

## COMMUNITY PHARMACISTS' PARTICIPATION IN IMMUNIZATION SERVICES IN CROSS RIVER STATE, NIGERIA.

Ben Benson Agbo<sup>1</sup>, Ekpoanwan Esienumoh<sup>1</sup>, Simon Alain Inah<sup>1</sup>, Jimmy Ebi Eko<sup>3</sup>, Eze James Nwachukwu<sup>3</sup>

<sup>1</sup>Department of Public Health, Faculty of Allied Medical Sciences, University of Calabar, Calabar, Nigeria.

<sup>2</sup>Department of Nursing Sciences, Faculty of Allied Medical Sciences, University of Calabar, Calabar, Nigeria.

<sup>3</sup>Department of Sociology, Faculty of Social Sciences, University of Calabar, Calabar, Nigeria.

**ABSTRACT:** *Community pharmacists' participation in providing immunization services is pivotal to expanding access to immunisation services especially in resource-constraint settings and bridging the existing gap in shortage of skilled service providers. Although there are several studies conducted on pharmacy-based immunization, the findings of such studies varies between countries and depends on the pharmacy practice characteristics of the area. **Objective:** The general objective of the study is to assess the extent of participation of Community Pharmacists in immunization services in Calabar Metropolis, Cross River State, Nigeria. **Method:** A descriptive cross sectional study design was used for the study. Data were collected using a pre-tested semi-structured questionnaire from 68 community pharmacists which were selected using the purposive sampling technique. Data generated were synthesised and analysed using SPSS (version 20.0) and results were presented in frequency tables and charts. Chi-square and Fisher Exact test was used to test for association between variables at 0.05 alpha level. **Results:** The result showed that 43 (69.4%) respondents were males, 49 (79.0%) were less than 40 years of age, 36 (58.1%) have been in practice for between 1-5 years and 53 (85.5%) had B.Pharm as the highest qualification. Most respondents 60 (97 %) provided at least one type of immunization service to the public and the vaccines commonly retailed were Tetanus Toxoid 57 (91.9%), Rabies vaccine 36 (58.1%) and Hepatitis B vaccine 9 (14.5%). Majority of the respondents 58 (94.0%) were willing to be more involved in providing immunization services. The immunization services respondents were willing to provide more were mainly educating clients on immunization 42 (67.7%), administering vaccines to clients 40 (64.5%) and engaging in mass campaign on immunization 38(61%). The association between the number of pharmacist in CPs ( $p = 1.000$ , fisher's exact test,) and years of practice ( $p = 0.149$ , fisher's exact test) were statistically not significant to the willingness of the community pharmacists to participate in immunization services. **Conclusion:** The inclusion of community pharmacists in advocacy, education and facilitation of immunization is critical to improving and expanding immunisation services to the underserved populace.*

**Keywords:** immunization, community pharmacist, community pharmacy, vaccine, Calabar metropolis.

## INTRODUCTION

The World Health Organisation highlighted that immunization schedule have experienced significant changes over the years. The 2001 schedule comprised of six vaccines: DTP (Diphtheria tetanus and pertussis), polio, BCG and measles. After a decade, seven more vaccines were added

to the schedule: Hepatitis B and Haemophilus type B (HIB) in 2005, rotavirus, pneumococcal conjugate, rubella and HPV in 2014 and lastly injectable polio virus (IPV) was included in the schedule in 2015 (Shen, Fields & Mc Question, 2014). However, to enhance the possibility of achieving global targets, Nigeria recently introduced three vaccines namely; pentavalent vaccine (Diphtheria, pertussis, tetanus, hepatitis B and Haemophilus type B (HIB), pneumonia and meningitis were introduced to reduce child mortality from pneumonia and meningitis); pneumococcal conjugate vaccine (to protect infants against diseases caused by *streptococcus pneumonia*) and injectable poliovirus (IPV) (for children at age of 14 weeks) (Muhammad, 2015).

