Towards Effective Healthcare Delivery: An assessment of Public Perception of Pharmacist's role in Nigeria

Abstract

Background: Pharmacists have a vital function in the healthcare system, acting as intermediaries between patients and the intricate realm of pharmaceutical administration. Pharmacists have a range of tasks that go beyond simply giving out prescriptions. These include providing guidance to patients, managing medication therapy, resolving issues related to drug therapy, and educating people about healthcare, which is known as pharmaceutical care.

Aim: This study aims to assess the public perception of pharmacists' roles in healthcare delivery in Nigeria.

Methods: A cross-sectional survey was conducted using a structured questionnaire to collect data from a representative sample of the Nigerian population. The collected data was coded into Microsoft Excel 2016 and subsequently analyzed using IBM SPSS Statistics for Windows, Version 21.0. Descriptive statistics were utilized to summarize the data, providing an overview of the demographic characteristics and key findings.

Key Findings: The findings reveal that while a majority of respondents recognize the importance of pharmacists in healthcare, significant gaps in awareness and utilization were identified. Approximately 65% of participants expressed trust in pharmacists' professional advice, yet only 45% reported regularly consulting pharmacists for health-related issues

Conclusion and Implications: The study concludes that enhancing public awareness and trust in pharmacists could significantly improve healthcare delivery in Nigeria. The findings suggest the need for targeted educational campaigns and policy interventions to better integrate pharmacists into the healthcare system.

Keywords: Pharmacist, Pharmaceutical care, Perception, Healthcare, Public

Introduction

Pharmacists play a crucial role in the healthcare system, serving as a bridge between patients and the complex world of medication management [1]. Their responsibilities extend beyond the traditional role of dispensing medications to include patient counseling, medication therapy management, resolution of drug therapy problems (DTPs), and healthcare education [2]. However, the perception of their role can vary significantly depending on cultural, social, and systemic factors [3].

Nigeria, with a population exceeding 200 million, faces significant healthcare challenges, including a high burden of infectious and non-communicable diseases, limited access to healthcare services, and a shortage of healthcare professionals [4]. The Nigerian healthcare system is a mix of public and private providers, with pharmacists being an integral part of both sectors. The scope of practice for pharmacists in Nigeria has evolved, encompassing roles such as clinical pharmacy, community pharmacy, hospital pharmacy, industrial pharmacy, and academia [5]. Regulatory constraints, insufficient public awareness, and cultural attitudes towards healthcare providers often lead to the underutilization of pharmacists' full potential [5].

Public perception significantly influences the utilization and effectiveness of healthcare services [6]. Positive perceptions can lead to increased trust and collaboration between patients and pharmacists, thereby enhancing medication adherence, health literacy, and overall health outcomes [7]. Conversely, negative perceptions can hinder the pharmacist's ability to contribute effectively to patient care. Understanding public perception is therefore essential for developing strategies to optimize the pharmacist's role in the healthcare system [8]. The availability and knowledge of pharmacists, the promptness of their service, and the quality of their counselling services shaped public opinions [9]. Despite the critical role pharmacists play, there is limited research on how the public perceives pharmacists and the impact of these perceptions on healthcare outcomes [10]. Hence, this study aims to explore the public's perception of the pharmacist's role within the Nigerian medical system, a context marked by unique challenges and opportunities in healthcare delivery.

Methodology

Study Design and study population

This study was conducted among residents in the southeastern part of Nigeria between March and July 2024. A cross-sectional survey involving descriptive, non-experimental research methods was employed to investigate the public perception of the role of pharmacists. The study targeted adults (18 years of age and older) across various regions in the south-eastern part of Nigeria, ensuring a representative sample that includes other health workers. A sample size of a minimum of 200 respondents was determined using stratified random sampling to ensure diversity in terms of age, gender, socioeconomic status, and geographical location.

