International Digital Organization for Scientific Research ISSN: 2579-0811
IDOSR JOURNAL OF BIOCHEMISTRY, BIOTECHNOLOGY AND ALLIED FIELDS 4(2): 64-85, 2019.

The Practice of Public Health Activities by Community Pharmacists in Enugu, South-East Nigeria

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ABSTRACT

Background: Due to the changing health indices (increase in prevalence of Non Communicable Diseases) in Nigeria, there has been much interest in developing its community pharmacy practice to offer public health services in addition to its traditional role of dispensing. Objectives: The objectives of the study are: to determine the level of involvement of community pharmacists in public health activities and to identify barriers that prevents community pharmacists in Enugu from being involved optimally in public health activities. Methods: The study involved administration of pre-tested and validated structured questionnaires. The questionnaires were analysed using SPSS and exported to Microsoft excel. Descriptive Statistic was carried out using means and percentages. The level of involvement in percentages were compared among the various groups using Analysis Of Variance (ANOVA) and Post Hoc Dunnet test. Results: 64 community pharmacists were recruited into the study. However, only fifty nine (59) questionnaires were completed and returned giving a response rate of 93.6%. Involvement in public health activities mean score was 234.7±108.4 which is below the neutral point of 261. The barriers that were reported by the highest number of pharmacists were: lack of finance (reported by 21 pharmacists), lack of time to carry out public health activities (18 pharmacists), lack of adequate training in public health (19 pharmacists).

Keywords: Practice, Public, health, community, pharmacists, Enugu, south-east, Nigeria

INTRODUCTION

The Community Pharmacy is the most accessible facility where health needs are met. This is because the community pharmacists do not charge for consultation, they are usually located close to most households, and usually have extended working hours. They offer services such as: drug dispensing, counseling of patients on the proper use of drugs, sale of drugs, treatment of minor ailments with Over The Counter drugs, dispensing of Prescription Only Medicines.

These are the traditional roles for which the community pharmacies were known. In recent times, the pharmacy practice has imbibed more patient oriented roles with the advent of pharmaceutical care. Disease prevention activities such as blood pressure checks, blood glucose tests, checking of a client's weight, are carried out in the community pharmacy. Health educational activities such as distributing health pamphlets, or any literature that has to do with health, participating in health campaigns should also be carried out in the community pharmacy. Hence, the role of community pharmacists is expanded to include Public Health services [1].

Primary health care centers cannot meet the health needs of the community because of limited number of health professionals present in these health care centers in the town and lack of supervision. This will greatly increase the health demands of clients who visit the community pharmacies [2].

The practice of community pharmacy has shifted from being product-oriented to

patient-oriented. The practice is based on Pharmaceutical care. Pharmaceutical Care is the responsible provision of drug therapy that will produce a definite outcome which will improve and maintain a patient's quality of life [3]. The practice of Pharmaceutical Care enables the patient to focus more on the patient's Health needs. Patients who visit the Community pharmacies where pharmaceutical care is offered see the pharmacist not just as a supplier of medicines but as a care-giver and professional who has the ability to meet his or her health needs. Health is a state of complete physical, mental, and social well being and not merely the absence of diseases or infirmity [4]. Hence, a health professional is one who can meet these needs and it can only be met by pharmacists through the operation of a Pharmaceutical Care practice.

Community Pharmacy and Public Health:

Turnock BJ in his book 'Public Health: what it is and how it works', described the Public Heath agenda as dynamic and responding to changing population needs. Public Health began primarily to fight epidemics and prevent the spread of diseases. There is now a change in Public Health efforts because of the emergence of different Public Health threats [5]. There is an increase in the aging population currently. This will result in a corresponding rise in the prevalence of chronic diseases which the elderly often suffer from. As a result, there will be pressure on our Health care systems [6]. Hence, the role of the pharmacist in Public Health should be emphasized especially at the community level. The concept of Primary Health Care was developed in order to ensure Health for all by the year 2000 and beyond. Primary Health care services offered at PHC include: education regarding a prevailing health problems and the methods of preventing and controlling them, promotion of food supply and proper nutrition, maternal and child care, including family planning, immunization against the major infectious diseases, prevention and control of locally endemic and epidemic diseases and provision of essential drugs and supplies [7]. The pharmacist has many functions that align with those of the essential Health services that are critical to Public Health. The pharmacist is strategically located in the community to offer Primary Health Care Services. Community pharmacists can offer PHC services through the dissemination of Public Health Activities in their premises. This was confirmed in a study carried out by Faduyile T et al. in four states in Nigeria. Results of the study showed that community pharmacists have the potential to improve maternal, newborn and child health when they are trained to do so [8].

Anderson C et al., carried out a review on 'the contribution of community pharmacy to improving Public Health report' and found out that Pharmacists are not yet formally classified as a profession within the Public Health workforce(especially in the developing countries), unlike other Public Health professionals (nutritionists, nurses, physicians). The Public Health role of the pharmacist is yet to be sufficiently recognized and promoted by Public Health agencies, pharmacy educators, or other Health Care professionals [9].

In Nigeria, several studies have shown that Public Health Services could be provided through the community pharmacy. In Warri, Delta State, a study carried out by [10] demonstrated the potential of community pharmacists to impact positively on the Public Health Status of the community when given the necessary training and the right environment (provision of user friendly resource materials) [11]. [12] revealed that there was little involvement of community pharmacists in preventive services and pharmaceutical care services in Nigeria. He also emphasized that exposure of community pharmacists in Nigeria to more clinical training and amendment of existing pharmacy practice laws will greatly improve Community pharmacists' involvement in preventive services and pharmaceutical care [13]. Another study carried out in Benin-City, Nigeria revealed that community pharmacists are involved marginally in Primary Health Care (PHC) programmes

but are willing to improve their performance. The author suggested that improvement of performance by incorporation of Primary Healthcare role of community pharmacists in the curriculum of pharmacy school and continuing education on PHC [14].

[15]. was able to demonstrate from his study that pharmacists in Nigeria when trained are able to act as better promoters, facilitators and implementers of maternal, newborn and child health [16].

In the United Kingdom, the new pharmacy role was formalized by the introduction of the new pharmacy contract in 2005 in England and Wales and 2006 in Scotland. This contract outlined the Public Health service pharmacists would be required to provide. These services include the provision of advice on Healthy living and self care and involvement in Health promotion campaigns in Scotland, England and Wales; provision of smoking cessation program and sexual Health services in Scotland [17].

The 'Healthy Living Pharmacy' Concept was developed in Portsmouth in 2009. It was developed by National Health Service, Portsmouth and works together with the Hampshire and Isle of Wright local Pharmaceutical Committee. They have the ability to help reduce Health Inequalities by delivering consistent and high quality health and well being services. These pharmacies promote health and provide proactive Health advice and interventions. The Healthy living Pharmacy program is currently being implemented in other areas of England and is supported by the pharmacy organizations and department of Health. Services to be carried out by Healthy Living Pharmacies are selected based on the local health needs of the community. Currently, services that could be carried out by Healthy Living Pharmacies include smoking cessation, physical activity, control of substance misuse, obesity, sexual health, minor ailments, alcohol abuse, Men's health, long-term conditions (National Pharmacy Association 2014).