Nigeria has a population growth rate of 3.28 % and fertility rate of 5.5 births per women (NBS, 2016). The continuous need for immunization requires adequate human and materials resources. Community pharmacies and other private health care facilities could be useful resources that can complement the efforts of National Primary Health Care Development Agency (NPHCDA) to improve immunization access to the populace. Traditionally, community pharmacist's involvement in immunization services are limited to retailing and distributing of vaccines for pharmaceutical companies. (Soyemi & Huunponu-Wusu, 2014). Beyond these traditional roles in immunization, some community pharmacists now promote immunization by acting as immunization advocate, facilitators and vaccines administrators (Bach & Goad, 2015).

Despite the concerted effort globally and locally to meet global target of immunisation coverage, statistics have shown that an estimated 18.7 million and 12% of eligible children have not received all the doses of Diphtheria vaccine (DTP) in Nigeria as at 2014 (Subaiya, et al, 2015). According to Nigerian Demographic Health Survey, Nigeria accounts for 58% DTP3 coverage against the desired 90% coverage (NDHS, 2014). Immunisation against other diseases such as measles and Tetanus Toxoid also recorded poor coverage (UNICEF &WHO, 2014). According to WHO, mortality due to some vaccine preventable diseases such as measles, pertussis, tetanus and diphtheria, was estimated to be approximately 218,400 deaths worldwide in 2013. Majority of the deaths occurred in the African region and the estimated number of eligible children that missed immunization have risen to 19.4 million in 2015 (WHO, 2016). It was also documented in Nigeria that 46% of children aged 12-23 months significantly account for the unimmunised and those that did not complete their immunization (NDHS, 2014). Likewise in Cross River State, it was reported that only 6% and 53% of children aged 12-23 months were unimmunised and fully immunised respectively which indicate a fall in global target of at least 90% coverage (NDHS, 2014). Though, there has been a decline in under-5 mortality from 201/1000 to 128/1000 live birth in 2013, achieving global target of 64/1000 live birth is still far-fetched (UNICEF, 2017). Other vaccine preventable diseases that are prevalent in the adult population also recorded poor immunisation coverage (Lavancly & Kane, 2016).

In a health system where shortage of manpower is a major challenge in meeting the health needs of the populace, community pharmacist could significantly bridge this gap. The community pharmacist can provide various types of immunization services to the public. Traditionally the community pharmacists are normally involved with the sales, storage and distribution of vaccines. Their practice setting provides an opportunity to act as immunization advocate through providing relevant information and advice about immunization. Other roles may include; vaccine administration, facilitation and referrals (Bach & Goad, 2015).

There is currently no official restriction in Nigeria limiting community pharmacists from providing immunization services to the public. NPHCDA that oversees the delivery of immunization services to the public in Nigeria encourages participation of private sector in providing immunization services. NPHCDA provide free vaccines and necessary supportive logistics to private health care providers such as CPs that are interested in immunization services (NPHCDA, 2009). The support provided by NPHCDA might serve as motivation for CPs to participate more in immunization services.

The readiness of the community pharmacist to provide immunization services have been demonstrated by a study in Lagos that showed that community pharmacies have the capacity and resources and were willing to undertake routine immunization (Aderemi-williams & Igwilo, 2007). Similarly, a study in Philippines by Justine, Cruz, Hizon, Joson, Salas, Tolentino & Cadiang (2016), showed that 69% of community pharmacists were willing to be involved in a pharmacy-based immunization programme and they believed that the programme would improve their practice. Community pharmacists in Philippines equally believe that they have adequate information about immunization to enable them effectively deliver immunization services. A Canadian study also reported that that 81.5% of community pharmacists were willing to administer all types of vaccines and most of them felt competent to administer vaccines (Marra, Kaczorowski & Marra, 2010). Hence, in light of the immunization delivery gaps and prevalence of vaccine preventable diseases, assessing the level of contribution of community pharmacist's to immunization services become imperative.

The general objective of this study was to assess the extent of participation of the community pharmacists in immunization services in Calabar Metropolis.