Survey Instrument and Administration

The study used a 23-item structured, self-administered questionnaire in simple English to guarantee target population comprehension. The questionnaire was divided into two main sections: Sections A and B. Section A gathered the respondents' personal data to facilitate a deeper understanding of the study population's demographic characteristics. Key parameters such as age, gender, educational level, work status, and marital status were included to provide a comprehensive demographic profile. Section B contained eighteen well-structured questions aimed at assessing the public's perception of the role of pharmacists within the Nigerian medical system. The questions focused on aspects such as the accessibility of pharmacists, the quality of services provided, trust in pharmacists, expertise, and the perceived importance of pharmacists in the healthcare delivery system. Additional questions explored respondents' experiences with pharmacists, their awareness of the pharmacists' scope of practice, and their satisfaction with pharmaceutical services. The study's objectives and procedures were clearly explained to potential participants, and informed consent (oral or written) was obtained from those who agreed to participate. Participants were instructed to complete the questionnaire individually, without consulting any external materials, to ensure the authenticity of their responses.

Inclusion/Exclusion Criteria

The study targeted a diverse population aged 18 years and above, specifically including healthcare workers, and people from other works of life within Nigeria. Participants encompassed a range of educational backgrounds, from non-educated individuals to those with primary, secondary, or tertiary education. The inclusion criteria were designed to capture a broad spectrum of different states in southeast, ensuring a representative sample. Conversely, the study excluded individuals under 18 years of age, Pharmacists, and anyone who did not consent to participate. This approach aimed to ensure the reliability and relevance of the findings to the targeted demographic and professional groups.

Data Analysis

The collected data was coded into Microsoft Excel 2016 and subsequently analyzed using IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp, Armonk, NY, USA). Descriptive statistics were utilized to summarize the data, providing an overview of the demographic characteristics and key findings. Thematic analysis was used to explain the data bringing out key details affecting the perception of pharmacists. Inferential statistics, specifically Pearson's Chi-square test, were employed where applicable to determine the relationships between variables. Statistical significance was established at a threshold of $P < 0.05$, ensuring that the results were robust and meaningful.

Results

Table 1 summarizes the sociodemographic characteristics of the study population. More than half of the middle-aged population (26–35 years old) represents about 52.2% of the respondents. The majority of the respondents have acquired one or more degrees in tertiary education (92.3%), while a paltry number (5.43%) hold a secondary school diploma. With respect to work status, 26.36% are healthcare workers, while 36.82% are students; civil servants (9.19%), traders (10.45%), and others comprise the rest. The bulk of the participants are single (87.73%), while about 4.36% are married.

Table 1. Sociodemographic Characteristics of the Study Population

S/N	Variable	Frequency	Percentage
1.	**Gender**		
	Male	138	62.72
	Female	82	37.27
2.	**Age (yrs.)**		
	18-25	88	40.0
	26-35	115	52.27
	36-45	12	5.45
	46-55	4	1.82
	Greater than 55	1	0.45
3.	**Educational level**		
	No Formal Education	1	0.45
	Primary Education	2	0.9
	Secondary Education	12	5.43
	Tertiary Education	206	93.21
4.	**Work status**		
	Healthcare Worker	58	26.36
	Civil Servant	20	9.09
	Trader	23	10.45
	Student	81	36.82
	Others	38	17.27
5.	**Marital status**		
	Single	193	87.73
	Married	25	11.36
	Divorced	2	0.91

The perception of the public regarding the roles and responsibilities of pharmacists is as shown in **Fig. 1,** the public perceives pharmacistsroles and responsibilities. Providing health advice and medication counseling took the lead, closely followed by managing medication therapy and dispensing medication. Less than 80 percent of respondents agreed that pharmacists administer vaccines while conducting health screenings, and less than 60 percent reported it.