These services are offered within the Healthy Living Pharmacy brand with the aim of exhibiting quality and improving the public's awareness of what a pharmacy can offer. As at September 2013, there were over 700 HLPs with around 2,100 trained Health Champions working in them to promote health and well being. There are also other pharmacies who offer Public health services but are not commissioned as HLPs (Newton 2014). Despite the interest shown by the government of the UK on HLPs, there is a diminished growth of UK studies in some key areas of Public Health, for example, there is a lot of evidence to show that public health services can be offered by the community pharmacy effectively but there is little evidence to show that it is cost-effective or more effective than other providers. There is strong evidence that smoking cessation, cardiovascular disease prevention, blood pressure management, and aspects of the management of diabetes, asthma and heart failure can be offered effectively by a community pharmacy but there is less strong evidence for COPD, infection control, substance abuse, weight management, minor ailments and EHC(Emergency Hormonal Contraceptive) supply outcomes (National Pharmacy Association).

Fajemisin F, a pharmaceutical adviser in Public Health for the NHS, UK also recorded that smoking cessation, cardiovascular disease prevention, blood pressure management, and aspects of the management of diabetes, asthma and heart failure can be offered effectively by a community pharmacy but there is less strong evidence for COPD, infection control, substance abuse, weight management, minor ailments and EHC(Emergency Hormonal Contraceptive) supply outcomes after she carried out a literature review of papers from peer reviewed journals published in August 2002 to August 2012 [18].

A literature review carried out by Agomo in 2010 revealed that the literature showed that a wide range of public health roles were performed by community pharmacists. The most prominent areas were smoking cessation services, healthy eating and lifestyle advice, provision of

EHC, infection control and prevention, promoting cardiovascular health, blood pressure control and prevention, management of drug abuse, misuse and addiction. There were gaps in the UK evidence base and there were no studies found in the UK for preventing falls in the elderly, emergency preparedness and response to bioterrorism, climate change and potential pandemics, immunization and vaccination services and prevention and risk assessment of osteoporosis. There were also gaps in the evidence base regarding the role of London community pharmacists in public health [19].

In Germany, a lot of research has been carried out to show that pharmaceutical care and other pharmaceutical services can be offered to the community through the community pharmacies. In 2003, a contract was signed between the community pharmacies and the largest German Health Insurance Fund in which included the provision of remuneration for offering pharmaceutical services. In 2014, a trilateral contract was signed which included the family physicians. This motivated a vast majority of pharmacists to contribute in the program [20].

In the US, Healthy People 2020 (which is an association in the United States that provides Science-based 10 year national objectives for improving the health of all Americans) recognizes that pharmacists play an important role in prevention and appropriate treatment and therefore pharmacists who seek to ensure appropriate medication use can assist in achieving these national health goals. In the U.S, public health programs that have been recorded to be carried out by pharmacists include: vaccination, pharmacy based syringe exchange program, emergency preparedness (Pharmacists and pharmacy students provided immunization, logistical support, patient education and screening in the Haiti earthquake in 2010), and mental health [21].

In California State in the U.S, a bill that will help improve the services offered by pharmacists (particularly the community pharmacists) was signed into law on October 2013 (to be effected in January 2014) by California governor, Jerry Brown. The new Bill authorizes all appropriately trained state-licensed pharmacists to provide additional services such as routine vaccinations, hormonal contraception, nicotine replacement medications, and certain prescription drugs for travelers independently. The legislation also enables Advanced trained Pharmacists who have received advanced training and experience, recognized by the state board of pharmacy and in collaboration with the primary care provider will be allowed to assess and refer patients; begin, adjust and end a drug therapy; send for and interpret drug therapy related tests; and participate in the evaluation and management of diseases and health conditions [22].

The Practice of Community Pharmacy:

The Practice of community pharmacy has transcended from just offering traditional services such as dispensing to being patient centered. This is because pharmacy as a profession has to evolve to meet the needs of the society. In the developed societies, 4-10% of all admitted patients experience adverse drug reactions that resulted from multiple drug therapy especially in treatment of the elderly and persons with chronic diseases. In the USA, Adverse Drug Reactions is the 4^{th}-6^{th} leading cause of death and is estimated to cost US$130 billion a year. In the UK Adverse Drug Reactions accounts for 466 million pounds (in 2004). Therefore appropriate drug therapy is safer and more cost-effective than other treatment alternatives. Pharmacists are well positioned to assume responsibility for the management of drug therapy because of their extensive academic background and their traditional role of providing and preparing medicines and educating patients on their use. Accepting responsibility for the patient's drug therapy outcome is essential to the practice of pharmaceutical care.

The WHO has identified 4 classes of pharmacy practice activity. They are:

1. Ensuring appropriate therapy and outcome:
    a. Ensuring appropriate pharmacotherapy;

   b. Ensuring patient's understanding/adherence of his or her treatment plan;
   c. Monitoring and reporting outcomes.
2. Dispensing medication and devices:
   a. Processing the prescription or medicine order;
   b. Preparing the pharmaceutical product;
   c. Delivering the medication or device.
3. Health promotion and disease prevention:
   a. Delivering clinical preventive services;
   b. Surveillance and reporting of public health issues;
   c. Promoting safe medication use in society.
4. Health systems management
   a. Management in the practice;
   b. Managing medications throughout the health system;
   c. Managing the use of medications within the health system;
   d. Participating in research activities;
   e. Engaging in interdisciplinary collaborations.

One of the benefits of a consensus of a uniform classification system by the WHO is to advance the recognition of pharmaceutical care as a key component of pharmacy practice, leading to an understanding of its value and the need for compensation for the delivery of pharmaceutical care. It also helps in facilitating the documentation of pharmaceutical care activities in computer based patient record systems as well as develop a collection of comparable studies on pharmacy practice irrespective of where the study is carried out [23].

Health promotion and disease prevention

In addition to the traditional role of dispensing, some other countries carry out health promotion and disease prevention activities. The poor usage of pharmacists in these aspects is a worldwide issue except in some developed countries like US and UK where the Department of Health recognizes their ability to function in this capacity. In Singapore and Jordan OTC advice is sometimes sought. In Ghana they are often recognized as a first point of call for STIs and in Nigeria they are desired to provide some health promotion and disease prevention services such as screening, advice on lifestyle changes [24] In Montreal (Quebec, Canada) a study carried out by Laliberte et al in 2012 to assess the ideal and actual involvement of community pharmacists in health promotion and disease prevention, revealed that most community pharmacists believed they should be very involved in health promotion and prevention, particularly in smoking cessation (84.3%); screening for hypertension (81.8%), diabetes (76.0%) and dyslipidemia (56.9%); and sexual health (61.7% to 89.1%); however, fewer respondents reported actually being very involved in providing such services (5.7% [lifestyle, including smoking cessation], 44.5%, 34.8%, 6.5% and 19.3%, respectively). The main barriers to the provision of these services in current practice were lack of: time (86.1%), coordination with other health care professionals (61.1%), staff or resources (57.2%), financial compensation (50.8%), and clinical tools (45.5%) [25].

