

Extensive Analysis of Pharmacists' Roles and Services towards Vaccine-Preventable Diseases in Bayelsa State, Nigeria

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Authors' Contributions

1 Conception & Study design, Data Collection & Processing, Data Analysis and/or Interpretation, Drafting of Manuscript, Critical Review.

2 Conception & Study design, Data Analysis and/or Interpretation, Drafting of Manuscript, Critical Review.

3 Conception & Study design, Data Collection & Processing, Data Analysis and/or Interpretation, Drafting of Manuscript.

Article info.

Received: December 24, 2020

Accepted: June 21, 2021

Funding Source: Nil

Conflict of Interest: Nil

Cite this article: Samuel BJ, Stella UF, Denmo OO. Extensive Analysis of Pharmacists' Roles and Services towards Vaccine-Preventable Diseases in Bayelsa State, Nigeria. *RADS J Pharm Pharm Sci*. 2021; 9(2):88-95.

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ABSTRACT

Background: Vaccines can stimulate the body's immune system to protect the person against subsequent infection or disease. Pharmacists and other healthcare givers play vital roles in vaccine administration, screening, and counseling of patients.

Objectives: The study was aimed to evaluate the contributions, obstacles, and limitations to pharmacy-based immunization services; and vaccine-preventable disease.

Methods: Descriptive cross-sectional design was employed in the study. A sample of 105 Pharmacists who were working in Bayelsa state, using the convenience sampling technique were enrolled in the study.

Results: Almost all respondents were aware of immunization. Lack of financial compensation workload of Pharmacists, no support from other healthcare providers, and absence of supportive laws for Pharmacists to administer vaccines, patients' non-compliance, unease access to vaccines, and inadequate cold chain system was seen as barriers to Pharmacy-based immunization despite their willingness to contribute towards vaccination. Pharmacists can participate more in immunization programs to help prevent actual and potential immunologic reactions and promote adherence to scheduled vaccination programs.

Conclusion: Adequate incentive and incorporation of immunization into Pharmacy education especially during internship periods for the young graduates to appreciate and possibly participate in these activities would ultimately improve the quality of life.

Keywords: Immunization, vaccines-preventable diseases, Healthcare providers, Pharmacists.

INTRODUCTION

Immunization is a proven tool for monitoring and eradicating infectious diseases that are life-threatening and it is estimated to prevent 2 to 3

million deaths yearly. It is a well-known cost-effective health investment, with proven strategies that make it accessible to individuals in both urban and rural areas of society [1].

In the USA, Pharmacists are routinely trained and retrained to provide immunization services with valid certifications, [2] to maintain pharmacy-based immunization programs thereby increasing individuals' participation [3]. An overview of the current impact of pharmacists on immunization gives a positive relationship between advocacy and support for vaccination activities and being able to legally provide vaccine administration in community pharmacy premises [4]. The sole aim of introducing the National Programme on immunization (NPI) in Nigeria, was to increase the good health and wellbeing of children, especially those at risk of contracting diphtheria, polio, tuberculosis, measles, whooping cough, and yellow fever in children less than two years, recorded initial but intermittent successes. There was at least 81.5% coverage in the early 1990s and the nation is said to have achieved universal childhood immunization coverage, but since that period of success, the Nation has witnessed a steady reduction in immunization coverage [5].

One of the diseases preventable by a vaccine is polio. A total of 21 cases of polio was reported in Nigeria as of 2010, from 21 Local Government Areas (LGAs) in eight states, against 388 cases from 198 LGAs, in 27 states in 2009. [6-8] Currently, Pharmacists plays roles such as administration of vaccines [9,10], screening and counseling of patients [10,11], education as well as guiding formulary logistics [10], proper documentation of activities [12], and public advocacy. [10,13,14] Some factors that are problematic towards the success delivery of immunization process include, misinformation about vaccination, language and improper communication skills of healthcare providers, forecasted risks and related adverse effects of vaccines [15-18], lack of understanding of the benefits related to routine vaccination, [19], the misconception that vaccinations cause more diseases or ailments, beliefs that vaccines are not effective enough, cultural and religious beliefs against vaccination, fear of injections especially the needle and syringe [17,20]. Others are lack of deliberate response from the healthcare team, complex and ambiguous vaccination schedules, improper documentation, unavailability of the cold chain, problems associated with the logistic system and distribution of vaccines, missed vaccination appointments, forgetting that additional or booster vaccines are required [18], reduced accessibility to vaccination providers due to distance traveled by individuals [20], cost of vaccines and lack of

incentives [17,21], financial constraints [22], lack of political commitment [23]. Following the above, we carefully aimed to identify pharmacists' contributions in immunizations activities in Nigeria, and evaluate the obstacles and limitations to pharmacy-based immunization services using Bayelsa state as the focal point.