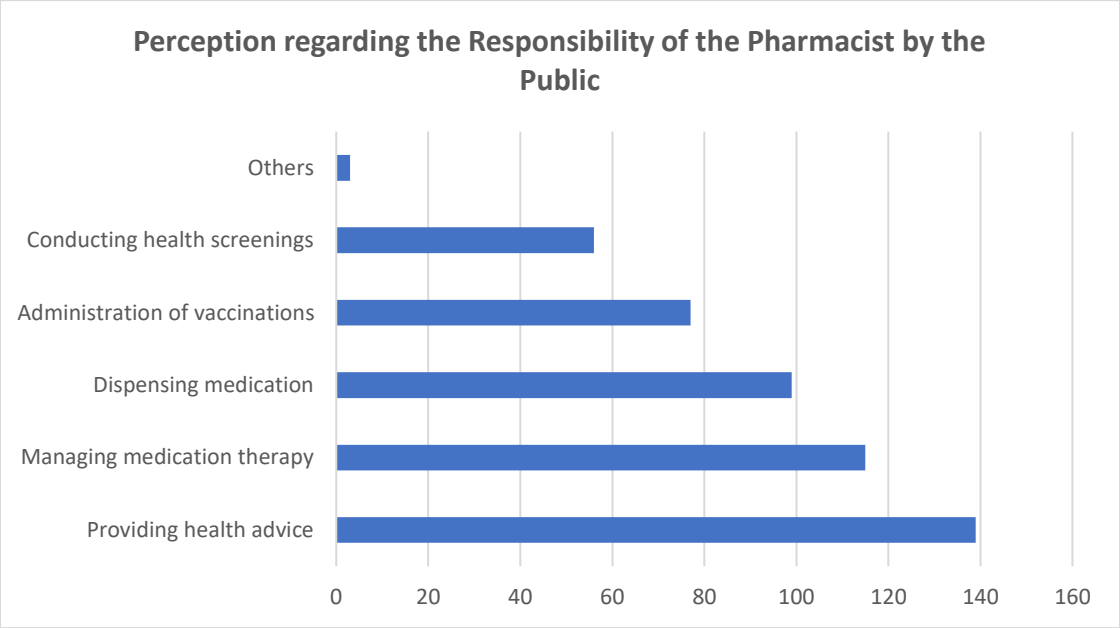

Fig 1. Bar chart showing the various perceptions the public has for pharmacists

Fig. 2 provides a graphic representation of the various sources that the public can use to familiarize themselves with the role and duties of a pharmacist**.** Media played the least role, while personal encounters represented the main route for more than half of the participants. Other healthcare professionals and training educational institutions are equal in their contribution to people's perceptions of pharmacists.

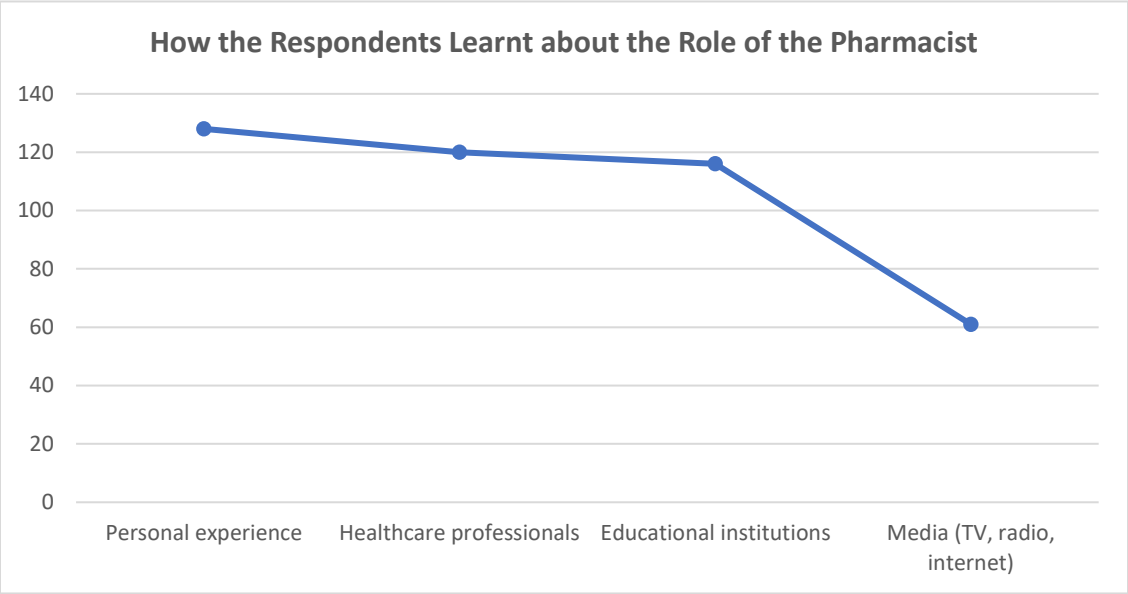

Fig 2. Line graph representing how the respondents learnt about the role of the pharmacist