## **METHODOLOGY**

The study was carried out in Calabar Metropolis. It's the capital of Cross River State with a population of over 2.8million persons. Out of this figure, Calabar Metropolis consist of about 439,768 people and 74,580 households (NPC, 2007). Based on the annual population growth rate of 2.8, the projected population is about 587,530 currently. The metropolis also comprise 2 LGAs with 22wards (i.e. 10 wards for Calabar Municipality and 12 wards for Calabar South). The

metropolis is bounded by Calabar River to the west, Akpabuyo Local Government Area to the east, Odukpani Local Government Area to the North and Atlantic Ocean to the South (Osuchukwu et al, 2013; Osuchukwu et al, 2017). The public health facilities in Calabar are the University of Calabar Teaching Hospital (UCTH), General Hospital and about 50 primary health centres which provides immunization services (DPRS, 2016). It has been documented that there are 96 registered Community Pharmacies (CPs) distributed within the metropolis (Pharmacist Council of Nigeria (PCN), 2016),

The design adopted for this study is a descriptive cross-section study design. The population of the study comprised all the licensed community pharmacists that registered the 68 community pharmacies empowered legally to carry out pharmaceutical services in 2017 within Calabar metropolis. The sample used for the study was the 68 community pharmacists that registered the 68 community pharmacies in the study area. Purposive sampling technique was used to sample the 68 respondents for the study. Availability of study participants, registration of community pharmacies and enthusiasm to participate in the study were top eligibility criteria for selection of study participants. Data were generated using a pre-tested semi-structured questionnaire which was self-administered to the respondents after establishing its reliability and validity. The questionnaire was subjected to face validation and Cronbach's Alpha test with the aid of Statistical Package for Social Sciences (SPSS) software (version 20.0) was used to test for reliability. A reliability index of 0.73 was obtained indicating that the Cronbach's Alpha test value falls within the acceptable range which makes the research instrument suitable for use (George and Mallery, 2003). The data elicited from the respondents were entered, synthesized and analysed using SPSS (version 20.0) and subjected to descriptive statistics. Results were presented in frequency tables and charts. Chi-square and Fisher Exact test was used to test for association between variables at 0.05 alpha level. Informed consent was duly sought and obtained from the study participants verbally. Participants who showed enthusiasm to participate in the study were selected and interviewed. Anonymity and confidentiality of information generated from the respondents as well as academic integrity were maintained throughout the period of survey.

## **RESULTS**

### **Socio-demographic characteristics of respondents**

Of the 68 copies of questionnaire distributed, 62 were completed and returned giving a response rate of 91%. The result in Table 1 showed that 43 (69.4%) respondents were males while 19 (30.6%) were females. Most respondents 49 (79.0%) were less than 40 years of age, 34 (54.8%) were single, 36 (58.1%) have been in practice for between 1-5 years and 53 (85.5%) had B.Pharm as the highest qualification.

### Types of immunization services provided by the respondents

Data presented in Table 2 revealed that community pharmacists provide different types of immunization services which includes; retailing vaccines 59 (95.2%), educating clients on immunization 37 (59.7%), referring clients for immunization 37 (59.7%) and administration of vaccines to clients 35 (56.5%). Majority of the respondents 60 (97 %) provided at least one type of immunization service to the public. The community pharmacies supervised by the respondents were engaged in retailing both routine and non-routine vaccines. The vaccines mostly retailed were T.T 57 (91.9%), Anti-rabies vaccine 36 (58.1%) and hepatitis B vaccine 9 (14.5%). (Fig 1, 2 and 3).

