Assessment of Pharmacists' Knowledge, Attitudes, Barriers and Readiness in implementing Pharmaceutical Care in Lagos state, Nigeria

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ARTICLE INFO

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ABSTRACT

Background: Pharmaceutical care is an innovative practice philosophy that pharmacists in many countries have been employing to improve the health outcomes of patients. However, pharmacists employing pharmaceutical care services have their limitations and barriers. Other researchers have conducted many studies on knowledge, attitudes, and barriers in other states but little or no work has been done on the readiness of pharmacists to provide pharmaceutical care. More research needs to be done in this area by researchers in Lagos state, Nigeria. This study assessed the knowledge, attitude, barriers, and readiness of pharmacists practicing in Lagos state, Nigeria, to employ pharmaceutical care in their practice and also to determine the possible association between the socio-demographic characteristics with knowledge, attitudes, barriers, and readiness of pharmacists in providing pharmaceutical care.

Methods: A cross-sectional online structured questionnaire-based survey of 377 consenting community and hospital pharmacists in Lagos, Nigeria, between August and September 2023 was used for this study after meeting the inclusion criteria. Descriptive (frequencies, mean, and percentages) and inferential statistics (Chi-square) were done with the Statistical Package for Social Sciences (SPSS), with the level of significance set at <0.05. The mean score was used to categorize the knowledge of respondents (a score of the mean value and above was considered good knowledge and vice-versa), and a mean score was also used to categorize attitude with similar consideration.

Results: The pharmacists showed good knowledge at a mean score ≥ 0.87 and favourable attitude at a mean value ≥ 3.76 towards pharmaceutical care. The unavailability of established communication channels with physicians was the most significant barrier agreed by the respondents, with 333 (88.3%) of the respondents identifying that. Pharmacists in Lagos state, Nigeria, demonstrated readiness to provide pharmaceutical care services, with 353 of the respondents (93.6%) adequately prepared and ready to provide pharmaceutical care. There was a significant relationship between the respondents' qualification level and their attitude towards pharmaceutical care and between practice setting and barriers to providing pharmaceutical care with the level of significance set at <0.05

Conclusion: The respondents generally showed good knowledge and favourable attitude towards pharmaceutical care in Lagos state, Nigeria. They also demonstrated readiness to provide pharmaceutical care. Still, for some barriers limiting them, the unavailability of established communication channels between physicians and pharmacists was the most limiting barrier. An improved working relationship and collaboration between members of Pharmaceutical Society of Nigeria and Medical and Dental Council of Nigeria will greatly reduce this significant barrier.

1.   INTRODUCTION

Pharmacists are usually the first point of contact when purchasing medicines and counselling on health problems in Nigeria. Pharmacists were compounders and distributors of drugs, which were product-focused but pharmacy practice have evolved to include patient care which is popularly known as pharmaceutical care [1]. The Pharmaceutical Care goals are to improve the patient's quality of life and achieve positive clinical outcomes within reasonable financial constraints [2]. The core objectives of Pharmaceutical Care centers on the duty of pharmacists to assist patients in addressing all of their drug-related needs

by collaborating with the patients and other health care professionals [3]. In several nations in the west, pharmaceutical care has been introduced and implemented, and studies have demonstrated improved patient results [4] while in Nigeria, there are factors limiting the growth of pharmaceutical care which includes lack of private counselling area, limited counselling time and inter-professional rivalry [5].

The practice of Pharmaceutical Care amongst pharmacists all over the world continues to expand and get attention amongst pharmacists, however there are some challenges impeding its provision in some countries especially in Africa e.g. Nigeria [6]. A cross-sectional survey in Africa, specifically Ibadan, Nigeria, evaluated the attitude, practice, and barriers to pharmaceutical care among community pharmacists in 2022, with about (115; 95.8%) of respondents having good practice of pharmaceutical care. However, about (62; 52.0%) had a positive attitude, and (117; 97.5%) believed more pharmaceutical care could be provided. Regarding their practice, most respondents (118; 98.3%) stated pharmaceutical care involves monitoring patient response, adherence to treatment regimes, and counselling patients with drug therapy problems. The survey's top detected barriers to pharmaceutical care provision included insufficient time (71; 59.2%) and inadequate collaboration with other healthcare professionals (56; 46.7%) [7], this was collaborated by another study in Poland which also noted the lack of sufficient time as a barrier in employing pharmaceutical care [8] while in Asia, specifically Malaysia, the study conducted found out that the main barrier identified in the implementation of pharmaceutical care services was lack of separation between prescribing and dispensing by a majority of the respondents (84.0%) [9].
Another study done in Ethiopia depicted that 85.9% of the respondents had good knowledge of pharmaceutical care and found a significant level of relationship between pharmacists' knowledge and their practice setting (value = 0.008) [10].