MATERIALS AND METHODS

Study population, Data Collection and Analysis

The study target populations were Pharmacists working in hospitals, community pharmacies, academia, industries, and administrative sector in Bayelsa State, Nigeria. The questionnaire was administered at their place of work/practice. A descriptive cross-sectional questionnaire was designed and used to describe the knowledge, roles, and contributions of Pharmacists towards immunization in Bayelsa state, Nigeria.

A 51 item stem consisting of 5 points response scale was developed for the survey questionnaire. Items included demographic data, pharmacist's involvement in immunization programs, willingness to provide immunization services, challenges and obstacles to pharmacy-based immunization, nature of the contribution, knowledge on vaccines, an adverse effect observed, and cost of services provided enabling structures for further improvements of pharmacists' participation in immunization programs in the state. Participants were required to indicate how they strongly agree, agree, strongly disagree, disagree, and/or neutral concerning some questions and self-evaluation statements relating to immunization. There were 130 dully registered Pharmacists in Bayelsa State according to the Pharmacists Council of Nigeria (PCN) record (2019), at the time of this survey. Out of this number, a sample of one hundred and five (105) Pharmacists participated in the survey. Sample size was calculated based on Taro Yamani's formula [24].

Inclusion and exclusion criteria were that the respondent must be a trained Pharmacist working in any establishment in Bayelsa state, and non-Pharmacists working in Bayelsa State as well as Pharmacists unwilling to participate respectively. The retrieved copies of the questionnaire were analyzed with IBM SPSS version 23.0.

RESULTS

Hundred and five (105) questionnaires were administered and retrieved giving a response rate of 100%. The results are presented in tables and charts.

Demographic data of participants are presented in Table 1, Pharmacists' involvement in immunization activities and observed obstacles to Pharmacy-based immunization, Table 2, and relevance of pharmacy-based immunization to the pharmacy profession in Table 3, etc.

Table 1. Demographic data of participants [n = 105].

Variables	Respondents	Frequency	Percentage
Age of respondents (years)	20-29	59	56.2
	30-39	38	36.2
	40-49	8	7.6
	50-59	0	0.0
Sex	Male	55	52.4
	Female	50	47.6
Marital status	Single	79	75.2
	Married	26	24.8
Area of Practice	Hospital	68	64.8
	Community	27	25.7
	Academia	10	9.5
Years in Practice (years)	1-5	78	74.3
	6-10	25	23.8
	11-19	2	1.9
Education	B.PHARM	94	89.5
	PHARMD	6	5.7
	MPHARM	5	4.8
Higher Education	M.Sc	17	16.2
	PhD	2	1.9
	Not applicable	86	81.9
Number of staff in the Pharmacy	1-5	39	37.1
	6-10	22	21.0
	11-15	2	1.9
	16-20	4	3.8
	21 and above	38	36.2
Hours Pharmacy is opened by day.	10	40	38.1
	12	30	28.6
	24	35	33.3
Prescription volume in Pharmacy	High	41	39.0
	Moderate	59	56.2
	Low	3	2.9
	Very low	2	1.9

The table above shows the demographic data of respondents, Pharmacists' awareness, and involvement in immunization activities.

Table 2. Pharmacists' involvement in immunization and Observed Obstacles to Pharmacy-based immunization [n = 105].