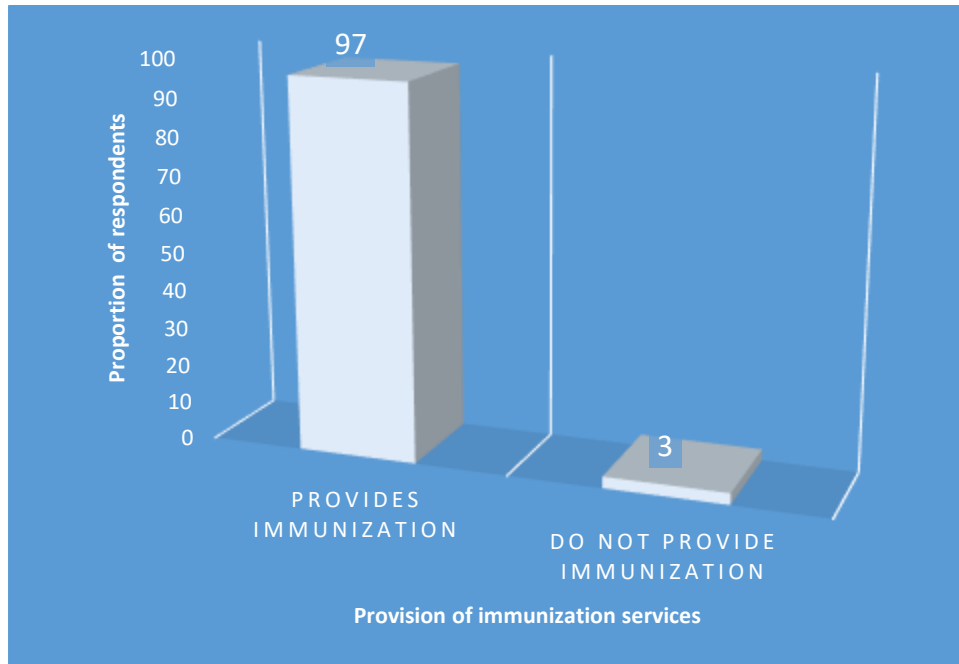
### Respondent's willingness to be more involved in immunization services

Majority of the respondents were willing to be more involved in providing immunization services (94%) (Fig 4). The extent the respondents were willing to provide more of the various types of immunization services varied. The respondents were interested in providing more of all the types of immunization services but principally highlighted; educating clients on immunization 42 (67.7%), administering vaccines to clients 40 (64.5%), engaging in campaign on immunization 38 (61.3%) and referring clients to immunization centres 37 (59.7%) (Fig 5).

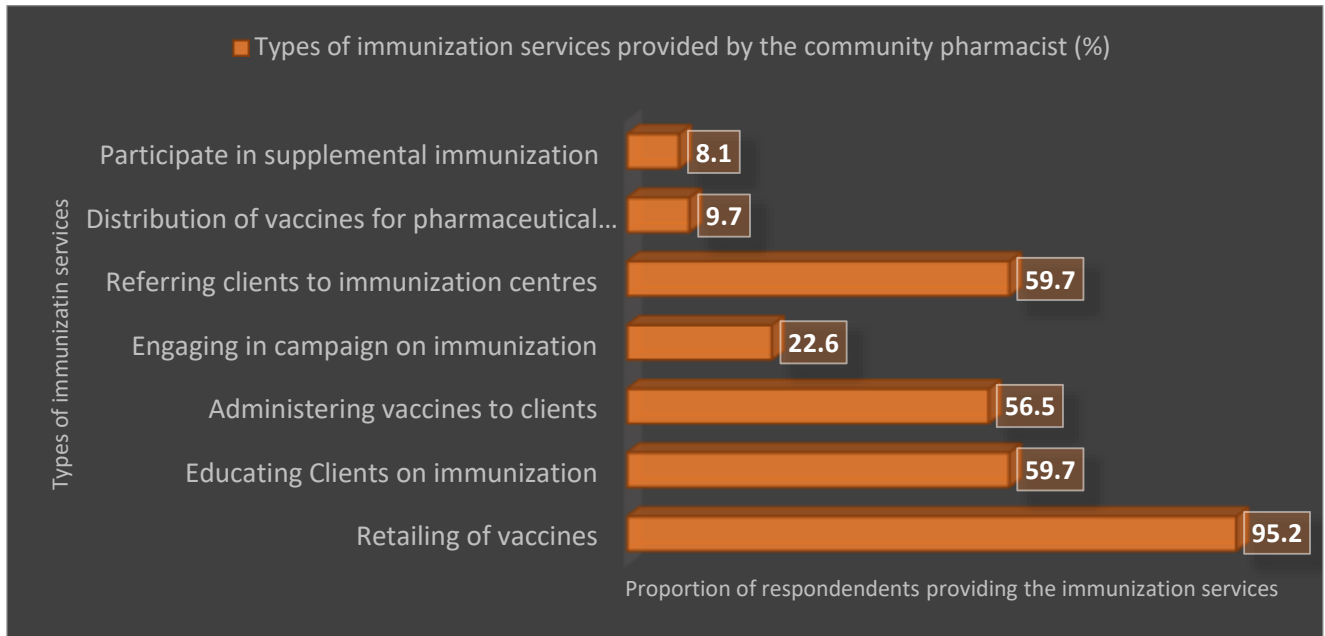
**Table 1: Socio demographic characteristics of the respondents (n = 62)**