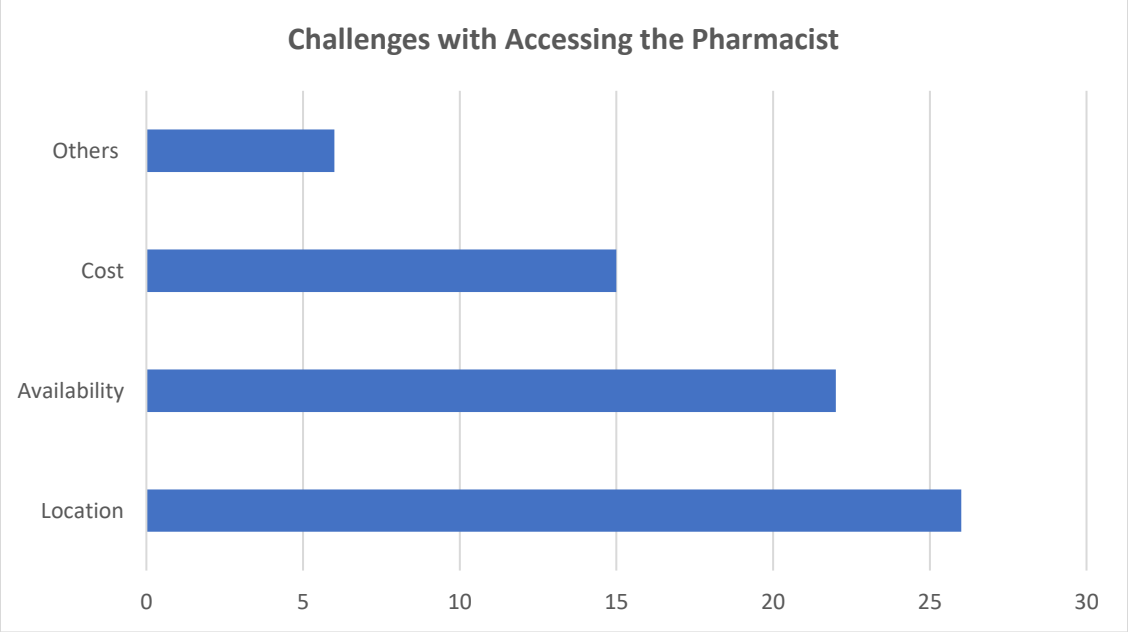

Fig 3. Respondents' challenges with access to the Pharmacists

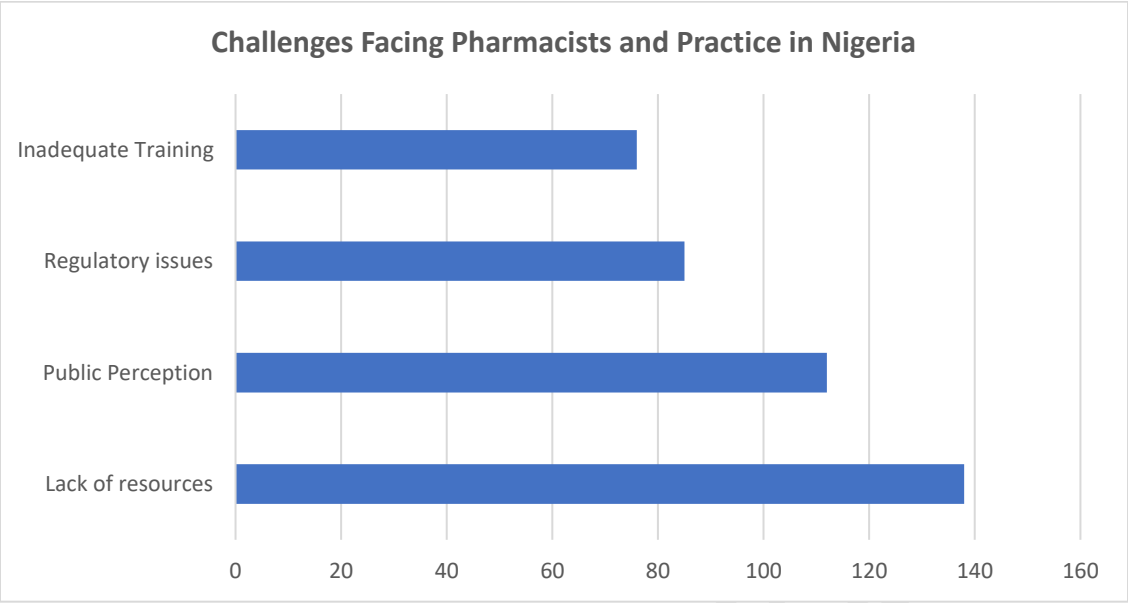

Fig 4. Challenges facing Pharmacists and Practice in Nigeria

Table 2 is a summary of the frequency distribution of key questions about the public's perception of pharmacists. The respondents generally understood very well the roles and responsibilities of the pharmacist (43.6%). When unwell, an equal number of patients consult the doctor (45%) and the pharmacists (44.5%). The majority of the respondents think that pharmacists are very important in the healthcare system (84.5%). Almost all the respondents have at one point received counseling from a pharmacist (94.1%). More than 50% expressed satisfaction with the counseling they received from the pharmacists. Interactions with the pharmacists are low, as 15% never get to meet them, while 57.7% rarely discuss with the pharmacist. The pharmacist's accessibility is high, as reported by more than 5% of participants.

Table 2. Key Perception Indices of Pharmacists by the Public

S/N	Question	Frequency	Percentage
1.	**Respondents' understanding of the role and responsibilities of a pharmacist.**		
	Very Well	96	43.6
	Well	75	34.1

	Somewhat	39	17.7
	Not at all	10	4.5
2.	**When unwell, the patient consults**		
	Doctor	99	45
	Pharmacist	98	44.5
	Nurse	11	5
	Lab Scientist	12	5.5
3.	**How important the respondent thinks pharmacists are in the healthcare delivery system**		
	Very important	186	84.5
	Important	32	14.5
	Somewhat important	2	0.9
	Not Important	Nil	Nil
4.	**Whether a respondent has ever received counseling from a pharmacist regarding their medication**		
	Yes	207	94.1
	No	13	5.9
5.	**Respondents' satisfaction with the counseling provided by the pharmacist**		
	Very Satisfied	110	50
	Satisfied	84	38.2
	Neutral	26	11.8
	Dissatisfied	Nil	Nil
	Very Dissatisfied	Nil	Nil
6.	**How often the respondent interacts with pharmacists**		
	Never	33	15
	Rarely	127	57.7
	Occasionally	60	27.3