Results of a study carried out by Adje et al, in Warri, Delta State, Nigeria showed that all the outlets included in the study were involved to some extent in public health activities, the level of non involvement ranged from 21% (treatment of Chlamydia infection) to 79% (determination of nicotine addiction status). Vaccination (tetanus toxoid only) was carried out in 60% of outlets at baseline. Weighing scale was available in 81.1% of retail outlets. A functional glucose meter was available in only 21% of retail outlets. Only 28% had meter rules for height measurement. Eighty six percent (86%) of pharmacists expressed willingness to incorporate public health activities into their practice at baseline. Scores at baseline were lowest for vaccine administration (2.98 ± 0.97) and vaccine schedule and dosages (2.82 ±0.83) and highest for obesity management (3.83±

0.89). Further training and provision of a conducive environment for the community pharmacies will improve the pharmacist's contribution to Public Health [26]

[27] carried out a study in community pharmacies at four states in Nigeria and he discovered that there were knowledge gaps in the maternal, newborn and child health services. The training intervention given by the researcher provided knowledge transfer and improved community pharmacists' position as promoters, facilitators and implementers of maternal, newborn and child health in Nigeria [28].

Justification

1. The Study will be used to determine the public health activities that are currently carried out by the community pharmacists.

Objectives of the study

1 To determine the level of involvement of community pharmacists in public health activities in Enugu metropolis.
2. To identify barriers that limits the community pharmacists' involvement in public health activities.

Methods of Data collection

Study design

A descriptive and cross sectional study was the study design used. All the community pharmacies in Enugu metropolis were to be used for the study.

Setting

The setting is Enugu metropolis which is located in Enugu State. Enugu state is located in the South Eastern part of the country. According to the National population Census Report in 2006, it was estimated that Nigeria has a population of 3,257,298. Majority of individuals based in Enugu state are civil servants. The state is divided into seven health districts for the purpose of healthcare delivery system; each health district is made up of between one to three LGAs. Within Enugu State, there are six district hospitals, 36 cottage hospitals and 366 primary health care centres. There are also approximately 700 private health facilities. There are four tertiary health care centres in the state. Namely, the University of Nigeria Teaching Hospital(UNTH), Enugu; The National Orthopaedic Hospital Enugu(NOHE); The National Neuropsychiatric Hospital,; The Enugu State University Teaching Hospital(ESUTH). There are seventeen LGAs in Enugu State which are officially recognized by the federal government, as well as development council areas created by the state. Five of the LGAs are largely urban.

Population/Sample

There were 83 community pharmacies in Enugu as at the time of this study. All the community pharmacies were visited and the intent of the study was explained to the pharmacist on duty. 64 community pharmacists gave oral informed consent and were included in the study.

Data collection Instruments:

The study instruments consisted of a questionnaire. The questionnaire was formulated to determine community pharmacist's level of Involvement in Public Health activities. It was modified from a questionnaire developed by [29] to determine the level of involvement of community pharmacists in Public health activities. The questionnaire was made up of nine domains/sections. The domains were: involvement in verbal education, involvement in education with printed materials, possession of a display counter/rack for health education materials, involvement in educating with electronic media, involvement in disease screening, involvement in travel health, involvement in administration of vaccines, stocking of health promotional items, and barriers to the practice of public health. The questions were rated on a likert scale of 1-5, with a midpoint of three. (5= Very much involved, 4=Very involved, 3= sometimes involved, 2=rarely involved, 1=Not involved at all). This questionnaire was validated and then pretested by administering to six community pharmacists in Enugu metropolis.

Data Analysis

Data were entered into Microsoft excel spreadsheet from where it was loaded into SPSS Version 19 for analysis. Means, standard deviation and percentages were used for descriptive statistics. Data were presented on a table. Item analysis was

carried out by summing up all the mean scores for the items listed under a domain to get the total mean scores. This score is then compared with a logical neutral point. The neutral point was gotten by determining the highest possible mean score and adding it to the lowest possible mean score after which the sum of the two mean scores is divided by two to get the neutral point. For example, involvement in Verbal education is made up of 17 items. This mean that the highest possible score will be 5x17=85 and the lowest possible score will be 1x17=17. The average of the two numbers is 85+17/2 which is equal to 51.

Hence, 51 is the neutral point. If the total mean score gotten for involvement in verbal education is greater than 51, then the community pharmacist's involvement is satisfactory. If the total mean score is less than 51, it indicates a non satisfactory involvement. A low standard deviation indicates a cluster of responses to the mean while high standard deviation reflected high variability of opinion from the mean. The percentage performance was the group of persons that scored above the critical point or neutral point on the rating scale (i.e persons that scored either 4 or 5). ANOVA and independent t-test was used to test for statistically significant difference in level of involvement of community pharmacists between specified groups. Independent t-test was used for binary variables while ANOVA was used for analysis of variables that have been classified into two or more groups. Where ANOVA reveals a statistically significant difference in the level of involvement in a specified activity between groups of community pharmacists, then the post hoc dunnet test will be carried out to determine the particular group of community pharmacists that are involved in the specified activity differently.

RESULTS

There are 83 registered retail community pharmacists in Enugu, 64 volunteered to join the study but only 59 filled the questionnaire completely. Hence, response rate was 92.1%. As represented on Table 3.1, 44(74.6%) of the community pharmacists were males. Majority of the pharmacists fell within the age range of 31-40(37.3%) while only two were above 60 years of age(3.4%). 40.3% of the respondents have had 1-5 years of work experience. None of the respondents had a doctorate degree. Only 18(30.5%) of the respondents have a masters degree while 4(6.8%) of the respondents are fellows of the West African Postgraduate College of Pharmacists (FPCPharm). 76.3% of the pharmacists do not have any qualification or training in public health. About half (50.8%) of the community pharmacies have been in operation for 1-5 years. Majority of the community pharmacies were pharmacist owned (76.3%).

Table 3.2 is a table that analyzed the responses of the respondents' involvement in verbal education. Each item deals with a public health issue which can be addressed through verbal education. The community pharmacists scored 56.8±18.5 which is marginally above the neutral point of 51. This suggests a marginally high or slightly satisfactory involvement in verbally educating clients about the specified health issue. About half (46.4%) of the respondents scored above the critical point. However, community pharmacists that scored above the critical point for verbal education on folic acid supplementation for child bearing women, physical activity/fitness, cardiovascular risk factors/stroke prevention, STIs, were 62.7%, 67.8%, 62.7%, 66.1% respectively.