Variables	Frequency	Percentage (%)
<b>Sex</b>		
Male	43	69.4
Female	19	30.6
Total	62	100
<b>Age</b>		
< 30	25	40.3
30-39	24	38.7
40-49	6	9.7
50 and older	5	8.1
Total	62	100
<b>Marital status</b>		
Single	34	54.8
Married	28	45.2
Divorced	0	0.0
Widowed	0	0.0

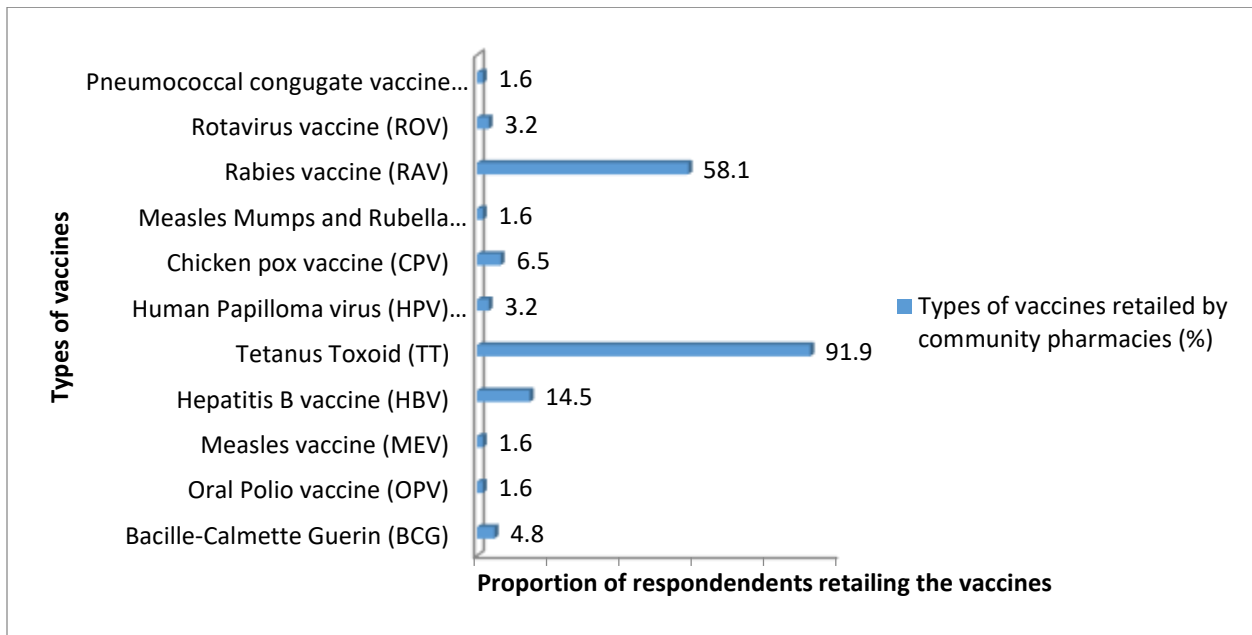
Total	62	100
<b>Years of practice</b>		
1-5 years	36	58.1
6-10 years	20	32.3
11-15 years	2	3.2
16-20 years	1	1.6
21 years and above	3	4.8
Total	62	100
<b>Highest Qualification</b>		
B. Pharm	53	85.5
M. Pharm	4	6.5
Pharm D	2	3.2
Fellowship (WAPGCP)	0	0.0
MBA	1	1.6
MPH	1	1.6
PhD	1	1.6
Total	62	100