Studies of similar topics have also been carried out in Delta State, Ogun State, and some other states in Nigeria. Still, they are limited in Lagos State, Nigeria, including studies on pharmacists' readiness to implement pharmaceutical care and the relationship between socio-demographic factors and pharmacists' knowledge, attitude, barriers, and readiness in providing pharmaceutical care. The provision of pharmaceutical care services should be non-negotiable and must be emphasized as the need for pharmacotherapy increases. Therefore, it is imperative to undertake this study to include the assessment of pharmacists' readiness in Lagos, Nigeria, to deliver pharmaceutical care.
This study aims to assess the knowledge, attitudes, barriers, and readiness of community and hospital pharmacists in providing pharmaceutical care, as well as determine the possible association between the socio-demographic characteristics with knowledge, attitudes, barriers, and readiness of pharmacists in providing pharmaceutical care in Lagos state, Nigeria.

2. MATERIALS AND METHODS

2.1. Study design
A cross-sectional design was conducted to assess the knowledge, attitude, readiness and barriers in employing pharmaceutical care by community and hospital pharmacists in Lagos state, Nigeria, as well as determine the possible association between the socio-demographic characteristics with knowledge, attitudes, barriers, and readiness of pharmacists in providing pharmaceutical care in Lagos state, Nigeria.

2.2. Study area and setting
The study area is in Lagos state which is the most populous city in Nigeria as well as Africa with an estimated population of 13.5 million in 2022 according to the National Population Commission [11]. The Public and Private Development Centre also reported that Lagos has a total of 2253 primary, secondary and tertiary health facilities combined [12].

2.3. Study criteria
Pharmacists working in Lagos state, Nigeria were included in the study using the inclusion and exclusion criteria.
Inclusion criteria
- o Pharmacists working in community and hospital pharmacies (public and private) in Lagos state, Nigeria.
- o Pharmacists who have worked in a community or hospital pharmacy for at least one year.

Exclusion criteria
- o Intern pharmacists
- o Pharmacists working outside Lagos state, Nigeria
- o Pharmacists working in manufacturing and distribution companies, academia.
- o Pharmacists on annual leave

2.4. Sampling techniques and sample size determination

Well structured, online questionnaire using google forms was distributed to pharmacists working in community, hospital pharmacies, and online groups dedicated for pharmacists working in Lagos state, Nigeria. E.g. Pharmaceutical Society of Nigeria Young Pharmacists Group Lagos (PSN-YPG Lagos). Informed consent was sought for and obtained from respondents before filling the online questionnaire. The sample size was determined using Raosoft sample size calculator. The sample size of 377 was used and this number was achieved by inputting the parameters needed. Population size was taken to be 20000, 5% margin of error, 95% confidence level and 50% response distribution were used.

2.5. Data collection instrument and technique

Data was collected through a Google Form questionnaire and distributed in online groups dedicated to pharmacists working in Lagos state, Nigeria, e.g., Pharmaceutical Society of Nigeria Young Pharmacists Group Lagos (PSN-YPG Lagos). Pharmacists in hospitals and community practices in Lagos were given an online questionnaire with an adequate explanation of its voluntary and confidential nature. The purpose of the online questionnaire was adequately explained to the pharmacists before the administration of the online questionnaires.

The questionnaire was developed by the investigators following extensive reviews of other relevant literatures. The questionnaire consist of four parts. Part A captures the socio-demographic characteristics. Part B consisted of 5 questions which comprises the knowledge of pharmaceutical care among respondents and was designed using a dichotomous response format consisting of 'Yes' and 'No'. Part C used 8 statements to assess the attitudes of pharmacists to pharmaceutical care with a 5-Likert-type scale and 5 statements to determine the barriers experienced in providing pharmaceutical care using a dichotomous response format consisting of 'Yes' and 'No'. Part D comprises of 7 statements on the readiness of the respondents in employing pharmaceutical care in Lagos, Nigeria using a dichotomous response format also. The questionnaire was subjected to expert assessment for content validity by pharmacists in academia from the Department of Clinical Pharmacy and Pharmacy Administration, University of Nigeria, Nsukka, and pharmacist researchers from National Hospital, Abuja. Also, the questionnaire was pre-tested by pharmacists in community and hospital pharmacies to assess the questions' accuracy, ambiguity, and comprehensibility.