From fig. 3.1, it is observed that 45(76.3%) of the respondents have a display counter/rack where printed health information materials can be displayed. This relates to more than half of the respondents. As seen on Table 3.3, the community pharmacists scored 47.7±27.1 which is below the neutral point of 54. 20.8% of the pharmacist scored above the critical value. This implies that the level of involvement of community pharmacists in using printed material in educating clients is low.

TABLE 1: Demographics of Respondents

CHARACTERISTICS		FREQUENCY	PERCENTAGE
SEX	FEMALE	15	25.4%
	MALE	44	74.6%
AGE	>60	2	3.4%
	51-60	4	6.8%
	41-50	13	22.0%
	31-40	22	37.3%
	21-30	18	30.5%
YEARS OF WORK EXPERIENCE	>20	8	13.6%
	16-20	4	6.8%
	11-15	9	15.3%
	6-10	14	23.7%
	1-5	24	40.7%
ADDITIONAL QUALIFICATION	PhD	0	0.0%
	Masters	18	30.5%
	FPCPHARM	4	6.8%
	Post grad	1	1.7%
Cert Mgmt			
QUALIFICATION/TRAINING IN PUBLIC HEALTH	NO	49	83.1%
	YES	10	16.9%
LENGTH OF TIME PHARMACY HAS BEEN IN OPERATION (YEARS)	1-5	30	50.8%
	6-10	15	25.4%
	11-15	4	6.8%
	16-20	6	10.2%
	>20	4	6.8%

TABLE 2 : Item analysis of responses to involvement in verbal education

VERBAL EDUCATION	Mean	% Involvement
Smoking Cessation	3.6±1.1	49.1
Nutrition & overweight	3.9±0.9	49.1
Oral Hygiene/Health	3.6±1.1	49.1
Family Planning	3.3±1.0	47.5
Emergency Contraception	3.1±1.3	38.9
Cardiovascular Risk Factor/Stroke Prevention	4.0±1.1	62.7
Physical Activity/fitness	4.0±0.9	67.8
Sexually Transmitted infection	4.0±1.9	66.1
Chronic Disease condition	3.7±1.0	52.6
Diabetes	4.1±0.8	45
Asthma	3.5±1.1	31
Hypertension	4.5±0.7	50
Mental Health	2.6±1.0	15.3
Immunization scheldule	2.6±1.2	18.7
Vaccine Storage	2.7±1.4	27.1
Alcohol consumption	3.7±0.9	55.9
Folic acid supplementation for Child Bearing women	3.9±1.1	62.7
MEAN TOTAL	56.8±18.5	46.4

Table 4 shows that the community pharmacist scored 42.3±25.8 which is below the neutral point of 60 while 17.9% of community pharmacists scored above the critical point for educating with electronic media.

Table 5 presents results for assessment of the community pharmacists' involvement in disease screening. The respondents

scored 22.7±8.1 which is marginally above the neutral point of 21. This means that the community pharmacists are slightly satisfactorily or marginally involved in disease screening. About half (43.8%) of the community pharmacists scored above the critical point. However, 71.2% and 84.7% of the community pharmacists scored far above the critical points for screening of diabetes and hypertension respectively.

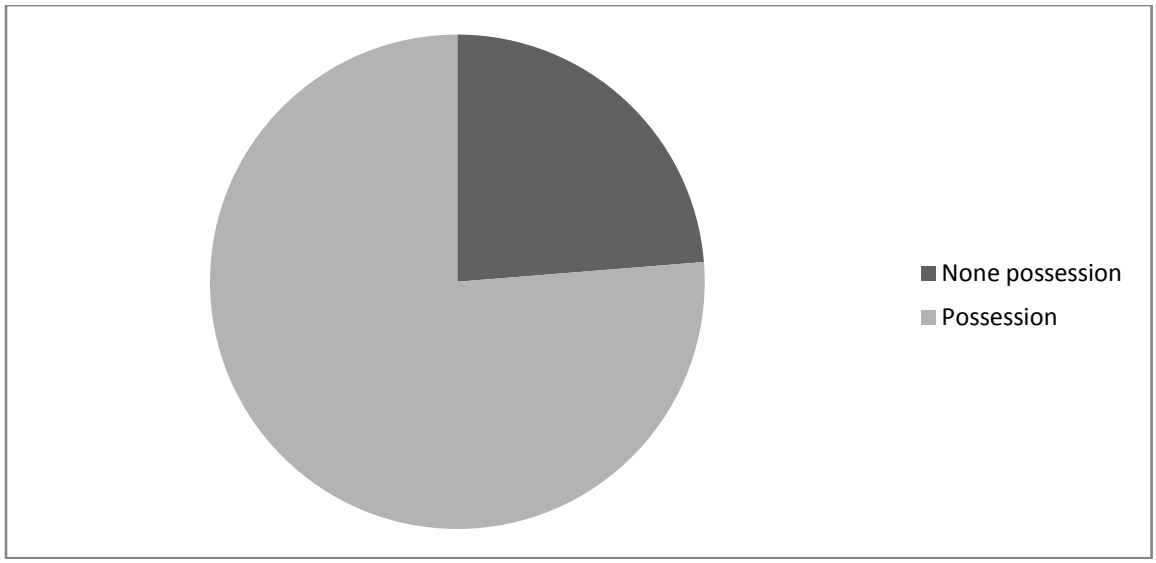

Fig. 1: POSSESSION OF DISPLAY COUNTER/RACK FOR PATIENT INFORMATION MATERIAL

TABLE 3: Item analysis for responses to involvement in educating clients with printed materials

ACTIVITIES	MEAN±SD	% INVOLVEMENT
Smoking Cessation	2.2±1.1	13.6
Nutrition & overweight	3.0±1.3	30.6
Oral Hygiene/Health	2.6±1.3	20.4
Family Planning	3.2±4.0	18.7
Emergency Contraception	2.5±1.3	22.0
Cardiovascular Risk Factor	2.9±1.4	20.4
Stroke Prevention	2.8±1.4	23.8
Physical Activity/fitness	2.9±1.3	23.8
Sexually Transmitted infection	2.8±1.4	27.2
Chronic Disease condition	2.5±1.3	22.1
Diabetes	3.1±1.4	25.4
Asthma	2.5±1.2	18.7
Hypertension	3.3±1.4	25.5
Mental Health	2.0±1.0	15.3
Immunization scheldule	2.1±1.1	10.2
Vaccine Storage	2.0±1.3	13.6
Alcohol consumption	2.6±1.3	21.1
Folic acid supplementation for Child Bearing	2.7±1.3	22.1
MEAN TOTAL	47.7±27.1	20.8

