Original Research Article

Readiness and Willingness of Community Pharmacists in Anambra State to Provide Immunization Services.

Abstract

Background: A significant goal for the World Health Organization is the global control of certain infectious diseases. Immunization is vital in the prevention of infection from vaccine-preventable diseases. Low immunization coverage has led to a low rate of immunization. Thus, the inclusion of community pharmacists into the immunization scheme is paramount to ensure broader and faster coverage of vaccination.

Objective: To assess the community pharmacists' readiness and willingness to provide immunization services with Anambra State as a focus area.

Methods: The study was cross-sectional and conducted among community pharmacists in Anambra state using a self-administered questionnaire to determine the readiness and willingness of the community pharmacists to provide immunization services. Descriptive analysis was used, and the data were analyzed using SPSS software version 23.

Results: Majority of the respondents, 110 (74.0%), expressed their willingness to providing immunization services. Also, out of the 148 participants, 108 (73%) identified multiple limiting factors or barriers to providing immunization services, and mainly a lack of training to deliver these services 142 (96.0%) and not having storage facilities in my pharmacy to provide immunization services 106 (71.6%). Lastly, 97 (65.8%) identified solutions to these barriers. Pharmacists who offer immunization services should be well paid 96 (65.2%), and the provision of better storage facilities improve Pharmacists' involvement with immunization 79 (53.4%) were the main solutions identified.

Conclusion: Findings from the study suggests that the community pharmacists are ready and willing to provide immunization services.

Keywords: Immunization, vaccination, Community pharmacists, vaccine, immunity

INTRODUCTION

A major goal for the World Health Organization is the global control of certain infectious diseases **[1, 2]**. The risk of epidemic outbreaks of these diseases is related to many factors including population mobility, changes in human behavior, social organization, climate, agricultural practices, and medical and public health practices.

Immunization and vaccination protect the individual and controls the spread of these diseases and are thus recommended throughout the person's lifetime to prevent vaccine-preventable diseases and their sequelae and are a fundamental part of communicable disease worldwide **[3]**. To increase accessibility to immunization services, in the last few years, community pharmacists have been providing immunization services in many developed countries such as the USA, the United Kingdom (UK), Australia, Canada, and New Zealand **[4, 5, 6]**.

Like in majority of the countries worldwide, the adult immunization rate in Nigeria falls below the desired targets, urging the need to expand this service nationally **[7]**. Nigeria is committed to the goals of the Global Vaccine Action Plan (GVAP). Immunization coverage in Nigeria is below GVAP goals, putting a substantial number of children at risk of vaccine-preventable diseases. Immunization coverage varies across Nigeria but improvements are needed in every state. Nigeria conducted a national survey on routine immunization coverage among children 12-23 months of age in 2016/2017 and it was found that; All states fall below the global goal of 90% coverage for 3 doses of pentavalent vaccines, Immunization performance is weakest in North East or northwest zones where every state falls below 50% penta3 coverage, Children in rural areas are half as likely to be vaccinated as those in urban areas, Children of younger and less educated caretakers are at greater risk, Only 1 in 4 children was found to have received all recommended vaccines and lack of awareness is the main reported reason children are not fully vaccinated.

In the literature, many barriers have been identified as factors that may contribute to this low immunization rate including the lack of patient knowledge and belief about the safety and efficacy of vaccines, inconvenient location and visiting hours for the immunization service, and longer waiting periods **[8, 9]**. Community pharmacists are recognized as highly accessible healthcare professionals, and community pharmacies—because of the convenient location and extended working hours—provide a significant venue to provide an immunization service **[10, 11]**. There is also evidence that pharmacy-led immunization programs can lead to an increase in

the uptake of immunizations compared with usual care [12]. Although community pharmacies play an important role in any healthcare system to overcome some of the barriers for example, among hard to reach groups and those who live in rural areas and pharmacists can play a key role in facilitating the uptake of immunization services and promoting patient education regarding the importance of immunization. Yet, community pharmacists' readiness and willingness to provide such services have not been explored in Nigeria. Pharmacists in Nigeria are currently not authorized to administer vaccines. Allowing pharmacists to provide vaccination service is a controversial issue. However, recently, the Ministry of Health (MOH) has considered an expansion and authorization in the role of pharmacists in immunization services. Still, it is unclear when this service will be implemented. Pharmacists can play an important role in disease prevention by advocating and administering immunizations. Such activities are consistent with the preventive aspects of pharmaceutical care and have been part of pharmacy practice for over a century [13]. Pharmacists must understand the legal and professional mechanisms by which authorization to administer vaccines is granted, as well as the additional responsibilities and considerations that accompany this expanded role. The feasibility of vaccine administration by pharmacists within a particular practice site or health care system can be determined by analyzing the issues of legal authority, training, and program structure.