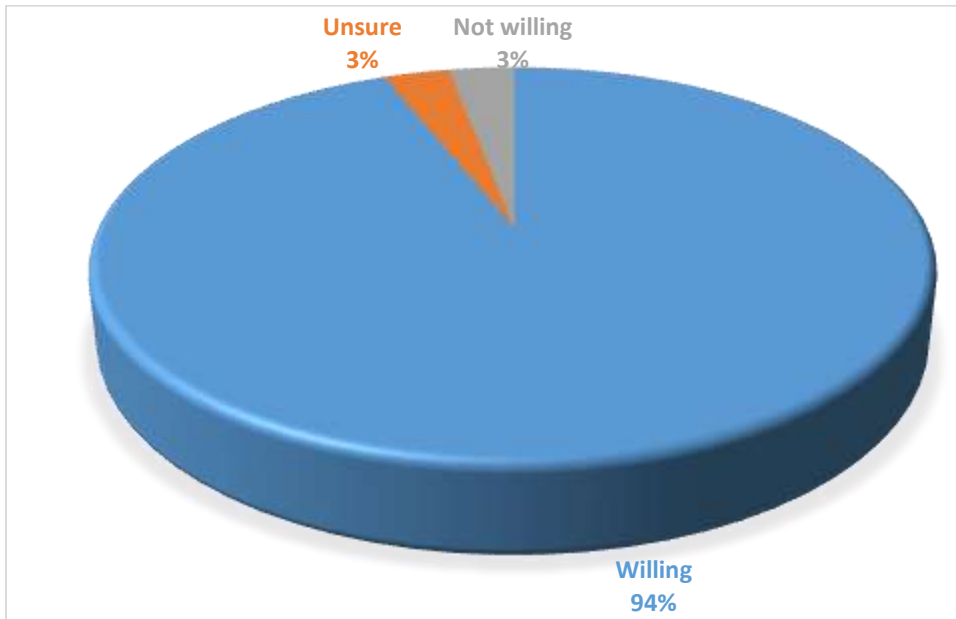
**FIG 1.**Proportion of respondents providing immunization services



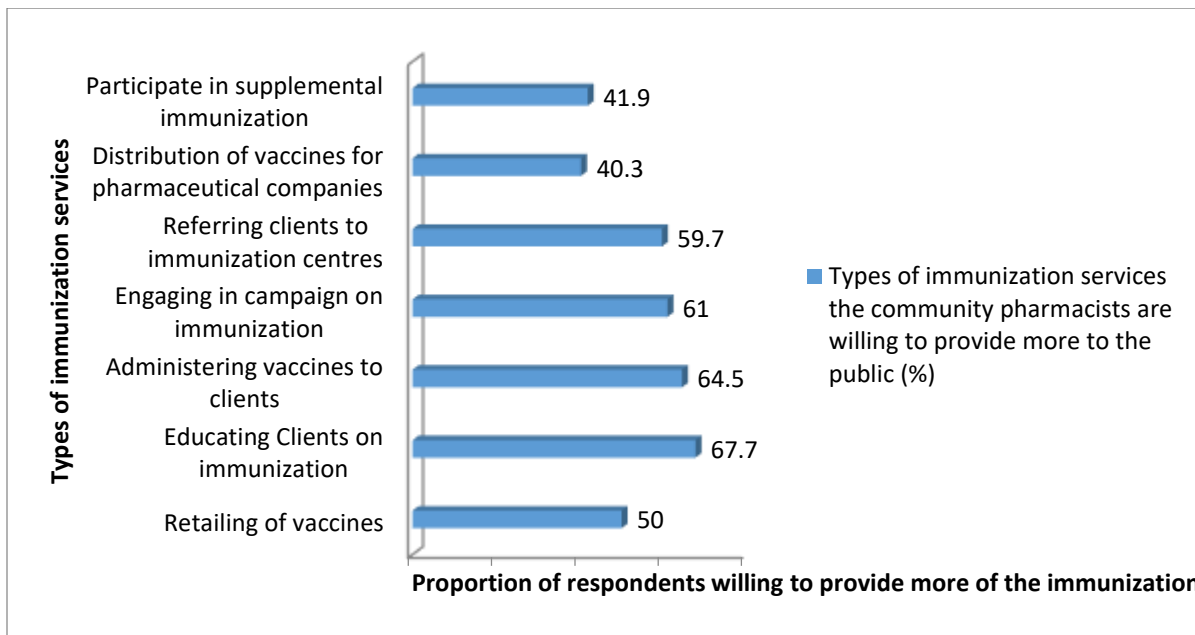
**FIG 2. Types of immunization services provided by the respondents**