2.5. Data processing and analysis

The data collected were coded and entered into Microsoft excel for data cleaning, checked for appropriateness and the cleaned data was exported into Statistical Package for the Social Sciences (SPSS) version 25.0 for data analysis. Descriptive statistical analysis (frequency and percentage) was used to summarize the results.

For the knowledge, barriers and readiness questions/statements, a score of 1 was used for a 'Yes' answer and a score of 0 for 'No' answer. A cumulative mean score of 0.87 for knowledge of participants about pharmaceutical care was estimated. Based on this, those who had scored less than the mean was considered to have "poor knowledge" and those who had scored greater than or equal to the mean value were considered as having "good knowledge" while for readiness a mean score of 0.83 and above was considered as a "Yes" whereas those scores below mean value were thought of as having a "No." A mean value of 0.65 was calculated for barrier, those scores at the mean value and above was considered a "Yes" whereas those scores below the mean value was considered "No". A Likert-type summation of scores was used for the attitude questions with rating from 1 - strongly disagree to 5 - strongly agree was utilized to measure the extent to which the respondents agreed with 8 statements related to pharmaceutical care (total of each respondent score was made to range between 8 and 40). A score of mean value of 3.76 and above was considered as a "favourable attitude" whereas those scores below mean value were thought of as having an "unfavourable attitude."

The negatively worded questions in the knowledge section were reversed during analysis so as to align the scores.
Chi-Square test was also performed to determine the association between the socio-demographics and the level of knowledge, attitude, barriers and readiness of pharmacists on pharmaceutical care. P-values

TABLE 1: Sociodemographic characteristics of respondents (n = 377)

Variables	Frequency	(%)
Age(years)		
21-30	290	76.9
31-40	74	19.6
41-50	9	2.4
51-60	4	1.1
Gender		
Female	179	47.5
Male	198	52.5
Marital Status		
Married	75	19.9
Separated/Divorced	1	0.3
Single	301	79.8
Highest qualification		
B. Pharm	353	93.6
Pharm.D	15	4.0
M.Pharm	8	2.1
Ph.D	1	0.3
Practice settings		
Community Pharmacy	289	76.7
Hospital Pharmacy	88	23.3
Years of practice/experience		
1-5	325	86.2
6-10	43	11.4
>10	9	2.4
Average number of client visits daily		
101-200	33	8.8
51-100	113	30.0
>200	15	4.0
0-50	216	57.3

3.2. Pharmacists' knowledge of pharmaceutical care

About 375 (99.5%) of the respondents understood the concept of pharmaceutical care as a method of delivering patient-centered medication management services. Also, 366 (97.1%) of the respondents understood the primary responsibility of pharmaceutical care to identify, prevent, and resolve any drug therapy problem encountered, 277 (73%) of the respondents acknowledged the fact that providing pharmaceutical care is not intended to take away the roles of medical doctors, and 285 (75.6%) of the respondents did not believe that during pharmaceutical care, the pharmacist intervention and recommendations should supersede the decisions and views of the medical doctors and other health care of professionals in the health care team. Generally, the respondents (58.1%) had good knowledge of pharmaceutical care.

TABLE 2: Knowledge of pharmaceutical care by pharmacists

No	Knowledge Assessment Question	Yes, n (%)	No, n (%)	Mean
1	Pharmaceutical care is a method of delivering medication management services which is patient - centred	375 (99.5) *	2 (0.5)	0.99
2	Pharmaceutical care acknowledges the pharmacist's intent in taking the roles of physicians	100 (26.5)	277 (73.5) *	0.74
3	The main responsibility of pharmaceutical care is to identify, prevent and resolve any drug therapy problem encountered.	366 (97.1) *	11 (2.9)	0.97
4	In pharmaceutical care pharmacist i ntervention and recommendations should supersede the decisions and view of the medical doctors and other health care of professionals in the health care team	92 (24.4)	285 (75.6) *	0.76
5	It does not involve the practice of optimizing the outcome of medic ation therapy for the patients	32 (8.5)	345 (91.5) *	0.92

