in Nigeria. The result of the 6 item parameters employed to determine the extent of the community pharmacists' involvement in rendering curative treatment to malaria patients is presented in Table 3.

Table 1: Item analysis of respondents' involvement in the prevention of malaria in Nigeria

Item	Mean	Standard deviation	% Performance
Awareness on malaria	3.57	1.45	90
Professional advice on Malaria	3.19	0.90	80
Advice on drugs for malaria	3.97	0.86	100
Ways of detecting early signs and symptoms of malaria	2.60	1.50	66
Promoting the use of ITNs	1.94	0.92	48
Mean total	15.27	5.63	77

Source: Field Survey, 2010.

Table 2: Community Pharmacists involvement in Pharmaceutical care to Malaria Patients

Item	Mean	Standard deviation	% Performance
Prompt service to malaria patients	4.27	0.92	85
Rate of information from pharmacist to malaria patients	2.85	1.14	57
Pharmacists ability to identify and resolve potential drug related problems	2.14	1.16	42
Quality of drug trading and monitoring by community pharmacists	1.83	0.83	34
Rate of feedback from patients	1.74	0.37	11
Mean total	12.83	4.40	46

Source: Field Survey, 2010.

Table 3: Community Pharmacists involvement in curative services to malaria patients

Item	Mean	Standard deviation	% Performance
Rational use of anti materials	4.29	0.72	86
Use of prophylactic drugs against malaria	4.34	0.60	88
Management of malaria	4.48	0.59	91
Extent of reporting drug resistance by malaria parasites	2.10	0.38	68
Extent of recording incidents of drug resistance	2.82	0.59	72
Adverse drug effects reporting (pharmacovigiliance)	2.58	0.45	74
Mean total	20.61	3.33	80

Source: Field Survey, 2010.

Eighty per cent of the respondents scored above 20.61±3.33. This result is a little bit above the critical point of 18 for a 6 -item variable measured on a 5 point scale.

DISCUSSION

Result obtained for community pharmacists' involvement in preventive services to patients/communities against malaria was fairly satisfactory but not too impressive. This may be why the perception of the cause of malaria by the community is very poor because only very few people in the community have been able to link mosquito to malaria, in spite of the plethora of seminars, conferences, symposia and public lectures organized at various times on malaria in Nigeria even at community levels. Hence, the incidence of reporting of cases of malaria remains poor in the country[15]. This position is re-enforced by the fact that in Nigeria for instance, pharmacists at all levels are rarely involved in public health campaigns in cases of common diseases such as diarrhea, typhoid fever, whooping cough, yellow fever, malaria among others. It has been an exclusive preserve of the medical doctors, nurses, midwives, sanitary inspectors and other healthcare givers[14]. It appears that the community pharmacists in Nigeria are not doing enough in enlightening the community on ways to effectively prevent malaria attack such as bite avoidance, the use of ITNs among others. May be they are preoccupied by their personal business interest which had been advocated outweigh their professional interest[11]. However, this is at variance with what obtains in Ghana. In Ghana for instance, the Pharmaceutical Society of Ghana (PSGH) not only launched a nation-wide campaign asking communities to seek early treatment at first signs of malaria attack but also insisted that patients must consult the pharmacists before taking any anti-malaria medicines. This is with the view to enhancing the position of the pharmacist in counseling the public on disease prevention and health promotion [19]. Furthermore, PSGH also organized series of interactive regional symposia, radio programmes and television discussion panels in order to ensure authoritative and up-to-date advice on the treatment, prophylaxis and prevention of malaria. Pharmacy laws in Ghana, according to [19] accommodated most activities embarked upon by the PSGH. This is not the same with the Nigerian Pharmacy laws [20]. The Pharmaceutical Society of South Africa (PSSA) encouraged community pharmacists to provide to consumers up-to-date information on malaria prophylaxis and treatment. Pharmacists provide education to local communities on more effective malaria preventive measures. Early treatments that improve therapeutic outcomes are embarked upon while efficient community access to essential information on malaria was ensured through South Africans "malaria helpline". The situation in Nigeria is different.

The value obtained for the involvement of the community pharmacist in pharmaceutical care rendered to malaria patients was 12.83±4.4. This is below the critical point of 15 and therefore considered very poor. Pharmaceutical care is anchored on the ability of the pharmacists to patiently acquire clinical problem-solving skills, through an increased understanding of therapeutics and drug information skills, combined with appropriate training and practice[2]. This training is best obtained from clinical pharmacy courses taught in modern pharmacy schools that run intensive and extensive Pharm. D (Doctor of Pharmacy) programme which incidentally is new in most universities that are offering degree courses in Pharmacy in Nigeria. As mentioned earlier, pharmacy students in Nigerian universities only undergo two semesters' externship/ clerkship programme as partial requirements for the award of Bachelor of Pharmacy degrees. The duration of such programme appears too short for a comprehensive understanding of the rudiments of clinical pharmacy practice. This may explain the poor performance of community pharmacists who were involved in rendering pharmaceutical care to malaria patients as revealed in this study.