Question/Variable	Weighted Mean [WM] (5.0 – 1.0)
Pharmacists' involvement	
I am currently involved in immunization activities.	2.6
I am willing to provide immunization services.	4.4
I am allowed in my state to administer immunization	2.8
I have attended seminar/training on immunization	2.9
I can counsel patients on immunization (vaccine safety, immunologic reactions & adherence).	3.6
I can host and assists nurses to administer immunization	3.7
I have personally administered vaccines	2.4
I can personally administer immunization	2.9
I am willing to promote immunization activities in my area of practice	4.4
I have never been involved in immunization programs	3.4
Obstacles	
Lack of reimbursement	3.8
Availability of time (no time)	2.9
Space (no space in Pharmacy)	3.4
No trained staff to participate	3.3
No support from other health professionals	3.6
No laws supporting Pharmacists participation	3.1
Patients non-compliance	2.7
No insurance coverage	3.3
Distance traveled by patients to the Pharmacy	2.7
Prolong waiting time by patients	2.7
It is not cost-effective for patients	2.4
It is not safe for patients	1.8
It is not effective in protecting patients' immunity	1.7
My religion doesn't permit me to participate	1.7
Inadequate cold chain/storage equipment	2.9

Key: WM = Weighted Mean (Sum of response divided by the number of participants).

willingness to provide immunization services in their area of practice, and an obstacle to pharmacy-based immunization.

From the above table, the majority of the respondent tends to agree with the involvement with patients

counseling on immunization, hosting and assisting nurses as well as the promotion of immunization activities in their area with an average score of 4. However, most of them had not personally administered vaccines with an average score of 2.

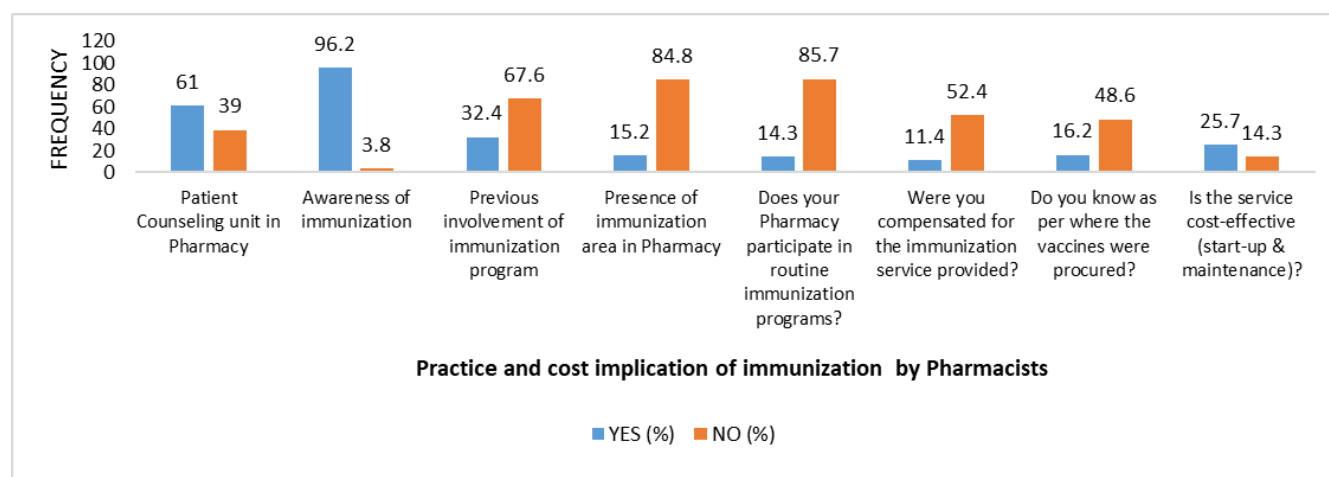


Figure 1. Shows the practice and cost implication of immunization by Pharmacists.

Table 3. The relevance of Pharmacy-based immunization to the Pharmacy Profession.

Variable	Respondents	Frequency	Percentage
Who administers immunizations in the pharmacy?	Nurse	42	40
	Pharmacist	21	20
	Not Aware	42	40
Please indicate the number and doses of immunizations administered in the previous 1-year period:	8	7	6.7
	100	3	2.9
	Not Aware	95	90.5
What adverse reactions/effects have you noted?	Skin rashes	9	8.6
	GIT disturbances	5	4.8
	High temperature	5	4.8
	Not Aware	86	81.9
If yes, please specify the source	Not aware	50	47.6
	DRF	5	4.8
	State cold chain store	6	5.7
	Open drug market	10	9.5
	Not applicable	34	32.4
What are your perceived impact(s) of the services provided on the Pharmacy practice (list two):	Promote professional relevance	13	12.4
	Prevent vaccine reactions	8	7.6
	Create more opportunities for Pharmacists	8	7.6
	Not applicable	76	72.4
What time do you usually administer immunization:	Morning	33	31.4
	Afternoon	7	6.7
	Evening	2	1.9
	None	63	60
How many support staff do you have?	1-2	18	17.1
	3-5	77	73.3
	5-10	10	9.5

Table 3. Shows the relevance of Pharmacy-based immunization to the Pharmacy profession and possible solutions to its barriers in Nigeria.