Thus, the main purposes of this study were to assess the readiness and willingness of the community pharmacists to provide an immunization service and to identify the barriers involved in implementing such service in Nigeria.

Objective

General objective:

This study aims to assess the readiness and willingness of pharmacists to provide immunization services.

Specific objective:

- To assess the readiness of pharmacists to provide immunization services.
- To evaluate the willingness of pharmacists to participate in immunization services.
- To identify the barriers to pharmacists' involvement in immunization.

- To identify solutions to these barriers from the pharmacists' perspectives.

METHODS

Study Design

The study was a cross-sectional study of Community pharmacists in Anambra state, Southeast Nigeria using an adapted well-structured questionnaire.

Study area

The study was carried out with Community Pharmacies in Anambra state. Anambra state is a state in the southeastern part of Nigeria. The capital and seat of government is Awka. Onitsha, a historic port city from precolonial times is the largest urban area in the state. With an annual growth of 2.21 percent per annum, Anambra has over 60% of its people living in urban areas out of 181 towns within it. It is one of the most urbanized states in Nigeria.

The major urban centers of Anambra state are Onitsha, Nnewi, and Awka, the state capital. Awka is strategically located midway between two major cities in northern Igbo land, Onitsha and Enugu and it is the seat of political and administrative function in Anambra state. It has one tertiary hospital just like Nnewi and several private hospitals.

The indigenous ethnic groups in Anambra state are the Igbo (99% of the population) and a small population of bilingual people; they live mainly in the north-western part of the state. It is the most eighth-most populated state in the Federal Republic of Nigeria and the second-most densely populated state in Nigeria after Lagos State. The stretch of more than 45 km between Oba and Amorka contains a cluster of numerous thickly populated villages and small towns giving the area an estimated average density of 1,500 – 2,000 persons per square kilometer

Instrument development

The questionnaire was adapted from previous studies (safeinhealth.biomedscience/article/) and adjusted to conform with the objectives of the study. It included basic demographic details,

readiness and willingness assessment, barriers to offering immunization services, and solutions to the barriers.

Instrument validation

The questionnaire was validated by carrying out a pilot test.

Pilot testing:

Ten community pharmacists in Awka were used for the pilot study after which the weak and unnecessary questions were pointed out and deleted.

Sample size calculation

The population for study (Community Pharmacists) in Anambra State was 236, which was elicited from the Pharmacists Council of Nigeria (PCN). The method used to determine the sample size is a Simplified formula for Proportions by Yamane (1967:886). The formula stated thus:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = sample size, N= Population size (236), e = level of precision (0.05).

Therefore, to substitute the formula, we have:

$$n = \frac{236}{1+236(0.05)^2} \quad n = \frac{236}{1+(236 \times 0.0025)} \quad n = \frac{236}{1+0.59} = 148$$

Therefore, n = sample size = 148

Inclusion criteria

All pharmacists practicing in Community Pharmacy outlets in Anambra state who gave their informed consent.

Exclusion criteria

- Pharmacists not duly registered
- Non-community-based pharmacists

- Pharmacists who refused to participate

Ethical Approval

The proposal for the study was sent to Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Ethical Committee for review and approval before undertaking the study. The approval was received with the approval reference: COOUTH/CMAC/ETH.C/VOL.1/FN:04/0068. All the Pharmacists were informed about the proposed study, their rights to refuse were maintained. Ethical conduct was also maintained during data collection and throughout the research process. The confidentiality of data obtained was assured. The name and address of the Pharmacists were omitted from the questionnaire.