TABLE .4: Item analysis for responses to involvement in educating clients with electronic media

ACTIVITIES	MEAN±SD	% INVOLVEMENT
Smoking Cessation	2.1±1.3	17
Nutrition & overweight	2.1±1.2	22
Oral Hygiene/Health	2.2±1.3	20.4
Family Planning	2.2±1.3	18.7
Emergency Contraception	2.2±1.3	22.0
Cardiovascular Risk Factor	2.2±1.4	20.4
Stroke Prevention	2.2±1.4	23.8
Physical Activity/fitness	2.3±1.5	23.8
Sexually Transmitted infection	2.3±1.5	27.2
Chronic Disease condition	2.2±1.4	22.1
Diabetes	2.3±1.3	25.4
Asthma	2.0±1.3	18.7
Hypertension	2.4±1.4	25.5
Mental Health/Depression	2.0.±1.2	15.3
Immunization scheldule	1.8±1.0	10.2
Vaccine Storage	1.8±1.2	13.6
Drinking Water Quality	2.4±1.6	32.2
Preconception Folic acid supplementation	2.0±1.3	13.6
Alcohol consumption	2.4±1.5	23.8
Folic acid supplementation for Child Bearing	1.2±0.4	13.6
MEAN TOTAL	42.3±25.8	17.9

TABLE 5: Item analysis of involvement in disease screening

ACTIVITY	MEAN±SD	% INVOLVEMENT
Diabetes	4.0±1.1	71.2
Osteoporosis	2.3±1.2	17
Cardiovascular Risk Factors	3.4±1.3	40.3
Hypertension	4.5±0.8	84.7
Dyslipidemia	3.0±1.3	30.5
Overweight/Obesity	3.6±1.2	52.5
Cancer	1.9±1.2	10.2
MEAN TOTAL	22.7±8.1	43.8

Fig. 2 revealed that more than half of the community pharmacists possessed a weighing scale 49(83.1%), sphygmomanometer 54(91.5%), glucose meter 36(61.0%), and thermometer 43(72.9%). It also showed that less than half of the community pharmacists, 19(32.2%), 15(25.4%) and 9(15.3%) possessed a meter rule, weight/height chart and a cholesterol meter respectively.

Table 6 assessed the community pharmacist's involvement in travel health and the mean score was 21.3±10.4 which is below the neutral point of 24. Less than a third (29.3%) of the community pharmacists scored above the critical point. This is not satisfactory. However,

more than half of the correspondents (56.4% and 50.8%) scored above the critical point for malaria prophylaxis and food/water safety respectively.

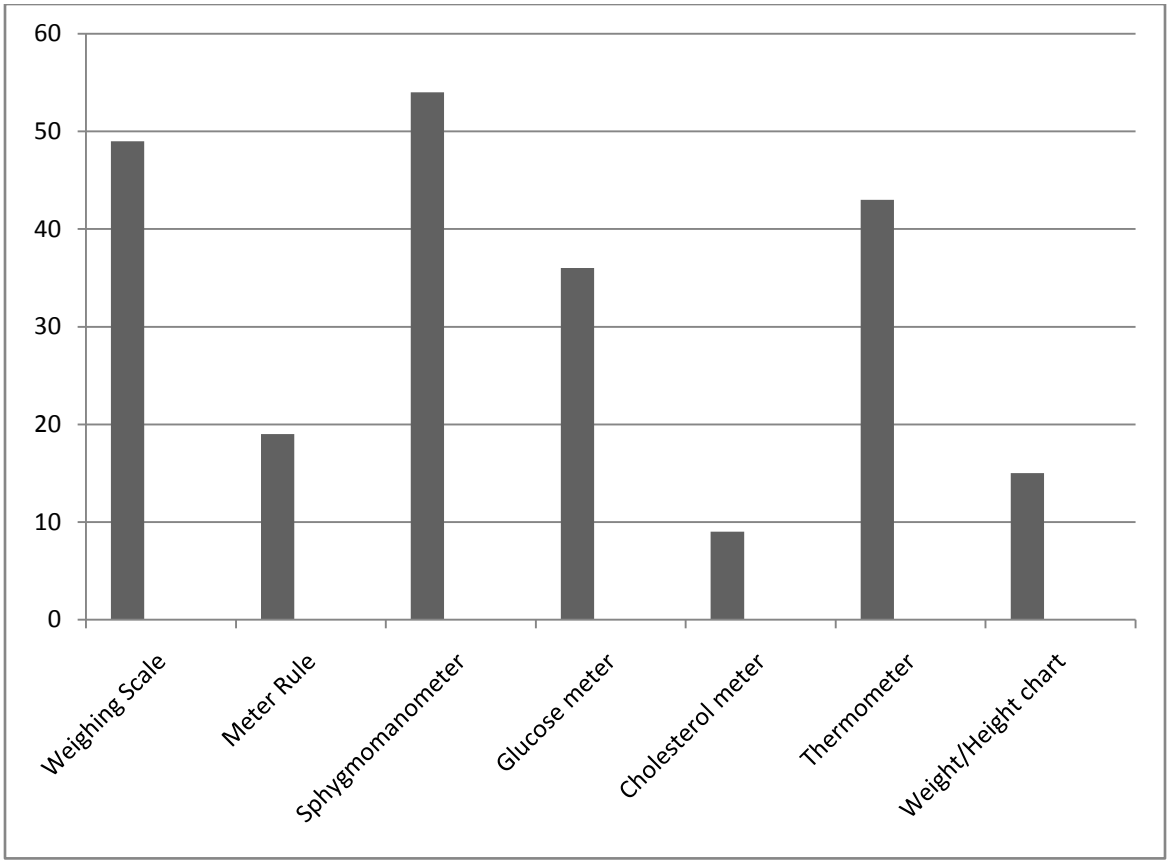

Fig. 2: Possession of equipments for disease screening

Table 7 analyzed the level of involvement of the community pharmacists to vaccination needs and the mean score was 19.6±8.8 which is below the neutral point of 27. The percentage of respondents that scored above the critical point was 21.2%. This signifies a low level of involvement. However, involvement in Tetanus toxoid vaccination by community pharmacists was the only activity that scored above the critical point of all the items analyzed (74.6%).

TABLE 6: Item analysis for involvement in travel health

ACTIVITIES	MEAN±SD	% INVOLVEMENT
Travel Destination Risks/ Security and Safety	2.4±1.3	18.7
Routine Vaccination	2.3±1.2	17.0
Required Vaccination	2.2±1.2	17.0
Recommended Vaccination	2.2±1.2	15.3
Travellers Diarrhoea	3.0.±1.4	39.0
Malaria Prophylaxis	3.5±1.3	56.4
Food/Water Safety	3.3±1.5	50.8
Immunization	2.4±1.3	20.4
MEAN TOTAL	21.3±10.4	29.3

As displayed on table 8, the mean score for involvement in stocking of health promotion items is 24.3±9.7 which is marginally above the neutral point of 24 and is marginally satisfactory. The percentage of community pharmacists that scored above the critical point is 39.2% and is quite low. However, more than half of the respondents scored 52.6%, 88.2% and 66.1% for stocking of Emergency Hormonal Contraceptive, male condoms and water guard/water filters respectively.