	Frequently	Nil	Nil
7.	**Accessibility of the pharmacists in the respondents' community**		
	Very accessible	79	35.9
	Accessible	117	53.2
	Rarely accessible	21	9.5
	Not accessible	3	1.4
8.	**Difficulty accessing a pharmacist when needed**		
	Yes	50	22.7

	No	170	77.3

The study determined a chi-square-level association between the sociodemographic characteristics of the participants and key perception questions in **Tables 3, 4, and 5**. In **Table 3**, there were differences in who the patient consults first when ill across the various demographics. However, only the age of the participants differed significantly at $p<0.05$. Males consult more pharmacists and doctors than females. Participants aged 26–35 years and healthcare workers observed the same trend. The non-disparity in the number of times patients consulted pharmacists and doctors is an important point.

Table 3. Association between who the patient consults first when sick and the sociodemographic characteristics of the respondents

S/N	**Sociodemographic Variable**	**When you feel unwell, who do you consult first? N(%)**				**P-value**
		Doctor	Pharmacist	Nurse	Lab Scientist	
1.	**Gender**					**>0.05**
	Male	63 (63.6)	60 (61.2)	70 (63.6)	8 (66.7)	
	Female	36 (36.4)	38 (38.8)	4 (36.4)	4 (33.3)	
2.	**Age (yrs.)**					**(0.007) ***
	18-25	36 (36.4)	44 (44.9)	4 (36.4)	4 (33.3)	
	26-35	53 (53.5)	50 (51.0)	5 (45.5)	7 (58.3)	
	36-45	8 (8.1)	3 (3.1)	0 (0.0)	1 (8.3)	
	46-55	2 (2.0)	1 (1.0)	1 (9.1)	0 (0.0)	
	Greater than 55	0 (0.0)	0 (0.0)	1 (9.1)	0 (0.0)	
3.	**Work Status**					**>0.05**
	Healthcare Worker	32 (32.3)	24 (24.5)	2 (18.2)	0 (0.0)	
	Civil Servant	10 (10.1)	9 (9.2)	1 (9.1)	0 (0.0)	
	Trader	6 (6.1)	12 (12.2)	2 (18.2)	3 (41.7)	
	Student	33 (33.3)	41 (41.8)	3 (27.3)	4 (33.3)	
	Others	17 (17.2)	12 (12.2)	3 (27.3)	5 (25)	
4.	**Marital Status**					**>0.05**
	Single	87 (87.9)	85 (86.7)	9 (81.8)	12 (100)	
	Married	11 (11.1)	12 (12.2)	2 (18.2)	0 (0.0)	
	Divorced	1 (1.0)	1 (1.1)	0 (0.0)	0 (0.0)	