Data Collection

The researcher went to Sharon Hall Onitsha where the Association of Community Pharmacists in Nigeria (ACPN) Anambra State Chapter conducted a general meeting on 27th April 2021. After their meeting, he introduced himself and the purpose of his research to them, then implore them to participate in the study by responding to the questionnaire. A good number of them responded to the questionnaire. The researcher also went round the Pharmacy outlets in the communities which includes three settings: the Urban, Semi-urban, and Rural settings to get the Community Pharmacists to participate in the study. In the course of this, he ensured that those who had responded to the questionnaire on their meeting venue did not partake the second time to avoid bias. The scale used for the study was a five-point Likert's-scale ranging from **1**. strongly disagree, **2**. Disagree, **3**. Undecided, **4**. Agree, **5**. Strongly agree. Also, the willingness scale has one item that is open to elicit any salient information from the respondents. For this item, positive responses were scored as 2 while negative responses were scored as 4.

Data analysis

The questionnaire was coded into Microsoft excel and cleaned of all errors. The cleaned data was then exported into Statistical Product and Service Solution (SPSS) Version-23 for appropriate data analysis. Descriptive statistical analysis (such as mean, mode, frequency, standard deviation), was used to summarize the study's findings. Chi-squared or Fischer's exact tests (based on the proportion of the variables) was employed in determining the relationship between

variables. No further inferential statistical analysis was conducted if there were no statistically significant relationship from the test of relationship. For all analyses, statistically significant *p* values were set at less than 0.05.

RESULTS

Socio-demographic characteristics of the respondents

The response rate for the work was great and out of the 148 community pharmacists who participated in the study 79 (53.4)% were males and 69(46.6)% were females, mean age was (43.24±11.99 years) and the majority of the respondents holds a bachelor degree in pharmacy, 49(33.1%). Participants were predominantly from urban located pharmacies, 71(48.0 %), and had 10.41±7.01 years of experience. More than two-thirds of the participants have not had any additional qualifications since acquiring a Bachelor's in pharmacy, 49(33.1%).

Table 1. Sociodemographic Characteristics of Participants (n=148)

Variables	**N (%)**
Gender	
Male	79(53.4)
Female	69 (49.6)
Qualifications	
B. Pharm	49(33.1)
Pharm D	25 (16.9)
M. Pharm	32(21.6)
FCPharm	23 (15.5)
PhD	19(12.8)
Role in Pharmacy	
Supritendent	60(40.5)
Locum	29 (19.6)
NYSC	23(15.5)
Intern	19 (12.8)
Pharmacy Location	

Urban	71(48.0)
Semi-urban	51(34.5)
Rural	26 (17.6)
Age	43.24±11.99**
Years of Experience	10.41±7.01**

B.Pharm (Bachelor in Pharmacy); Pharm.D (Doctor of Pharmacy); M Pharm (Master of Pharmacy); **Mean ± SD

Items for community pharmacist's readiness and willingness to provide immunization as well as the barriers and solutions to them

Summary of Table 2, 3 and 4

Tables 2, 3, and 4 were all summarized into table 5, with the average means, percentages, and standard deviations obtained. Of the 148 community pharmacists that participated, 110 (74%) **(Table 5)** participants expressed their willingness to administer vaccines and readiness to establish an immunization service in their current pharmacies. Many of those who were willing and ready believed that community Pharmacists' involvement in immunization services would improve vaccination coverage 139(94.4%) **(Table 2)**. On the other hand, those who were unwilling to provide immunization services were 38(26%) out of the 148 community pharmacists that participated.

Also, out of the 148 participants, 108(73%) identified multiple limiting factors or barriers to providing immunization services and mainly a lack of training to deliver these services 142(96.0%) and not having storage facilities in my pharmacy to provide immunization services106(71.6%) **(Table 3)** were identified.

Lastly, out of the 148 participants, 97 (65.8%) identified solutions to these barriers. Pharmacists who offer immunization services should be well paid 96(65.2%) and the Provision of better storage facilities improve Pharmacists' involvement with immunization 79(53.4%) **(Table 4)**

From the summarized table, **Table 5;** the mean, standard deviations were averaged and the percentage of the mean was obtained and this shows that 110(74%) of the participants were ready, 108(73%) identified some barriers affecting readiness and willingness to provide immunization services and 97(65.8%) identified solutions to these barriers.