Analysis of involvement in public health was done by analyzing the result of all aspects of public health analysed and the mean score was 234.7±108.4 which is below the neutral point of 261. This is not satisfactory. 31.2% of the community pharmacists scored above the critical point. This indicates a low level of involvement in public health activities. This is displayed on table 9.

TABLE 7: Item analysis for involvement in administration of vaccines

ACTIVITIES	MEAN±SD	% INVOLVEMENT
Tetanus Toxoid	3.9±1.4	74.6
HBV	2.0±1.2	13.6
MMR	1.6±1.0	6.8
Varicella	1.9±1.2	15.3
Meningococcal	1.7±1.0	8.5
Pneumococal	1.8±1.1	10.2
Yellow Fever	1.8±1.0	8.5
Typhoid Fever	2.5±1.5	27.2
Rabies	2.4±1.5	25.7
MEAN TOTAL	19.6±8.8	21.2

TABLE 8: Item analysis of involvement in stocking of health promotion items

ACTIVITIES	MEAN±SD	% INVOLVEMENT
Emergency hormonal Contraceptives	3.6±1.5	52.6
Sugar free medicines	3.6±1.1	40.6
Male condoms	4.6±1.0	88.2
Female condoms	2.5±1.4	25.5
Dental floss	2.7±1.4	23.8
Wheel Chair	1.6±1.1	6.8
Crutches	1.7±1.2	10.2
Water guard/water filter	4.0±1.0	66.1
MEAN TOTAL	24.3±9.7	39.2

Barriers to the practice of public health as reported by the respondents are displayed on fig. 3.3. Some of the reasons which most of the community pharmacists gave for not carrying out public health activities are lack of finance as reported by 21(35.6%) pharmacists; lack of time to carry out these activities as reported by 18(30.5%) pharmacists and lack of adequate training in public health as noted by 19(32.2%) pharmacists.

TABLE 9: Analysis of involvement in public health activities

ACTIVITY	MEAN±SD	% INVOLVEMENT
Verbal education	56.8±18.5	46.4
Education with printed materials	47.7±27.1	20.8
Education with Electronic media	42.3±25.8	17.9
Disease Screening	22.7±8.1	43.8
Travel Health	21.3±10.4	29.3
Vaccination	19.6±8.8	21.2
Stocking of health promotional items	24.3±9.7	39.2
MEAN TOTAL	234.7±108.4	31.2

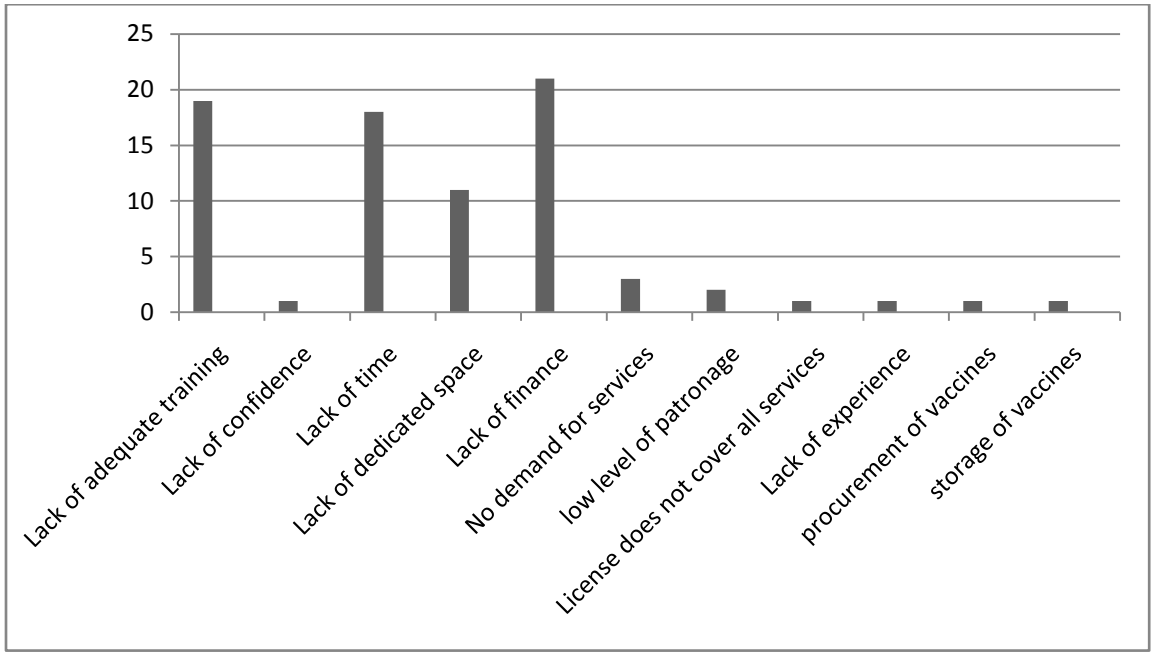

Fig. 3: Barriers to practice of public health

TABLE 10: The effect of Qualification/training in Public Health on community pharmacist's involvement in public health activity

ACTIVITIES	Qualification/Training in Public Health	Mean±SD
Verbal Education	No	62.0±17.2
	Yes	53.4±13.7
Printed Materials	No	38.6±27.1
	Yes	37.0±23.6
Electronic Media	No	25.5±29.0
	Yes	31.6±25.4
Disease Screening	No	53.0±20.5
	Yes	55.7±14.6
Travel health	No	37.4±25.9
	Yes	37.5±22.4
Administration of vaccines	No	27.0±22.5
	Yes	22.5±17.2
Stocking of Health	No	49.2±18.7

Promotional Items	Yes	39.1±13.9

Table 11 displays the result of the effect of number of years of experience of the community pharmacist on his involvement in public health activities. ANOVA was used to compare involvement between groups. The p-value gotten for education with electronic media was less than 0.05(p=0.025) while the p-values for the other activities were greater than 0.05. Hence, there was a statistical significant difference in community pharmacists' involvement in education with electronic media between the groups of community pharmacists with different years of experience. After the Dunnet test was carried out, the group with a statistically significant different level of involvement in educating clients with electronic media was those community pharmacists with 11-15 years of experience.