* correct answer based on authors opinion

3.3. Pharmacists' attitude towards pharmaceutical care

From the results obtained in Table 3, more than half (64.2%) of the respondents strongly agreed that pharmaceutical care is a promising innovation to pharmacy practice and 253 (67.1%) strongly believed that all pharmacists in direct contact with patient care should practice pharmaceutical care with 61% feeling happy and fulfilled when providing pharmaceutical care to their clients though currently, 46.7% of the study participants provide pharmaceutical care to their clients.

Less than half (44%) of the study participants agreed that they have attended capacity building on providing pharmaceutical care to their clients while 46.2% of the study participants agreed that they are willing to sponsor themselves to trainings on pharmaceutical care. More than 62.1% of the respondents strongly disagreed with the idea that pharmaceutical care is not important because patients rarely demand it. Generally, a significant number of the respondents 342 (90.7%) showed favourable attitude to pharmaceutical care.

TABLE 3: Attitude of pharmacists towards pharmaceutical care

No	Attitude Assessment Question	n (%)					Mean
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
1	Pharmaceutical care is a promising innovation to pharmacy practice	242(64.2)	88(23.3)	8(2.1)	2(0.5)	37(9.8)	4. 32
	I provide pharmaceutical care to all my patients	141(37.4)	176(46.7)	28(7.4)	13(3.4)	19(5.0)	4.07
3	Providing pharmaceutical care does not make my job stressful	83(22.0)	136(36.1)	74(19.6)	64(17.0)	20(5.3)	3.53
4	I attend workshops that help build my capacity to provide pharmaceutical care to clients	76(20.2)	166(44.0)	98(26.0)	24(6.4)	13(3.4)	3.71
5	Pharmaceutical care is not important since patients rarely demand it	5(1.3)	11(2.9)	13(3.4)	114(30.2)	234(62.1)	1.51

6	All pharmacists in direct contact with patient care should practice pharmaceutical care	253(67.1)	96(25.5)	10(2.7)	5(1.3)	13(3.4)	4.52
7	I feel happy and fulfilled providing pharmaceutical care to my clients	230(61.0)	124(32.9)	11(2.9)	1(0.3)	11(2.9)	4.49
8	I am willing to sponsor myself to trainings on pharmaceutical care	116(30.8)	174(46.2)	70(18.6)	6(1.6)	11(2.9)	4.00

3.4. Pharmacists' barriers to providing pharmaceutical care

More than half, 205 (54.4%) of the respondents from this study found lack of sufficient time as a barrier to providing pharmaceutical care, and 191 (50.7%) acknowledged lack of counseling room as another barrier. Most pharmacists, 333 (88.3%) identified the unavailability of established communication channels with physicians as a massive barrier to providing pharmaceutical care by depriving pharmacists of access to patient medical records. Another barrier is the lack of a sufficient workforce in their facilities, identified by 241 (63.9%) respondents. In comparison, a lack of a good remuneration package was identified by 262 (69.5%) of the respondents.

TABLE 4: Barriers to pharmacists' provision of pharmaceutical care

No.	Barriers to pharmacists' provision for pharmaceutical care	Yes, n (%)	No, n (%)	Mean
1	I lack sufficient time to provide pharmaceutical care	205(54.4)	172(45.6)	0.54
2	Lack of counselling room to interact with clients	191(50.7)	186(49.3)	0.51
3	Unavailability of established communication channels with physicians consequently may deprive pharmacist access to patient medical records	333(88.3)	44(11.7)	0.88
4	Absence of sufficient workforce (pharmacists) in my facility	241(63.9)	136(36.1)	0.64
5	Lack of standard remuneration discourages one from providing pharmaceutical care to patients	262(69.5)	115(30.5)	0.71

3.5. Pharmacists' readiness to providing Pharmaceutical care

Most of the respondents (88.6%) stated that the management of their facilities support the provision of pharmaceutical care and a large proportion of the respondents (93.6%) reported that they were adequately prepared and ready to provide pharmaceutical care while 97.9% of the pharmacists were ready to follow up on their clients and monitor their progress during pharmaceutical care. Also, almost all the respondents (99.7%) stated they were open to embracing new innovations in delivering pharmaceutical care and 98.4% of the respondents were willing to take trainings or short courses to improve their pharmaceutical care skills. Generally, 368 (97.6%) of the respondents were ready to provide pharmaceutical care in their facilities.