Table 2. Items for Community pharmacists' Readiness and Willingness to provide immunization services

Items	Responses	Levels of arguments					Mean ±SD
		SD n(%)	D n(%)	UN n(%)	A n(%)	SA n(%)	
The training I had in pharmacy school has fully equipped me to carry out immunization services.	148(100%)	24(16.2)	8(5.4)	16(10.8)	34(23.0)	66(44.6)	2.57
I need additional training to be able to provide immunization services effectively	148(100%)	4(2.7)	9(6.1)	5(3.4)	88(59.5)	42(28.4)	4.05
The facilities I have in my community pharmacy are sufficient to maintain the storage conditions of the vaccines.	148(100%)	31(20.9)	20(13.5)	4(2.7)	51(34.5)	42(28.4)	2.91
I have good knowledge of vaccine and their indication.	148(100%)	20(13.5)	14(9.5)	19(12.8)	40(27.0)	55(37.2)	3.87
As a community-based Pharmacist, I am easily accessible.	148(100%)	3(2.0)	2(1.4)	4(2.7)	54(36.5)	85(57.4)	4.46
Pharmacists' involvement in immunization services would improve vaccination coverage.	148(100%)	6(4.1)	2(1.4)	1(0.7)	41(27.7)	98(66.7)	4.51
Pharmacists will play an essential role in advertising and promoting immunization.	148(100%)	6(4.1)	4(2.7)	1(0.7)	47(31.8)	90(60.8)	4.43
The services I offer in my pharmacy is enough and I will not include immunization services.	148(100%)	65(43.9)	59(39.9)	16(10.8)	6(4.1)	2(1.4)	1.79
I am ready to offer immunization services in my pharmacy	148(100%)	8(5.4)	5(3.4)	11(7.4)	81(51.7)	43(29.1)	3.40
I am willing to offer immunization services in my	148(100%)	8(5.4)	6(4.1	10(6.8	78(5	46(3	4.00

pharmacy			)	)	2.7)	1.1)	
Pharmacists in the community are better positioned to offer immunization services than those in the hospital.	148(100%)	4(2.7)	16(10.8)	12(8.1)	59(39.9)	57(38.5)	4.01
Generally, Community pharmacists in community Pharmacists are in a better position to provide immunization services.	148(100%)	11(7.4)	13(8.8)	11(7.4)	83(56.4)	30(20.3)	3.73

Key: SD = Strongly Disagree; D = Disagree; UN = Undecided; A = Agree; SA = Strongly Agree

Table 3. **Barriers affecting community pharmacist' readiness and willingness to provide**

Items	Responses	Levels of arguments					Mean ±SD
		SD n(%)	D n(%)	UN n(%)	A n(%)	SA n(%)	
I am not adequately trained to offer immunization services in my pharmacy	148(100%)	14(9.5)	10(6.8)	12(8.1)	52(35.1)	60(40.5)	3.59
I cannot manage any adverse events that may result from immunization.	148(100%)	21(14.2)	7(4.2)	25(16.9)	27(18.2)	68(45.9)	3.41
I do not have space to provide immunization services in my pharmacy	148(100%)	27(18.2)	8(5.4)	10(6.8)	29(19.6)	73(49.3)	3.61
I do not have storage facilities in my pharmacy to provide immunization services	148(100%)	15(10.1)	14(9.5)	12(8.1)	64(43.2)	42(28.4)	3.70
Pharmacists are trusted by patients to provide immunization services.	148(100%)	21(14.2)	5(3.4)	16(10.8)	56(37.8)	50(33.8)	3.86
I will not be paid if I offer immunizations.	148(100%)	17(11.5)	30(20.3)	11(7.4)	33(22.3)	59(39.9)	3.68

Key: SD = Strongly Disagree; D = Disagree; UN = Undecided; A = Agree; SA = Strongly Agree

Table 4. **Community pharmacists' (Readiness and Willingness) responses to solution to the barriers**