**FIG 3. Types of vaccines retailed by the community pharmacies**



**FIG 4. Proportion of respondents willing to be more involved in immunization services**



**FIG 5. Types of immunization services the respondents were willing to provide more to the public**



**Test of association between gender and the types of immunization services community pharmacists were willing to provide more to the public.**

It was observed that types of immunization services community pharmacists were willing to provide which include; retailing ( $p = 0.409$ ,  $df = 1$  and  $\chi^2 = 0.683$ ) educating clients ( $p = 0.210$ ,  $df = 1$  and  $\chi^2 = 1.57$ ), administering vaccines ( $p = 0.469$ ,  $df = 1$  and  $\chi^2 = 0.525$ ), campaigning on immunization ( $p = 0.352$ ,  $df = 1$  and  $\chi^2 = 0.866$ ), referring clients ( $p = 0.351$ ,  $df = 1$  and  $\chi^2 = 0.870$ ), distributing vaccine ( $p = 0.135$ ,  $df = 1$  and  $\chi^2 = 2.234$ ) and supplemental immunization ( $p = 0.986$ ,  $df = 1$  and  $\chi^2 = 0.000$ ) was statistically not significantly associated with gender. Therefore; the researcher rejected the hypothesis (Table 2).

**Test of association between the number of pharmacists in CPs and the willingness of the community pharmacists to participate more in immunization services.**

For the number of pharmacist, p-value according to Fisher's exact test = 1.000. The association between the number of pharmacists in CPs and the willingness of the community pharmacists to participate more in immunization services was not statistically significant ( $p: 1.000 > 0.05$ ). Therefore, the researcher rejected the hypothesis (Table 3).

**Test of association between community pharmacist's years of practice and the willingness of the community pharmacists to participate more in immunization services.**

For the association between years of practice and willingness to participate more in immunization services, p-value according to Fisher's exact test = 0.149. The association between years of practice and willingness to participate more in immunization services was not statistically significant ( $p: 0.149 > 0.05$ ). Therefore, the researcher rejected the hypothesis (Table 4).

**Table 2: Test of association between gender and the types of immunization services the respondents were willing to provide more to the public**

<b>Gender</b>	<b>Yes</b>	<b>No</b>	<b>Chi-square (<math>\chi^2</math>)</b>	<b>p - value</b>
<b>Retailing vaccines</b>				
Male	20 (47 %)	23 (53 %)	0.683	0.409
Female	11 (58 %)	8 (42 %)		
<b>Educating clients on immunization</b>				
Male	27 (63 %)	16 (37 %)	1.574	0.210
Female	15 (79 %)	4 (31 %)		
<b>Administering vaccines to clients</b>				
Male	29 (67%)	14 (33%)	0.525	0.469
Female	11 (58%)	8 (42 %)		
<b>Engaging in campaign on immunization</b>				
Male	28 (65 %)	15 (35 %)	0.866	0.352
Female	10 (53 %)	9 (47 %)		
<b>Referring clients to immunization centres</b>				
Male	24 (56 %)	19 (44 %)	0.870	0.351
Female	13 (68 %)	6 (32 %)		
<b>Distribution of vaccines for pharmaceutical companies</b>				
Male	20 (49 %)	23 (53 %)	2.234	0.135
Female	5 (26 %)	14 (74 %)		
<b>Participate in supplemental immunization</b>				
Male	18 (42 %)	25 (58 %)	0.000	0.986
Female	8 (42 %)	11 (58 %)		

**Table 3: Test of association between number of pharmacists and willingness to provide more immunization**

	Willing	Unsure	Not willing	P-value (Fisher's exact test)
<b>Number of Pharmacists:</b>				
1-2 pharmacists	37 (95%)	1(2.5%)	1(2.5%)	1.000
3 and above pharmacists	21 (91%)	1(4.5%)	1(4.5%)	

**Table 4: Test of association between years of practice and willingness to provide more immunization**

	Willing	Unsure	Not willing	P-value (Fisher's exact test)
<b>Years of practice:</b>				
1-5 years	34 (94%)	0 (0.0%)	2 (6%)	0.149
6 years and above	24 (92%)	2 (8%)	0 (0.0%)	