TABLE 5: Readiness of pharmacists to provide pharmaceutical care

No	Readiness of pharmacists to provide pharmaceutical care	Yes (%)	No (%)	Mean
1	I am willing to follow up on my clients and monitor their progress	369(97.9)	8(2.1)	0.98
	I would take trainings or short courses to improve my pharmaceutical care skills	371(98.4)	6(1.6)	0.98
3	My facility has an established system for receiving and managing feedback from patients	202(53.6)	175(46.4)	0.54
4	I have sufficient time to provide pharmaceutical care	189(50.1)	188(49.9)	0.51
5	The management of my organization supports the provision of pharmaceutical care	334(88.6)	43(11.4)	0.89
6	I am open to embracing new innovations in delivering pharmaceutical care	376(99.7)	1(0.3)	0.99
7	I am adequately prepared and ready to provide pharmaceutical care	353(93.6)	24(6.4)	0.94

3.6. Factors associated with knowledge, attitudes, barriers, and readiness of pharmacists' to providing pharmaceutical care

Pearson chi-square was used to determine the association between socio-demographic characteristics (age, gender, marital status, highest qualification, practice settings, number of practice years, average number of clients visits daily) and knowledge, attitude, barriers, and readiness of pharmacists towards providing pharmaceutical care services. There were significant relationship between attitude and qualifications at a p-value of 0.012 and another significant relationship was observed between barriers and practice settings at a p-value of 0.042.

TABLE 6: Factors associated with knowledge, attitude, barriers and readiness of pharmacists in employing pharmaceutical care in Lagos, Nigeria

VARIABLES	KNOWLEDGE				ATTITUDE				BARRIERS				READINESS			
	Poor f(%)	Good f(%)	p-value	Pearson chi-square	Unfavourable f(%)	Favourable f(%)	p-value	Pearson chi-square	Yes f(%)	No f(%)	p-value	Pearson chi-square	Yes, f(%)	No f(%)	p-value	Pearson chi-square
Age(years)																
21-30	121(32.3)	167(44.5)	0.935	0.424	29(7.7)	261(69.2)	0.653	1.628	201(53.3)	89(23.6)	0.371	3.138	283(75.1)	7(1.9)	0.950	0.350
31-40	30(8.0)	44(11.7)			6(1.6)	68(18.0)			51(13.5)	23(6.1)			72(19.1)	2(0.5)		
41-50	3(0.8)	6(1.6)			0(0.0)	9(2.4)			4(1.1)	5(1.3)			9(2.4)	0(0.0)		
51-60	2(0.5)	2(0.5)			0(0.0)	4(1.1)			2(0.5)	2(0.5)			4(1.1)	0(0.0)		
Gender																
Female	69(18.4)	109(29.1)	0.290	1.122	10(2.7)	169(44.8)	0.019	5.532	113(30.0)	66(17.5)	0.035	4.443	172(45.6)	7(1.9)	0.065	3.394
Male	87(23.2)	110(29.3)			25(6.6)	173(45.9)			145(38.5)	53(14.1)			196(52.0)	2(0.5)		
Marital Status																
Married	31(8.3)	44(11.7)	0.495	1.408	5(1.3)	70(18.6)	0.644	0.879	48(12.7)	27(7.2)	0.212	3.098	73(19.4)	2(0.5)	0.973	0.054
Separated/Divorced	1(0.3)	0(0.0)			0(0.0)	1(0.3)			0(0.0)	1(0.3)			1(0.3)	0(0.0)		
Single	124(33.1)	175(46.7)			30(8.0)	271(71.9)			210(55.7)	91(24.1)			294(78.0)	7(1.9)		
Highest qualification																
B.Pharm	147(39.2)	204(54.4)	0.595	1.892	32(8.5)	321(85.1)	0.012*	10.902	244(64.7)	109(28.9)	0.412	2.870	345(91.5)	8(2.1)	0.270	3.924
PharmD	5(1.3)	10(2.7)			2(0.5)	13(3.4)			9(2.4)	6(1.6)			15(4.1)	0(0.0)		
M.Pharm	3(0.8)	5(1.3)			0(0.0)	8(2.1)			5(1.3)	3(0.8)			7(1.9)	1(0.3)		
Ph.D.	1(0.3)	0(0.0)			1(0.3)	0(0.0)			0(0.0)	1(0.3)			1(0.3)	0(0.0)		
Practice settings																
Community Pharmacy	120(32.0)	167(44.5)	0.881	0.023	25(6.6)	264(70.0)	0.443	0.590	190(50.4)	99(26.3)	0.042*	4.151	284(75.3)	5(1.3)	0.130	2.295
Hospital Pharmacy	36(9.6)	52(13.9)			10(2.7)	78(20.7)			68(18.0)	20(5.3)			84(22.3)	4(1.1)		
Number of practice years																
1-5	140(37.3)	183(48.8)	0.98	4.646	31(8.2)	294(78.0)	0.623	0.946	229(60.7)	96(25.5)	0.077	5.126	316(83.8)	9(2.4)	0.478	1.475
6-10	15(4.0)	28(7.5)			4(1.1)	39(10.3)			25(6.6)	18(4.8)			43(11.4)	0(0.0)		
>10	1(0.3)	8(2.4)			0(0.0)	9(2.4)			4(1.1)	5(1.3)			9(2.4)	0(0.0)		
Average Number of patients daily																
>200	8(2.1)	7(1.9)	0.479	2.478	3(0.8)	12(3.2)	0.064	7.267	10(2.7)	5(1.3)	0.934	0.432	15(4.0)	0(0.0)	0.533	0.533
101-200	14(3.7)	19(5.1)			6(1.6)	27(7.2)			22(5.8)	11(2.9)			32(32.5)	1(0.3)		
51-100	41(10.9)	72(19.2)			6(1.6)	107(28.4)			80(21.2)	33(8.8)			112(29.7)	1(0.3)		
0-50	93(24.8)	121(32.3)			20(5.3)	196(52.0)			146(38.7)	70(18.6)			209(55.4)	7(1.9)		