Items	Responses	Levels of arguments					Mean ±SD
		SD n(%)	D n(%)	UN n(%)	A n(%)	SA n(%)	
Pharmacists should be prepared right from the university to equip them to offer immunization services	148(100%)	24(16.2)	39(26.4)	23(15.5)	36(24.3)	26(17.6)	3.01
Pharmacists in practice should be protected by law to immunize.	148(100%)	20(13.5)	31(20.9)	20(13.5)	40(27.0)	37(25.0)	3.03
Continues update on immunization services will improve pharmacists' involvement with immunization	148(100%)	19(12.8)	39(26.4)	24(16.2)	33(22.3)	33(22.3)	3.15
Provision of better storage facilities improve Pharmacists' involvement with immunization.	148(100%)	14(9.5)	24(16.2)	31(20.9)	47(31.8)	32(21.6)	3.40
The society should be continually informed that pharmacists' can also immunized	148(100%)	14(9.5)	24(16.2)	28(18.3)	43(33.1)	33(22.1)	3.43
Pharmacists who offer immunization services should be well paid	148(100%)	11(7.4)	19(12.8)	23(15.5)	44(29.0)	51(34.5)	3.72

Key: SD = Strongly Disagree; D = Disagree; UN = Undecided; A = Agree; SA = Strongly Agree

Table 5. Table Summary

	Readiness/ Willingness	Barriers	Solution
Average mean	3.69	3.64	3.29
Mean (%)	74	73	64.8
Average SD	1.20	1.23	1.33

SD = standard deviation

DISCUSSION

This study was conducted to evaluate the community pharmacists' readiness and willingness in providing immunization services with Anambra state as the focus area. It also identified the barriers community pharmacists face to providing these services and solutions to these barriers.

Summary of key findings

With a impressive response rate, majority of the respondents were aged between 32 to 55 years while none of them were less than the Nigerian adult age of 18 years. Despite the accommodation of any year of experience, the respondents showed a good year of experience of 4 to17 years between them. Also, more than half of the respondents showed their willingness to provide this service. Aside from the easiness of easiness accessibility, community pharmacists believed that they have a strong role in increasing the rate of immunization besides their role in advertising, promoting, and improving the vaccination service through community settings. On the other hand, several limiting factors were also identified in this study - for example; adequate training and not having storage facilities in my pharmacy to provide immunization services were majorly indicated. Solutions to these barriers were also proffered by the community pharmacists and robust incentives and the provision of better storage facilities were majorly indicated.

Comparison of results

In a similar conducted in Poland by Piotr Merks, Urszula Religion Kryzyszt of bilmin et al on Readiness and Willingness to Provide Immunization Services. A total of 1,777 pharmacists participated in the study, comprising 127 (7.1%) pharmacists trained in vaccinations during the Pharmacists Without Borders project and 1650 (92.9%) pharmacists not participating in the workshops. Pharmacists participating in the workshops more often indicated that providing vaccinations in community pharmacies would improve the overall vaccination rate ($p = 0.0001$) and that pharmacists could play an important role in advertising and promoting vaccinations ($p = 0.0001$). For the pharmacists not participating in the workshops, they indicated to a much greater extent possible barriers affecting the readiness to provide vaccinations in pharmacies **[14]**.

Balkhi, B., Aljadhey, H., Mahmoud, M.A. et al. **[15]** conducted similar work on the Readiness and willingness of community Pharmacists to provide immunization services. This study was a

cross-sectional paper-based survey conducted in the community pharmacy setting in Riyad, Saudi Arabia. Among the 139 respondents, 76 (55%) expressed their willingness to administer vaccines and establish an immunization service **[16]**. Our study showed consistency with the two previous studies as both showed that community pharmacists are willing and ready to provide immunization services and identified barriers to carrying out this service as well as solutions to these barriers **[17]**..

Conclusion

Community pharmacies offer a unique place to provide a vaccination service. Implementation of an immunization service may increase the number of adults that would be vaccinated and ultimately improve their overall health by reducing vaccine-preventable diseases. The findings of this study indicate that community pharmacists working in Anambra state are willing to provide immunization services. However, overcoming barriers identified in this study is a key to success and this, in turn, guide future planning and implementation of immunization services. Community pharmacists need to be included in the scheme for immunization services to improve the coverage of immunization in Nigeria.

Recommendation

It is thus recommended that; Pharmacists in this category should be well remunerated as an incentive, Community Pharmacists in practice should be protected by law to carry out immunization services, Also, Pharmacists should be trained from the university to equip them to offer immunization services. There should be enough provision for space and storage facilities by the Federal Ministry of Health.

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