

The Assessment of Telepharmacy Practice Among Community Pharmacists in Lagos, Nigeria

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ABSTRACT

Background: Telehealth is transmitting medical information and providing and supporting clinical care from one place to another through electronic communication methods. Telepharmacy is the provision of pharmaceutical care to patients using technologies and telecommunications. Telepharmacy allows the pharmacist to provide patient care services in an area by taking history, reviewing patients' files, and assessing medications utilized by the patients. This study is aimed to analyse the assessment of tele-pharmacy practice among community pharmacists in Lagos, Nigeria.

Methods: This was a cross-sectional descriptive survey of community pharmacists practising in Lagos, Nigeria. We used a convenient sampling technique in recruiting participants to the study. The questionnaire was developed and validated. The final questionnaire consisted of three sections. The first domain centered on the sociodemographic characteristics of the respondents while the second section probed for awareness and availability of telepharmacy services in community pharmacies in Lagos.

Results: From our results 54(63%) of the total pharmacy providers who were randomly sampled for this pilot study were currently practicing telepharmacy services in Lagos state, 82(96.5%) of the total participants were aware and had the perception on the importance of telepharmacy practice in Nigeria. Also, 21(50.7%) of the telepharmacy providers started the practice within 1-5years hence buttressing the fact that there is a surge in telepharmacy growth from the COVID-19 era till present.

From the results 43(50.6%) of the participants strongly agree that telepharmacy practice enables greater penetration of the pharmaceutical market, 37(43.5%) also agree that telepharmacy is more convenient for their patient and 31(36.5%) also strongly agree that telepharmacy is an effective means of discharging pharmaceutical services.

Conclusion: Findings from the study show that most of the pharmacists practicing in Lagos were aware of the importance of telepharmacy practice and were also currently practicing telepharmacy, with also a more significant percentage of unaware pharmacists willing to practice telepharmacy.

It was surmised that telepharmacy practice enables greater penetration of the pharmaceutical market, more convenient for the patients and is an effective means of offering pharmaceutical services. Telepharmacy faced some challenges, including poor internet connectivity, poor patronage, high installation cost, and lack of ICT resources, possibly leading to more telephone interviews than videoconferencing.

1. Introduction

The use of information and communication technology to obtain health services has established a concept called telehealth¹. Telehealth means transmitting medical information while offering and supporting clinical care from one place to another through electronic

communication systems^{2,3}. One of the subsets of telehealth is telemedicine.

World Health Organization defines telemedicine as "The delivery of health care services, where distance is considered a critical factor, by different health care professionals using the available information, communication technologies and systems for the exchange

of valid information for the diagnosis, treatment and prevention of various disease conditions, research and evaluation, and for the continuing learning of health care providers, all in the interests of advancing the health of people as well as the communities where they stay”⁴.

The practice of offering pharmaceutical care to individuals during the global covid pandemic has traditionally been limited to simple physical examination and treatment. Physicians and other healthcare professionals were bound to offer health care services to the individuals in specific areas which include the conventional private clinics and hospitals. Recently, with the advancement in technology and the global pandemic, the traditional way of offering healthcare services to patients has been improved, and a new system of care services called telemedicine has been developed. Telemedicine is the ultramodern way of offering health care services to patients and the general community via different telecommunication tools like telephones, smartphones, tablets, wireless tools, and laptops⁵. Earlier on, just 250,000 patients used telemedicine services, but with time, improved campaigns and other intervention programs, it has reached up to 3.2 million patients⁶. Telemedicine also comprises of telehealth services and remote patient monitoring. Monitoring patients from a distance via web applications has been studied to enhance patient-reported quality of life, drug adherence, and lower health care costs⁷. Telepharmacy is a category under telemedicine and is the provision of pharmaceutical care to individuals using technologies and telecommunications⁸. Telepharmacy allows the pharmacist to offer patient care services in a remote area by obtaining the patient history, reviewing their medical records, and assessing medications taken by the patients. The practice of telepharmacy also helps the caregiver to verify and dispense the patient prescriptions accurately under the remote supervision of the pharmacist. This creates new possibilities for improving patients' health outcomes and enhancing the quality of health care systems in general. The use of telepharmacy includes patient counseling, drug management, mail order of medicines, supervision of technician dispensing, medication therapy management, central processing with appropriate approvals, and automated dispensing systems, with pharmacist tele-counseling⁶.