DISCUSSION

Previous studies have suggested a few strategies to tackle barriers associated with pharmacy-based immunization. From the current study, 86.7% of the respondents stated that they are willing to provide immunization services in their area of practice, 32.4% of the total respondents have attended seminars and training on immunization while 60.9% agreed, they can counsel patients on vaccine safety, immunologic reactions, and adherence issues. 40% stated they can personally administer vaccines, 23.8% have administered vaccines personally during their participation in national immunization programs (**Table 2**).

Some of the participants (67.7%) were ready to host and assist nurses to administer vaccines. 27.6% of the respondents were allowed to administer vaccines. 42.9% of the respondents noted that no laws are supporting pharmacists' participation in immunization, this is related to a report of some previous studies that legal constraints and legislative regulation as barriers to Pharmacy-based immunization. [22, 23] 65.7% of the Pharmacists agreed that lack of compensation or incentive was a major obstacle to Pharmacy-based immunization, this is inconsonant with another study, regarding lack of compensation or appreciation and cost of vaccination as barriers.[17, 18]; 42.9% stated that they cannot participate in immunization programs due to lack of time (availability of time), this could be due to lack of commitment of the Pharmacist and low political will, as such programs are not on daily basis. 60% are not able to involve in immunization because there was no support from other health professionals with weighted or average mean (WM), 4.0 of 5.0; as reported by a group of researchers, that inadequate communication healthcare providers and lack of strategic response, are barriers to pharmacy-based immunization [19, 20].

Also, 27.6% of the respondents agreed that patients' non-compliance is a major barrier to pharmacy-based immunization with WM, 3 of 5.0 which indicates that the perception of respondents was neutral. 37.1% also agreed that distance traveled by patients to vaccination points is also a barrier to pharmacy-based immunization, while 28.5% said prolong waiting time by patients is a barrier, in line with previous reports, (**Table 2**) [19, 20].

The respondents perceived immunization to be beneficial and safe for patients. 80.9% of the respondents agreed that vaccines are very safe for patients. 88.6% agreed that immunization is effective in protecting patients' immunity. 6% agreed while 86.6% disagreed with religion as a barrier to pharmacy-based immunization with WM, 2 of 5.0. Majority of the respondents (67.6%) had no previous involvement in immunization programs with WM, 4.3 of 5.0, only 32.4% has involve in immunization; this discourages young Pharmacists in participating in public health activities as the senior colleagues are not seen in the scene. Furthermore, above half of the respondents (52.4%) alleged they were never compensated after participating in immunization outreaches, hence affected their passion to participate, as captured in Figure 1. With Pharmacists involvement in immunization (Vaccinations), patient-health related risks such as potential and actual anaphylactic reactions can be properly managed, this will greatly benefit the community, and the country at large. Hence, Pharmacists play vital roles in vaccines education thereby preventing immunologic reactions and adverse reactions resulting from vaccines and provision of vaccines-post marketing surveillance [24].

CONCLUSION

The pharmacists' contributions in immunization activities, as well as obstacles and limitations to pharmacy-based immunization services, were carefully analyzed. Lack of compensation or incentive, availability of time, no support from other healthcare providers, absence of supportive laws for Pharmacists to participate or administer vaccines, patients non-compliance, unease access to vaccines, and inadequate cold chain or storage system were seen as the major barriers by Pharmacists, while distanced traveled by patients to vaccination sites, prolonged waiting time, previous immunologic adverse reactions affect patients compliance to scheduled immunization activities as stated by the Pharmacists that participated in the survey. Pharmacists are contributing positively towards immunization activities in Nigeria, as all the participants were involved in these activities and showed a willingness to participate in future advocacy programs to improve the individuals' quality of life in their communities.

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