Table 4 is a snapshot of how the demographics of the respondents influence their perceptions of the importance of pharmacists in the healthcare setting. More males (62.4%) than females (37.6%) believe that pharmacists are very important. Healthcare workers underperformed (28.5%) compared to students (37.1%) in their perception of the importance of pharmacists. Except for the participants' education level, all the differences were not significant at $p<0.05$.

Table 4. Association between how important pharmacists are and the sociodemographic characteristics of the respondents

S/N	Sociodemographic Variable	How important do you think pharmacists are in the healthcare delivery system? N (%)				P-value
		Very important	Important	Somewhat important	Not important	
1.	**Gender**					**>0.05**
	Male	116 (62.4)	21(65.6)	1 (50.0)	Nil	
	Female	70 (37.6)	11 (34.4)	1 (50.0)	Nil	
2.	**Age (yrs.)**					**>0.05**
	18-25	76 (40.9)	12 (37.5)	0 (0.0)	Nil	
	26-35	96 (51.6)	17 (53.1)	2 (100)	Nil	
	36-45	12 (6.5)	0 (0.0)	0 (0.0)	Nil	
	46-55	2 (1.1)	2 (6.3)	0 (0.0)	Nil	
	Greater than 55	0 (0.0)	1 (3.1)	0 (0.0)	Nil	
3.	**Educational Level**					**<0.05**
	No Formal Education	0 (0.0)	1 (3.1)	0 (0.0)	Nil	
	Primary Education	1 (0.5)	0 (0.0)	0 (0.0)	Nil	
	Secondary Education	5 (2.7)	6 (18.8)	1 (50.0)	Nil	
	Tertiary Education	180 (96.8)	25 (78.1)	1 (50.0)	Nil	
4.	**Work Status**				**>0.05**	
	Healthcare Worker	53 (28.5)	4 (12.5)	1 (50.0)	Nil	
	Civil Servant	14 (7.5)	6 (18.8)	0 (0.0)	Nil	
	Trader	16 (8.6)	7 (21.9)	0 (0.0)	Nil	
	Student	69 (37.1)	12 (37.5)	0 (0.0)	Nil	
	Others	33 (17.7)	3 (9.4)	1 (50.0)	Nil	
5.	**Marital Status**					**>0.05**

	Single	164 (88.2)	27 (84.4)	2 (100.0)	Nil	
	Married	21 (11.3)	4 (12.5)	0 (0.0)	Nil	
	Divorced	1 (0.5)	1 (3.1)	0 (0.0)	Nil	

Table 5 highlights the association between the participants' perceptions of pharmacists' accessibility and their sociodemographic characteristics. At $p<0.05$, the perception of accessibility is not significantly different between males (59.5%) and females (40.5%). The highest level of access to pharmacists was reported by healthcare workers. This difference is significant at $p<0.05$.

Table 5. Association between the accessibility of the pharmacists and the sociodemographic characteristics of the respondents

S/N	**Sociodemographic Variable**	**How accessible do you find pharmacists in your community? N(%)**				**P-value**
		Very Accessible	Accessible	Rarely accessible	Not accessible	
1.	**Gender**					**>0.05**
	Male	47 (59.5)	78 (66.7)	10 (47.6)	3 (100)	
	Female	32 (40.5)	39 (33.3)	11 (52.4)	0 (0.0)	
2.	**Age (yrs.)**					**>0.05**
	18-25	26 (32.9)	54 (42.6)	8 (38.1)	Nil	
	26-35	46 (58.2)	53 (45.3)	13 (61.9)	Nil	
	36-45	6 (7.6)	6 (5.1)	0 (0.0)	Nil	
	46-55	1 (1.3)	3 (2.6)	0 (0.0)	Nil	
	Greater than 55	0 (0.0)	1 (0.9)	0 (0.0)	Nil	
3.	**Educational Level**					**>0.05**
	No Formal Education	0 (0.0)	0 (0.0)	1 (0.5)	0 (0.0)	
	Primary Education	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	
	Secondary Education	5 (6.0)	7 (6.3)	0 (0.0)	0 (0.0)	
	Tertiary Education	74 (93.7)	109 (93.2)	20 (95.2)	3 (100)	
4.	**Work Status**					**<0.05**
	Healthcare Worker	29 (36.7)	22 (18.8)	5 (23.8)	2 (66.7)	
	Civil Servant	10 (12.7)	8 (6.8)	2 (9.5)	0 (0.0)	