*statistically significant

4. DISCUSSION

This study aimed to assess pharmacists' knowledge, attitudes, barriers, and readiness towards pharmaceutical care in Lagos State, Nigeria, and to determine the possible association between the socio-demographic characteristics with knowledge, attitudes, barriers, and readiness of pharmacists in providing pharmaceutical care. The study involved 377 participants, with a slightly higher proportion of male respondents (52.5%) than females (47.5%). Most participants (76.9%) were young pharmacists aged 21-30, with 86.2% having only 1-5 years of practice experience. Community pharmacy was the primary practice setting for 76.7% of participants, while 23.3% practiced in hospital pharmacy.

Regarding knowledge, the findings indicated that more than half of the respondents 219 (58.1%) had good knowledge of pharmaceutical care, and this was in tandem with a similar study in Qatar [13], in Jordan [14], in Rivers and Bayelsa States, Nigeria [15] but discordant with the study in Saudi Arabia [16]. Our study found that 99.5% of pharmacists agreed that pharmaceutical care is a patient-centered medication management service, which was also consistent with the study in Northwest China [17] and similar study in Jamaica showed 94.3% of respondents shared this understanding [18]. Moreover, 73.5% of participants in this study recognized that pharmaceutical care does not intend to replace physicians' roles.

On attitudes, 342 (90.7%) of the respondents had favourable attitudes towards Pharmaceutical care, similar to another study in Ogun State, Nigeria [19] and Turkey but at a lower percentage of 86.8% of the respondents in Turkey [20]. The favourable attitude toward pharmaceutical care among pharmacists is promising, and this could be a result of increased awareness of pharmacists' roles in pharmaceutical care and the tailored training of pharmaceutical care in pharmacy schools. About 64.2% of the respondents strongly agreed that pharmaceutical care is a promising innovation, and 67.1% believed all pharmacists in direct patient care should practice pharmaceutical care. This indicates an improvement in pharmacists' attitudes toward incorporating pharmaceutical care, consistent with studies in Delta State, Nigeria and Eastern Ethiopia, which showed 55.5% and 59%, respectively [4, 10]. Over 80% of the pharmacists in Lagos are currently providing pharmaceutical care to their patients. This is in tandem with the study in Ibadan, Nigeria where 95.8% of the pharmacists reported practicing pharmaceutical care [7].