Numerous factors affect the embracement of these services in community pharmacy practice since not all pharmacies offer these services and numerous people are still not familiar with them. Nevertheless, the pandemic impact has showed an increased interest in delivering telepharmacy services and as well increased its utilization. Pharmacies

quickly shifted their services to offer patient medication counselling, medication therapy monitoring, COVID-19 clarification and screening and as well medication home delivery, all of which have improved patients' life and made it seamless to access pharmacists during the COVID-19 period. The community pharmacists' roles have broadened to other services, which include offering reliable disease information, public education on preventive measures, referring suspected cases, maintaining a continuous supply of medicines and preventative products, and vaccination⁹.

Lagos state is located geographically in the South-Western part of Nigeria and is the nation's economic and commercial capital. The latitude of *Lagos state*, Nigeria is 6.465422, and the longitude is 3.406448.

It is considered the most populated city in Africa, with a 17.5 million estimated population¹⁰. The state had most of the confirmed COVID-19 cases and was the pandemic's epicenter in Nigeria,¹¹ presenting a need for concerted efforts to suppress the virus and reduce community transmission.

This study is aimed to analyze the assessment, awareness, benefits and as well challenges of telepharmacy practice among community pharmacists in Lagos, Nigeria.

2. Methods

2.1 Study design and sampling technique: this was a cross-sectional descriptive survey of community pharmacists practicing in Lagos, Nigeria. We used a convenient sampling technique in recruiting participants to the study.

Study instrument and administration: The questions for the questionnaire were drafted after a thorough literature search then the content validation was done through academia pharmacists after which face validation was carried out by with a few respondents to check if the statements are clear and understandable for the research. The final questionnaire consisted of three sections. The first domain centered on the sociodemographic characteristics of the respondents while the second section probed for awareness and availability of Telepharmacy services in community pharmacies in Lagos. Perception of community pharmacists on telepharmacy practice was determined in the third thematic area whereas the fourth section elicited information on challenges of telepharmacy practice in community pharmacies in Lagos. The questionnaire for translated into a google form. A link to the electronic questionnaire was shared with the respondents within Lagos State, Nigeria using pharmacy establishment official

email address, pharmacists email address and WhatsApp official phone numbers since they form a suitable platform for disseminating information in Nigeria. Data for the study were collected from May to July 2022). A total of 85 respondents completed and returned informed consent along with the questionnaire electronically, because it was a convenient survey, sample size was based on the number obtained within the study period.

Data Analysis: The data collected were coded and abstracted into the Microsoft Excel Spreadsheet and thereafter transcribed into the Statistical Package for the Social Sciences (SPSS) version 23 for Windows for final analysis. Simple descriptive statistics including counts and percentages (%) were reported for categorical data.

Ethical Statement: Ethical considerations like ensuring confidentiality of all our respondents was ensured during and after the study.

3. RESULTS

Table 1: Socio-Demographic Characteristics of Respondents

Socio-demographic characteristics	Frequency (N)	Percentage (%)
Age (years)		
<25	14	16.5
25-30	57	67.1
>30	14	16.5
Mean Age (\pm SD) = 27.88 (\pm 5.00)		
Gender		
Male	51	60
Female	34	40
Marital Status		
Single	74	87.1
Married	10	11.8
Separated/divorced	1	1.2
Highest level of education		
BPharm/PharmD	81	95.3
MSc/MPharm	3	3.5
FPCPharm	1	1.2
Years of practice as a community pharmacist		
<1	37	43.5
1-3	21	24.7
4-6	14	16.5
7-9	7	8.2
>10	6	7.1
Position in community pharmacy		
Locum pharmacist	57	67.1
Superintendent pharmacist	19	22.4
Pharmacy owner	9	10.6
Type of premise		
Retail outlet	74	87.1
Wholesale/retail outlet	11	12.9
Number of staff		
1-5	3	8.6
6-10	13	37.1
11-15	5	14.3
16-20	6	17.1
>20	8	22.9