	Trader	7 (8.9)	14 (12.0)	2 (9.5)	0 (0.0)	
	Student	21 (26.6)	50 (42.7)	10 (47.6)	0 (0.0)	
	Others	12 (15.2)	23 (19.7)	2 (9.5)	1 (33.3)	
5.	**Marital Status**					**>0.05**
	Single	64 (81.0)	106 (90.6)	20 (95.2)	3 (100.0)	
	Married	15 (19.0)	9 (7.7)	1 (4.8)	0	
	Divorced	0	2 (1.7)	0	0	

Discussion

The pharmacist is an integral component of the healthcare system worldwide. They provide essential drug services that are critical for patients' robust clinical and humanistic outcomes [11]**.** From dispensing medication to medication monitoring, from providing drug information to optimizing drug therapy, the pharmacist is involved in all aspects of patient care. Just like every other profession, pharmacists serve the community around them, and thus this interaction creates a perception among the community dwellers [12]. Perceptions, in turn, shape the extent of trust and reliance the community has in them to carry out their duties. This study evaluated the public perception of pharmacists among residents of Southeastern Nigeria. The results of this study will provide an objective assessment of pharmacists and their roles based on the public opinion poll and thus crucial for understanding the societal value attributed to pharmacists and identifying areas where their contributions can be optimized. The findings highlight both the positive views and the challenges faced by pharmacists, which can inform future healthcare policies and practices.

Pharmacy is as old as the medical profession and has taken gentle strides to expand in scope and complexity, encompassing all aspects of healthcare [13]. Pharmacy has evolved across the globe, and today's modern pharmacists play a critical role in ensuring the efficacy and safety of medical products in use. In Nigeria, since the opening of the first medical store in 1887 by Mr. Zaccheus Bailey, the pharmacist profession has seen a robust transformation to its outstanding role in the healthcare profession today [14]. Today, pharmacists are at the forefront of pharmaceutical care services. Pharmaceutical care aims to provide responsible and conscientious drug therapy within

an integrated health system to achieve optimal medication outcomes and increase patient satisfaction, thereby improving patients' quality of life. This signifies that pharmacists play an inestimable role in the healthcare system [15]. In our study, many of the respondents said that pharmacists are known for providing medication counseling and medication therapy management, while their role in just dispensing medications came in third. This shows a marked change or improvement in the perception of pharmacists as not just storekeepers but an integral component of the healthcare team tasked with ensuring optimum clinical outcomes for patients. In Poland, pharmacists enjoyed a reasonable repute among patients, as positive perception remains high, though much education is still needed to encourage patients to seek out the broad pharmaceutical care services provided by the pharmacist [16]. A study in Pakistan noted that the public had a high level of knowledge and perception regarding the various roles and responsibilities of pharmacists, while their understanding of the pharmacist's rational drug therapy remained moderate [17]. Most of the study participants agree that, like doctors and nurses, pharmacists are an essential part of the health care system [17]. The general public in Pakistan conceived pharmacists as an authentic source of drug information and believed in them as an important member of the healthcare team due to their ability to provide adequate treatment guidelines for most illnesses [18]. Since the seminal work in 2001 by Oparah and Iwuagwu, few studies have highlighted the public view of services provided by pharmacists in Nigeria. Oparah and Iwuagwu noted a moderately positive perception and rating of community pharmacists by the public. They advocated the need for pharmacists to carve out a distinct professional niche for themselves [19]**.** A study in 2014, made a similar assessment among the public in Delta State, Nigeria, and they noted only a slight improvement in perception [20]**.** A study conducted among the general public at the University of Nigeria Nsukka found a very high positive perception of pharmacists and their activities among the university community [21]. This shows an improvement in public perception, especially with the rise in education and knowledge among the people about the roles and responsibilities of pharmacists.