The study identified several barriers to providing pharmaceutical care, including lack of sufficient time (54.4%), lack of counselling room (50.7%), lack of established communication channels with physicians (88.3%), inadequate pharmacists workforce (63.9%), and poor remuneration (69.5%). These findings align with a study in Enugu State, Nigeria which identified similar barriers [21] and another study by Pereira C.E.O., et al also identified insufficient human resources as one of the significant barriers to implementation of pharmaceutical care [22]. A study in Malaysia found that the lack of separation between prescribing and dispensing as the main barrier to the implementation of pharmaceutical care services [9] which is at variance with our study identifying the lack of established channels of communication with the physicians as the greatest barrier. This barrier may have to do with the strained working relationship or professional rivalry between the physicians and pharmacists resulting to lack of collaboration between pharmacists and physicians which was a limitation identified by Ogbonna, B.O., et al [23]. Some of the barriers highlighted are regulatory in nature e.g. lack of counselling room to interact with the client, which the Pharmacy Council of Nigeria (PCN) have to do more in enforcing its guidelines with respect to pharmacy space or size while other barriers may have to do with the various hospital or community pharmacy management. This finding implies that despite the respondents' good knowledge of pharmaceutical care and favourable attitude towards pharmaceutical care, there may be restraint from providing pharmaceutical care without addressing the identified barriers, which will also affect patient outcomes. Generally, on readiness, the study showed that 97.6% of the respondents were ready to provide pharmaceutical care services which was consistent in the study by Oparah, A.C. & Eferakeya, A.E. [24]. Also, 371 (98.4%) of the pharmacists were willing to take short courses and training to improve their pharmaceutical care skills. The high willingness among pharmacists to take training programs and short courses indicates a burning desire for continuous learning and professional development. The implication of this high enthusiasm by the respondents is that healthcare organizations and regulatory bodies can leverage it by providing accessible and relevant training programs and mentorship to facilitate the implementation of pharmaceutical care.

There is a statistically significant relationship between the level of qualification of the respondents and their attitude toward pharmaceutical care. This finding suggests that the

qualifications and training possessed by pharmacists may have translated to improved attitudes toward pharmaceutical care. The findings support the perception of study participants in a similar study conducted in the Philippines by Agaceta *et al* [25]. The trend of similar outcomes may not be unconnected with the fact that specialization comes with higher qualifications with a better chance of showcasing an improved level of expertise and attitude in practice towards pharmaceutical care, so pharmaceutical care training and certification programs should be prioritized by pharmacy schools and professional organizations (PCN).

Furthermore, the study shows that the relationship between practice setting and barriers to providing pharmaceutical care is statistically significant, in tandem with the report of Carolina Oi Lam Ung, *et al* [26] conducted in Macao, China. Pharmacists have consistently maintained that they need a conducive environment to render pharmaceutical care services to their clients optimally. Prioritization of resource allocation by healthcare policymakers and managers to create a conducive environment for pharmacists will be beneficial in the provision of pharmaceutical care services.

Limitations of the study
The study used an online questionnaire (Google Forms questionnaire), which may be subject to bias or inaccuracies since they were not interviewed at their places of work. Also, the sample size of 377 pharmacists, though sufficient for statistical analyses, may be too small to accurately detect other significant differences between the variables and the small sample size may not be a representative of the entire pharmacists in Lagos state, Nigeria as a larger sample size would have provided more robust results.

5. CONCLUSSION
This study found that pharmacists in Lagos State, Nigeria, showed favourable attitudes and good knowledge of the concept of pharmaceutical care and are willing to provide pharmaceutical care. However, barriers such as lack of sufficient time, lack of counseling room, inadequate pharmacists workforce, poor remuneration, and lack of established communication channels with physicians, the most significant barrier identified by the respondents, have limited their efforts.

This calls for an improved working relationship and collaboration between the professional bodies of the Pharmaceutical Society of Nigeria and the Medical and Dental Council of Nigeria. From the barriers identified, it is pertinent to say that reducing these barriers will significantly improve the pharmaceutical care services experienced by clients assessing the various hospitals or community pharmacies in Lagos state, Nigeria.

Declaration of conflicting interests: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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