TABLE 11: Effect of years of experience on involvement in public health activities

ACTIVITIES YEARS OF EXPERIENCE		Mean	P-value	Mean Difference
Verbal Education	>20	62.2±12.1	0.054	-3.0
	16-20	59.3±13.6		-5.8
	11-15	44.7±15.3		-20.5
	6-10	62.9±19.1		-2.2
	1-5	65.1±15.7		Reference group
Printed Materials	>20	32.9±28.3	0.300	-7.5
	16-20	33.8±48.8		-6.7
	11-15	22.2±23.0		-18.2
	6-10	46.2±27.1		5.8
	1-5	40.5±21.4		Reference group
Electronic media	>20	19.8±29.7	0.025	-16.4
	16-20	46.3±33.5		10.1
	11-15	0.8±3.3		-35.4*
	6-10	33.0±26.7		-3.2
	1-5	36.2±30.4		Reference group
Disease Screening	>20	45.4±6.7	0.193	-12.3
	16-20	63.1±14.9		5.3
	11-15	42.9±22.1		-14.9
	6-10	58.2±24.1		0.4
	1-5	57.7±17.5		Reference group
Travel Health	>20	27.7±28.3	0.112	-14.1
	16-20	45.8±19.1		4.0
	11-15	19.9±19.0		-21.9
	6-10	45.1±20.1		3.3
	1-5	41.8±26.7		Reference group
Administration of vaccines	>20	23.0±18.3	0.213	-9.3
	16-20	20.4±17.6		-11.9
	11-15	13.9±13.4		-18.4
	6-10	35.7±26.7		3.4
	1-5	32.3±24.5		Reference

				group
Stocking of Health Promotional Items Travel Health	>20	43.8±11.6	0.133	-6.5
	16-20	43.8±3.2		-6.5
	11-15	34.0±19.1		-16.3
	6-10	53.8±17.6		3.5
	1-5	50.3±19.4		Reference group

*. The mean difference is significant at the 0.05 level after the Dunnet test

DISCUSSION

Males that participated in the study were far more than females. This result was similar to results gotten from a study carried out in Indiana, USA [30]. This might be because of the long work hours needed to produce optimum profit in the community pharmacies. Most females prefer to work in other areas of pharmacy practice that affords them time to take care of their families. Generally, men are also more business inclined than women.

None of the respondents had a doctorate degree while less than half of the community pharmacists had a masters degree. This might be because the community pharmacists feel that having an additional degree is of no added advantage to their practice.

Pharmacies that have been in operation for 1-5 years were about half of the community pharmacies studied. This implies that there was an increase in the establishment of new pharmacies in the past five years.

Less than a quarter of the community pharmacies were not owned by pharmacists. This is not in concordance with the Pharmacists Council of Nigeria (PCN) Act 1992 and Registration of Pharmaceutical Premises Regulations, 2005 which states that 'individuals must be registered pharmacists, partnership must be with other pharmacists. Owner can register as superintendent in only one pharmacy. All stores owned must employ a pharmacist' [31]. This implies that the pharmaceutical inspectors of the PCN are defaulting in the regulation of ownership of retail community pharmacies in Enugu. Ownership of community pharmacies by non-pharmacists may have occurred due to lack of capital on the side of the pharmacist to start up his or her own pharmacy. This encourages wealthy business men to own the pharmacy and then employ pharmacists to run them or register them as the case may be. In Nigeria, the 'register and go' system whereby a pharmacist registers a premise for a non-pharmacist for a certain fee after which the pharmacist does not supervise the activities in the pharmacy exists. Such premises that are run based on the 'register and go' system do not offer professional services to their clients because they are usually manned by untrained personals who have little or no knowledge about health and drugs. This will lead to drug therapy problems in clients that visit them and ultimately increase in morbidity in the community where they are situated.

About half of the community pharmacists scored above the critical point after analysis of their involvement in verbal education. This implies a border line level of involvement. This is not encouraging because verbal education is the cheapest means of educating clients who visit the pharmacies about important health issues. The community pharmacies are patronized by many individuals and hence if all the community pharmacies are encouraged to carry out verbal education on all their clients, there will be remarkable reduction in morbidity in our society. This low involvement in verbal education may be because the pharmacist feels more comfortable with carrying out drug related activities rather than carrying out health education. In a study carried out in Indiana, USA, it was revealed that community pharmacists believed that they were most prepared to counsel patients about drugs and were less prepared to counsel patients about behavior change [32]. Similar finding was reported in another study carried out in Kuwait [33].

There was low involvement in educating clients using printed materials or electronic media. This may be because of the cost involved in printing materials and cost of communication via electronic media. Health Education is a very important aspect of public health because it aims at improving the knowledge of individuals about their health, improves attitude of individuals towards their health and ultimately fosters healthy behavior in individuals who receive them. This notion is supported by findings of two studies in which it was recorded that health promotion administered in community pharmacies improves smoking cessation rates [34]; [35]. According to the 'four part compendium of minimum standards for the assurance of pharmaceutical Care in Nigeria' which is a publication of the PCN, the pharmacist in addition to their traditional role of dispensing prescriptions written by medical practitioners and counseling should also be involved in primary health care services and public health education. It also emphasized that the future of community pharmacy practice depends majorly on the ability of the community pharmacist to provide total pharmaceutical care [36]. More than three quarters of the community pharmacists had display counters in their pharmacies where leaflets can be displayed. It is expected that possession of these display counters will encourage the involvement of community pharmacist in educating patients with printed materials but it is not so. A study carried out in North Staffordshire in 2002 revealed that targeted distribution of leaflets in combination with advice was a more effective method of providing health information to clients when compared with just displaying the leaflets on the display counter [37]. While collecting data for this study it was noticed that most of these counters had drug promotional leaflets (which are usually dropped by pharmaceutical representatives) which were usually biased. There should be a conscious effort by community pharmacists to source for or develop their own health education leaflets which will educate clients on topical health issues.

Community pharmacists that were involved in screening for diabetes and hypertension was satisfactory. This is supported by a study carried out in Australia in 2010 in which it was revealed that a pharmacy based cardiovascular disease risk profile screening program has the potential to identify and refer many undiagnosed individuals at high risk of cardiovascular event [38]. The percentage of community pharmacists that screened for all the disease conditions assessed was not satisfactory. This is because of the non involvement of majority of the community pharmacies in the screening of osteoporosis and cancer. This may be because they lack the skill to carry out screening for osteoporosis and cancer. In our society today, mortality due to cancer is on the upsurge and the best remedy to cancer is early detection. Due to the accessible nature of the community pharmacies, training the community pharmacists to carry out screening for disease conditions such as cancer and osteoporosis will greatly reduce morbidity and mortality in our society. In community pharmacies where disease screening is not carried out, the client could be referred by the community pharmacist to a health center where the screening service is carried out [39]; [40].