Many respondents also highlighted pharmacists in relation to giving vaccinations. Vaccination has traditionally been associated with doctors and nurses. The COVID-19 pandemic created an emergency that required optimum use of the available healthcare workforce to provide massive immunization and health information needed [22]. We deployed community pharmacists to vaccinate as many people as possible, aiming to reduce burnout among nurses and doctors. This

revolutionized the role of pharmacists in that regard. In a meta-analysis, pharmacist involvement as an immunizer and/or advocate profoundly impacted the uptake of the influenza vaccine in the United States and most developed economies [23]. In Nigeria, one year after the pandemic, pharmacists' readiness to participate in immunization has increased tremendously [24].

Access to pharmacists is a critical issue highlighted by the correlation analysis in this study. Access to pharmacists represents general access to quality medicines since pharmacists are the custodians of medicines [25]. The concentration of most community pharmacists in cities leaves rural and semi-rural areas without these essential services. While all tertiary and some secondary care facilities in Nigeria boast pharmaceutical services, their outreach and coverage remain poor. Meanwhile, the pharmacists working in these hospital settings make up less than half of the total pharmacist workforce. In another work, it was noted that more than half (56.2%) of the pharmacist workforce in Nigeria practices in a community setting, with close to 90% concentrated in urban regions [26]. Though this number must have significantly improved since then, the distribution essentially remains the same. Ekpenyong et al. noted similar trends in their study the following year [27]. He further demonstrated that the southwestern region of Nigeria is home to more than one-third of the pharmacist workforce. The fact that we conducted our study in southeastern Nigeria may have influenced the quality of access we reported. In the same vein, the absence of urban-rural stratification in this study might also complicate our findings and conclusions.

In Nigeria, there are three strata of healthcare delivery, well represented by the primary, secondary, and tertiary health facilities. Patients always prioritize primary healthcare, with secondary and tertiary facilities serving as referral centers for specialists handling complex cases [14]. Our study revealed that patients contacted pharmacists as frequently as doctors when they felt unwell. This represents the ever-expanding role of the pharmacist in primary healthcare delivery in Nigeria. The primary healthcare level is tasked with public health: grassroots immunization, emergency response to disease outbreaks, and massive health education and awareness. A profound challenge that necessitates this is Nigeria's acute shortage of available healthcare workers [28]. Pharmacists in Nigeria, especially community pharmacists, have become the preferred point of contact for patients with various ailments, making a significant contribution to primary healthcare delivery in the country. Interventions led by community pharmacists have provided robust disease prevention and drug-related care outcomes in Nigeria [29]. Community pharmacists are key to achieving

universal health coverage, especially in a resource-poor country like Nigeria. Ihekoronye and Osemene, using a mixed-methods survey, assessed community pharmacists' impact and level of participation in primary healthcare. Across the eight domains of primary healthcare, pharmacists performed well in treating endemic diseases, disease prevention, and vaccine administration [30]**.**

Conclusion

Pharmacists' roles are expanding, and the public expects their perception to align for effective delivery. Pharmacists' positive perception and integral role in the healthcare workforce stem from their ability to provide counseling and other pharmaceutical care services beyond the normal dispensing of medications, as well as their provision of basic primary healthcare needs like vaccination. We also noted that issues like access to pharmaceutical care services negatively impact the public's perception of pharmacists. The pharmacists, on the other hand, hold the key to projecting themselves beyond their traditional roles as worthy stakeholders in the healthcare system. Through engagement and education, the public can then be brought to appreciate the vital role pharmacists hold in addressing their medication and health needs.

Limitations

Most of the statistical significance seen among the level of education group can be attributed to selection bias as most of the respondents have one or more degree from tertiary institutions. Also, there was no urban versus rural stratification in our demography which might also affect the generalizability of the results

Ethical Approval and Consent

Ethical approval was sought and obtained from Research and Ethics committee of University of Nigeria Teaching Hospital Ituku-Ozala (NHREF/04/08/2022B-FWA00002458-IRB00002323). Informed consent was obtained from all participants, ensuring they were fully aware of the study purpose and their role in it. The confidentiality and anonymity of the respondents were maintained throughout the study, protecting their personal information and ensuring that their responses

remained private. These measures upheld the ethical standards necessary for conducting responsible and respectful research.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of manuscripts.

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