N=85; SD= Standard Deviation

Table 1 above provides the socio-demographic characteristics of the study participants. The results captured in this table indicates that a total of 85 pharmacists participated in this study and more than half of the study population 51(60%) are males while the remaining study participants 34(40%) are females. It can also be deduced from the table that 74(87.1%) of the pharmacists recruited for this study are single, 11.8% are married while the remaining 10(1.2%) are either divorced or separated. Furthermore, the table shows that most of the study participants' 81(95.3%) highest level of education is BPharm/PharmD, whereas 3(3.5%) have an MPharm/MSc and 1(1.2%) have an FPCPharm qualification. It can also be seen from the table that more locum pharmacists 57(67.1%) participated in this study compared to those who are superintendent pharmacists 19(22.4%) and pharmacy owners 9(10.6%). Table 1 above also reveals that most of the study participants 74(87.1%) work in a retail outlet and the remaining 11(12.9%) work in wholesale outlets.

N=85; Cumulative %<100 for any subgroup is due to nonresponse

Table 2: Pharmacists knowledge and practice of Telepharmacy

Variables	Responses, n (%)
Are you aware of telepharmacy practice?	
Yes	82 (96.5)
No	3 (3.5)
Does your premise provide tele pharmaceutical services to clients?	
Yes	54 (63.5)
No	31 (36.5)
If yes to the above, for how long have you been providing tele pharmaceutical services to clients? (years)	
<1	10 (23.8)
1-5	21 (50.7)
>5	11 (26.2)
If no, are you willing to offer telepharmacy services?	
Yes	45 (95.7)
No	2 (4.3)
Type of telepharmacy available in your community pharmacy	
Telephone interviews	62 (82.7)
Videoconferencing	13 (17.3)
How many clients do you provide tele pharmaceutical services to on a weekly basis?	
1-10	21 (35.6)
11-20	13 (22.0)
21-30	6 (10.2)
31-40	2 (2.4)
41-50	12 (20.3)
>50	5 (5.9)

Table 2 provides a summary of the responses of the study participants to questions that seek to elicit the level of their knowledge and practice of Telepharmacy. The result indicates that more than half of the study participants 82(96.5%) are aware of telepharmacy and 54(63.5%) of them practice it in their various premises; about half of this latter category have been practicing telepharmacy for about 1 – 5 years. Also, most of the respondents that practice telepharmacy 62(82.7%) do that via telephone interviews while the remaining respondents in that category 13(17.3%) make use of video conferencing. It can also be deduced from the table that 45(95.7%) of the study participants who do not practice telepharmacy are willing to offer telepharmacy services.

Table 3: Pharmacists' perception of Telepharmacy

Variable	Strongly Agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)
Telepharmacy practice enables greater penetration of the pharmaceutical market	43 (50.6)	33 (38.8)	8 (9.4)	1 (1.2)	0 (0)
Telepharmacy is more convenient for my client	27 (31.8)	37 (43.5)	16 (18.8)	5 (5.9)	0 (0)
Telepharmacy enables the provision of services during the COVID-19 pandemic lockdown	29 (34.1)	25 (29.4)	4 (4.7)	2 (2.4)	25 (29.4)
Telepharmacy is costly to maintain	2 (2.4)	28 (32.9)	19 (22.4)	25 (29.4)	11 (12.9)
Telepharmacy is an effective means of discharging pharmaceutical services to clients during the pandemic	31 (36.5)	28 (32.9)	9 (10.6)	3 (3.5)	14 (16.5)