## DISCUSSION OF FINDINGS

This study provided an insight into the current state of immunization activities provided by pharmacists' in Cross River State, Nigeria. This study became imperative because community pharmacists' participation in immunization as shown from previous research studies have the potential to expand access to immunization due to their peculiar characteristics such as accessibility, cost effectiveness and long opening hours (Francis & Hinchliffe, 2010). Most of the community pharmacists in this study are currently providing product-oriented services such as retailing of vaccines and to a lesser extent engaged in distribution of vaccines. They also averagely provided patient-oriented services such as immunization education, referring clients for immunization and administration of vaccines. These services are patient-oriented because they are non-traditional services that focuses on the patients unlike product-oriented services that focuses on the sales and handling of drugs/products. The findings of this study concerning product-

oriented services showed that 95% of community pharmacies retail different type of vaccines but in different proportion. The most retailed vaccines were T.T (91.9%), RAV (58.1%) and HBV (14.5%). This result is comparable to a similar study by Fowowe & Aina (2016), in Lagos where 84.2% of CPs retail vaccines and the trend were similar, T.T (70.7%) was the vaccine retailed most followed by RAV (59.2%) and lastly HBV (58.2%) . The slight variation between the results of these studies could be due to the differences in practice setting. The stocking of more of T.T and RAV in this study might probably be due to high demand for them. Tetanus Toxoid is extensively for tetanus prophylaxis following injuries. Pregnant women also take T.T routinely to prevent tetanus. In the case of RAV, the driving demand could be the high prevalence of rabies in Calabar. This was confirmed by Ekanem, Eyong, Philip-Ephraim, Eyong, Adams & Asindi (2013) in their study which revealed that within a period of five months, University of Calabar Teaching Hospital admitted and diagnosed ten patients with rabies. The reason for the high prevalence of rabies according to their study was the thriving dog trade in Calabar fuelled by the increasing rate of consumption of dog meat. Handling of these dogs predisposes the traders' to rabies because the probability of them been bitten by an infected dog is higher. The management of dog bite requires the use of both T.T and RAV as prophylaxis to prevent tetanus and rabies.

Assessing the types of immunization services community pharmacists' preferred to provide more to the public in this study was crucial. This knowledge could guide the decision on the type of immunization activities Community Pharmacists could scale up to improve immunization delivery. This study revealed that community pharmacists were more willing to provide patient-oriented immunization services than product-oriented immunization services. The inclination to provide patient-oriented immunization services in this study is comparable to a study in the US by Kamal, Madhavan, and Maine, (2003) where most community pharmacists, comprising of those providing immunization services and those not providing immunization services were willing and ready to provide patient-oriented services such as counselling, administering and promoting immunization. The community pharmacists' willingness to engage more in these immunization activities as revealed in this study is an advantage which could be used to expand immunisation services

Although the relationship between gender and the types of immunization services community pharmacists were willing to provide more to the public was not statistically significant, it was observed in Table 2 that the immunization services females preferred to provide were mainly educating clients on immunization 15(79%) and referring clients 13 (68%), while males preferred more of administering vaccines 29 (67%) and campaigning for immunization 28 (65%). This research did not explore the reasons for these preferences. Similarly, it was also observed in Table 3 & 4 that no statistically notable association that existed between the community pharmacist's years of practice, the number of pharmacists in a CP and willingness to provide more immunization services.

## CONCLUSION AND RECOMMENDATIONS

Community pharmacists are extensively involved in providing numerous immunization services to the public. Aside from performing their traditional roles of retailing vaccines, they were also involved in advocacy, education and facilitation of immunization. They also demonstrated enthusiasm to participate more in immunization services. Nevertheless, despite their enthusiasm towards immunization activities, immunisation-oriented training for CPs was indicated to be critical to improve immunization delivery. Raising awareness about pharmacy-based immunisation is also imperative for high uptake of services.

From the forgoing, it is highly recommended that community pharmacists be trained on Post Exposure Prophylaxis (PEP) of rabies to reduce mortality from rabies, since most CPs retails ARVs. Identifying the reasons why community pharmacists preferred to be more involved in immunization activities should formulate the focus for further studies.

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