Possession of sphygmomanometers and glucose meters was high. This may be the reason for the high involvement in screening for diabetes and hypertension by community pharmacies in Enugu. The percentage of community pharmacists that affirmed the possession of a weighing scale in this study was high which was similar to findings of a study carried out by Adje et al in Warri in which the percentage of community pharmacists that possessed a weighing scale was 83.1%. It was also similar in the area of possession of meter rules which was 28% for this study and 32.2% for the later study. Percentage of community pharmacists that possessed a glucose meter was 61% for this study and 21% for the study carried out in Warri [41]. This difference in possession of glucose meters may be as a result of the assessment of functionality of the glucose meters in the study carried out in Warri which was not assessed for in the current

study. Only possession of a glucose meter was assessed for in this study. The percentage of community pharmacists that possessed a sphygmomanometer was 91.5% in this study which was similar to findings of a study carried out in 2002 by Opara A et al in Benin City which was 83%. However, a finding for possession of a weighing scale was 32% in the study carried out by Oparah A which is not similar to the result from this study [42]. The dissimilarity between the studies may be because of greater awareness of hypertension in the recent years as compared to the previous years. The study carried out in Benin City was carried out 12 years ago.

Involvement in advising clients about travel health issues was low. This may be because of the low demand for such services in the study area. The findings from this study varied from that carried out in a California study in which certified community pharmacists administered 700 Hepatitis A vaccines and yellow fever vaccines, and malaria medications in addition to travel health education to 283 intending travelers in a travel-health clinic situated in an independent community pharmacy in California within a period of 16 months [43]. Thus, the demand for travel health services may be higher in California and findings from the study also showed that travel health services provided by the community pharmacists in California have gone beyond just advising the patient. In addition, another reason for the low involvement of community pharmacists in the study area may be lack of competence of these community pharmacists. The average Nigerian pharmacist who studied in a Nigerian university does not have the necessary training to advice on issues relating to travel health. However, the level of involvement in advising for malaria prophylaxis is high 56.4%. This high level of involvement could be as a result of the endemicity of malaria in the study area which makes it imperative for all health professionals in the study area to have a good knowledge about prevention, control and treatment of malaria.

The community pharmacists'level of involvement in vaccine administration was low. However, Tetanus toxoid vaccines had a high level of community pharmacists' involvement. This could be due to the high demand for tetanus toxoid vaccines in the study area. The general level of involvement in vaccine administration in community pharmacies may be low because people believe that all vaccination needs should be sought at the Primary health care centres and not in a community pharmacy. A study carried out in Warri by Adje et al confirmed that there was a low level of involvement of Nigerian community pharmacists in immunization. He also proved that this can be improved upon through proper training of the community pharmacists [23]. In the United States community pharmacists are permited by law to vaccinate adults. This law covers 50 states in the US [11]. Hence, one of the barriers to vaccine administration by community pharmacists in Enugu is non permission by law to inject people. Another barrier could be lack of proper storage facilities used in preserving the vaccines in the pharmacy so as to prevent deterioration of the active agent. In addition, even though the storage facility is available, there may be no constant power supply to maintain the vaccines at the required temperature.

The percentage of community pharmacists that scored above the critical level was less than half for involvement in stocking of health promotional items. This implies that there is a low level of involvement of community pharmacists in Enugu in the stocking of the indicated health promotional items. In spite of this, the community pharmacists showed satisfactory involvement in stocking of Emergency Hormonal Contraceptives, Male Condoms and water guard/water filters. There may be relatively increased demand for these items as compared to other items that were assessed. In the UK, a study revealed that there was increased demand for EHC by women which led to the increase in supply through community pharmacies. This increase in supply resulted from a change in policy which gave rise to the reclassification of EHC from a POM to an OTC [10].

The main barriers to the practice of public health identified in this study are similar

to the main barriers identified by Laliberte et al in Canada and Abdelmoneim et al in Kuwait [5]; [6]. Some pharmacists reported that 'no demand for public health services' was their reason for not carrying out public health activities. This was supported by a study carried out in a rural community in Australia [15]. Another study proved that training of pharmacists to acquire the necessary skills to carry out public health activities and also providing materials that are important for carrying out public health activities increased the involvement of community pharmacists in Public Health Activities. It also proved that community pharmacists can contribute to public health positively [23]. All the public health activities assessed in this study gave involvement scores that were less than 50%. Analysis of involvement in public health activities revealed a low level of involvement in public health activities. This implies that generally community pharmacists in Enugu are not satisfactorily involved in public health activities. Involvement of community pharmacists in educating patients, disease screening, travel health, and immunization will improve the health status of the community. Community pharmacies are accessible and are usually the first point of call for a health complaint for majority of clients before they eventually visit the hospitals. Moreover, they are patronized by both healthy and ill individuals. Hence, it is suitable for the practice of public health. Health education will influence the behavior of clients positively and also helps them to adopt healthier lifestyle. Health education is the first step in most health programs like smoking cessation. This statement was confirmed by a review of some UK studies in which it was observed that training was fundamental to the success of smoking cessation services provided by community pharmacists and that community pharmacists that have acquired the skill to cause behavior change are effective in helping clients quit smoking [37]. Disease screening is another important aspect of public health. Disease screening for hypertension and diabetes is high as indicated from results of this study. Nowadays, there is an increase in cases of cancer and other cardiovascular diseases. Training of community pharmacists to detect these ailments early will greatly reduce morbidity and mortality rates in the community. Training of community pharmacists to carry out screening for osteoporosis greatly increased the involvement of community pharmacists in screening of osteoporosis [11]. Another study showed that osteoporosis screening carried out in a community pharmacy is effective and feasible [27]. If community pharmacists continue practicing with this low level of involvement in public health activities, their clients will not adopt healthy lifestyle. Unhealthy practices like smoking, heavy alcohol drinking, sedentary lifestyle, eating fatty foods are risk factors to chronic diseases. If the community pharmacists do not educate their clients on these issues they will not be able to develop the right attitude that will eventually lead to adopting healthy lifestyle practices. Hence, the incidence of chronic diseases increases. Disease screening will help to detect the disease early so that prompt treatment is given. Community pharmacist's low involvement in screening of some diseases will lead to increased incidence of that disease. All these will eventually lead to increased mortality and morbidity in the community.

Based on results of the statistical analysis, the possession of a qualification/training in public health does not have any statistical significant effect on the level of involvement of the community pharmacist in public health. This implies that they may be other factors which pose a strong limitation to the involvement of the community pharmacist in public health activities. These factors may be the other barriers identified by the community pharmacists themselves.

The level of community pharmacists' involvement in education with electronic media was statististically different for community pharmacists with 11-15 years of experience.

CONCLUSION

This study demonstrates a non satisfactory involvement of Community pharmacists in public health activities in Enugu metropolis.

RECOMMENDATIONS:

The following recommendations might improve the current level of practice of community pharmacy in Enugu metropolis.

Incorporating trainings aimed at improving community pharmacists' public health skills in the MCPD programs should be considered by the PCN. This will improve the involvement of community pharmacists in this area and eventually improve the health status of the community.

The PCN should develop strategies that will improve the quality as well as the frequency of inspections carried out.

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