N=85

Table 3 is a Likert Scale structured section that provided questions seeking to measure the perception of telepharmacy among the study participants. It can be deduced from the provided result that about half of the respondents 43(50.6%) strongly agree that telepharmacy provides greater penetration of the pharmaceutical market, where as less than half of the study population 37(43.5%) agree that telepharmacy is more convenient for their clients. On the other hand, 28(32.9%) of the respondents disagree that telepharmacy is costly to maintain. Meanwhile 31(36.5%) of the respondents strongly agree that telepharmacy is an effective means of discharging pharmaceutical services to clients during the pandemic.

Table 4: Range of pharmaceutical services delivered via a telepharmacy in your premises

Questions	Number of responses, n (%)
Pharmaceutical care for patients with chronic ailments	18 (25.0)
Medication therapy management	19 (26.4)
Counselling	13 (18.1)
Dispensing and prescription refill	21 (29.2)
Health education on safe healthy practices	1 (1.4)

Table 4 above reveals a breakdown of pharmaceutical services provided by the study participants via telepharmacy in their individual premises. This table indicates that one-fourth of the respondents have provided pharmaceutical care for patients with chronic ailments and another one-fourth (approximately) of the respondents have used telepharmacy to provide medication therapy management. Furthermore, approximately one-fourth of these respondents made use of telepharmacy in dispensing and prescription refill, whereas the final one-fourth (approximately) of the study participants have engaged telepharmacy in counselling. Meanwhile, only 1(1.4%) of the study participants provided health education on safe healthy practices using telepharmacy.

Table 5: Challenges of Telepharmacy in my practice

Variables	N (%)
Lack of technical skills to man the telepharmacy software	27 (10.5)
Clients are not willing to pay for the services	30 (11.7)
Poor internet connectivity	49 (19.1)
Poor patronise by clients	28 (10.9)
Internet security issues	25 (9.8)
High cost of installation of telepharmacy	29 (11.3)
Shortage of Pharmacy Human Resources	23 (9.0)
Lack of training facilities	12 (4.7)
Lack of ICT resources	27 (10.5)
Others	6 (2.3)

The challenges of telepharmacy practice experienced by the study participants is captured in table 5 above. From the table, poor internet connectivity has been reported by 49(19.1%) of the respondents, representing the highest number as the challenge they have with telepharmacy. On the other hand, only 6(2.3%), representing the lowest number of the study participants attributed their challenge with the use of telepharmacy to other factors. Furthermore, about 30(11.7%) of the respondents indicated that unwillingness of clients to pay for the services have been a challenge in engaging telepharmacy. About 28(10.9%) attributed their challenge with telepharmacy to poor patronage by clients, 25(9.8%) to internet security issues, 29(11.3%) to high cost of installation of telepharmacy, 23(9%) to shortage of pharmacy human resources, 12(4.7%) to lack of training facilities and 27(10.5%) to lack of ICT resources.

4. Discussion

The importance of telepharmacy has increased exponentially during the COVID-19 pandemic as a result of social distancing restrictions which challenged the ability of pharmacists to render the continued medication management (CMM) programs. Consequently, in all studies that have evaluated telepharmacy in the COVID-19 period from the end users' point of view, its needfulness has been emphasized¹². A similar study analyzed pharmacists' perception with regards the clinical benefits of telepharmacy and also recognized some of the challenges regarding its use during the COVID-19 pandemic, from the study it showed that majority of pharmacists had positive attitudes towards the benefits of telepharmacy including customized and dynamic drug therapy (82.2%), timely feedback (91%), and frequent and accurate communication with the healthcare team (77%)¹³.