The result obtained for community pharmacists involvement in curative services of malaria was 20.61±3.33 which was above the critical point of 18 and therefore considered adequate. This result however has raised a fundamental legal issue as to whether pharmacists in general are now empowered by the existing Nigerian pharmacy law to carry out curative cure or effect medical treatment on ailing patients. The practice of pharmacy in Nigeria is presently much in tune with the WHO prescription which emphasized the active participation of pharmacists in providing pharmaceutical care, promotion of rational drug use and in the prevention of illness[22]. This may explain why the study recorded a value of 20.61±3.33 which is above the critical value of 18 for community pharmacists' involvement in curative services for malaria patients.

Nevertheless, one inherent drawback in this study is the limited number of variables employed (irrespective of the existence of a host of other variables not used) in the determination of the quality of health care rendered by community pharmacists' in areas of preventive services, pharmaceutical care and curative services to malaria patients. Again, it may not be enough to use only one disease condition (malaria) to determine the extent of pharmacists' involvement in ensuring quality health outcome. However, these limitations did not in any way; diminish the quality of results obtained and their far reaching effects. Rather, incorporating more variables and evaluating more disease conditions could form basis for further research.

CONCLUSION

While there is a little involvement (15.27±5.63) of community pharmacists in preventive services against malaria attack on patients, no appreciable impact (12.83±4.4) was made by community pharmacists in the area of pharmaceutical care services to malaria patients. Notable impact on curative services (20.61±3.33) by community pharmacists to malaria patients was however recorded. Consequently, it is important to encourage and motivate community pharmacists to get more involved in activities that would bring improvements in patient health outcomes not only in the management of malaria but also in other disease conditions. This could be achieved by extending the duration for externship/clerkship programme, as well as intensify the teaching of clinical pharmacy courses to pharmacy students at the undergraduate level. However, there is need to modify the existing laws governing pharmacy practice in Nigeria, as was done in most developed countries, in order to empower and enable practicing pharmacists to carry out clinical services in line with the recommendation of the World Health Organization.

REFERENCES

1. Ludwig-Boltzmann. Institute for Sociology of Health and Medicine. Health promotion in general practice and community pharmacy – conclusions and proposals from a 2002, European Project.
2. Pharmacist Council of Nigeria. Pharmacy and Drug Laws in Nigeria Resolution. Role of the Pharmacist in Supporting the WHO Reversed Drug Strategy 2005. (WHAT 47/1994/ROC/s)
3. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J. Hosp Pharm.* 1990; 47:533-43
4. FIP. Good Pharmacy Practice in Developing Countries. Recommendation for Stepwise implementation. Report of a working group. The Hague. International Pharmaceutical Federation.1998.
5. WHO. The Role of Pharmacist in Health Care System. Report of a WHO Consultative Group, New Delhi, India. 2007.
6. FMOH. Malaria situation analysis in Nigeria. 2nd ed. Abuja. 2005.
7. Pharmanews. Editorial Comment. *Nigeria Foremost Pharmacist Journal* 2010; 4(3) 12
8. WHO. Good Pharmacy Practice. Guidelines in Community and Hospital Pharmacy Settings. Geneva .World Health Organization. 1996.
9. WHO. The role of pharmacist in the health care system, Geneva. World Health Organization. 1988.
10. WHO. Primary Health Care Report of the International Conference on Primary Health Care, Alma-Ata USSR Geneva. 1998.
11. Federal Republic of Nigeria. National Policy on Malaria Diagnosis and Treatment, Abuja, Nigeria. 2001.
12. Dada SOB. The role of pharmacists in primary health care delivery. *Nig J Pharm*: 1987; 22: 15-20.

13. Smith FJ. Community Pharmacists and Health Visitors, *Health Visit*: 1990; 63(11) 383- 384.
14. Eniojukan JF, Adeniyi A. Community Pharmacists and Primary Health Care Programme. *Nig J.* Pharm: 1997; 28(2): 21-24.
15. FMOH. The pattern of transmission of malaria in Nigeria. Reserved National Health Policy. Sept. 2007.
16. Kotze I. Pharmacists' role in the prevention and management of malaria. Paper delivered at World Malaria Day Chairmen Conference. 2008.
17. Smith FJ, Salkind MR, Jolly BC. Community Pharmacist: A method of assessing quality of care, *Soc, Sci med*: 1990; 31(5): 603-7
18. CPA. "Your Pharmacist Cares" Annual Health Awareness Campaign, World Malaria Day April 25. Tanzania. 2008.
19. Dodoo A. Health system benefits from Pharmacist input to malaria control. World Malaria Day, Accra Ghana. 2008.
20. Egboh AA. The practice of pharmacy laws in Nigeria. *Pharm Pract J*: 1986; 3(5).
21. HPA. Guidelines for malaria prevention in travelers from United Kingdom. 2007. www.hpa.org.uk/../1203496943523
22. W H O. The role of pharmacists in support of the WHO Revised Drug Strategy. 1994.
23. Opara CA, Arigbe-Osula ME. Evaluation of Community Pharmacist' Involvement in Primary Health Care. *Trop J. Pharm Res*: 2002; 9(2): 67-74
24. National Economic Empowerment and Development Strategy. National Planning Commission. Abuja. 2004.
25. Marko JL, Pandey SP, Ashutosh chourishi .A comparative study of efficacy of Azithromycin and chloroquine for the treatment of uncomplicated plasmodium Falciparum Malaria. *IJPPS*: 2011; 3(3):221-224.