In this study, majority of pharmacy providers who were randomly sampled were currently practicing telepharmacy services in Lagos state, almost all of the total participants were aware and had the perception on the importance of telepharmacy practice in Nigeria. Also, half of the telepharmacy providers started the practice within 1-5years hence buttressing the fact that there is a surge in

telepharmacy growth from the COVID-19 era till present.

Our results showed that almost all of the participants who were yet to use telepharmacy were willing to offer telepharmacy services. The outcome is in line with a previous study which showed that the usage of telepharmacy been increasing during and after the pandemic occurred¹⁴.

From the results more than half of the participants strongly agree that telepharmacy practice enables greater penetration of the pharmaceutical market, about half also agree that telepharmacy is more convenient for their patient and about half also strongly agree that telepharmacy is an effective means of discharging pharmaceutical services. This result conforms with prior evidence which shows that telemedicine has been a pragmatic, safe and cost-effective, means to offer pharmacy services and to improve quality of care health professionals offer patients¹⁵.

Retail outlets which are majorly community pharmacies were responsible for nearly all of the current telepharmacy providers in Lagos state which shows that more patients quality of life will be improved when more awareness is created for telepharmacy.

Constrastingly, financial problems (76.4%) which include coffers to set up the practice and the lack of sufficient evidence-based studies (70.8%) to support its effectiveness

were identified as the top challenges¹³.

From the results telepharmacy in Lagos state is more centered on dispensing, medication refill, pharmaceutical care and counselling, there is little focus on health education and promotion programs.

Approximately two-third of the current telepharmacy providers made use of telephone interviews as the main point of contact between the pharmacist and the clients instead of video teleconferencing, this is in line with the major challenges affecting telepharmacy¹⁶

From the results, the major challenge towards telepharmacy is lack of poor connectivity which is in line with a previous study carried out and the notable challenges include lack of technical skills to man the software, poor internet connectivity, poor patronage, high cost of installation, lack of ICT resources¹⁶. Half of the participants cited the major challenge as poor internet connectivity; this further confirms the reason behind telephone interviews as the most used form of communication and helps to cushion breeches between the pharmacist and the client.

From the demographics, more than half of the respondents were between the age of 25-30years, nearly all currently hold a BPharm/PharmD and more than half were currently practicing as locum pharmacists, age and educational level is significantly associated because the younger pharmacists had more awareness on the newer technologies that can be installed in the pharmacies compared to the older and more experienced pharmacists, in addition to the little or no knowledge, the older pharmacists were reluctant in taking the risk to embrace newer technologies due to the challenges mentioned above¹⁷.

In summary, the awareness of telepharmacy has tremendously increased due to the COVID 19 pandemic, this can be seen in the number of years most pharmacy providers have been practicing telepharmacy. There is adequate awareness of telepharmacy practice but there is need for newer technologies to be implemented such as CERP systems, inventory software systems and use of other medium channels besides phone interviews, it has been proven these systems are efficient and have helped to maintain a continuous improvement process for both the client and the pharmacist¹⁸. Some modifiable challenges that can be improved using these systems technologies are poor patronage especially through social media channels that have access to millions of users, poor internet connectivity as some of these systems operate a secure local area network connection with minimal data usage.

In order to ensure its progress and success, especially for patients who stand to gain the greatest benefits and the

providers who offer them these services, policymakers and pharmacy regulators will need to be mindful of the possible unintended outcomes of some rules for medically underserved people and ensure that financial support are well aligned with care needs and enough coffers are available.

5. Conclusion

Findings from the study show that most of the pharmacists practicing in Lagos were aware of the importance of telepharmacy practice and were also currently practicing telepharmacy, with also a more significant percentage of unaware pharmacists willing to practice telepharmacy.

It was surmised that telepharmacy practice enables greater penetration of the pharmaceutical market, more convenient for the patients and is an effective means of offering pharmaceutical services. Telepharmacy faced some challenges, including poor internet connectivity, poor patronage, high installation cost, and lack of ICT resources, possibly leading to more telephone interviews than videoconferencing.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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