

Evaluation of Telepharmacy Services in Community Pharmacies in Abuja, Nigeria

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Abstract

Globally, pharmacists play a key role in the provision of quality-assured medicines in sufficient quantities. Access to essential medicines is a major challenge to Universal Health Coverage, however, Telepharmacy has been used in other parts of the world as a solution to poor access to medicines and pharmacists faced in rural areas. The aim of this study is to evaluate the awareness of availability of Telepharmacy services amongst residents of Abuja Nigeria, their attitude towards these services, and their readiness to use the services.

A cross-sectional descriptive study was conducted among clients visiting selected community pharmacies that offer Telepharmacy services in Abuja using simple random sampling method. Data was collected with the aid of a thirty-eight (38) item self-administered questionnaire which had five (5) sections. The data collected was computed into a Microsoft Excel spreadsheet and analyzed using descriptive statistics, Chi-square test and Logistic regression.

Of the 381 respondents, 250 (65.6%) are urban dwellers while 173 (45.5%) have acquired tertiary education. About 305 (80.1%) purchase data out-of-pocket while 23(6%) do not have access to the internet. About 182(47.6%) are aware of Telepharmacy services. There was a significant association between awareness of Telepharmacy services and location of the respondent ($P=<0.001$), educational level ($P=<0.001$) and employment status ($P=<0.001$). About 187(49.1%) had poor attitude towards Telepharmacy services while 215(56.4%) had good readiness to adopt Telepharmacy services.

The clients' awareness of Telepharmacy services was poor although they had good readiness for Telepharmacy services. There are several barriers that need to be overcome for Telepharmacy to be fully implemented.

Keywords: Pharmacy, Telepharmacy, Healthcare Services, Community Pharmacy.

Introduction

One critical health service challenge in the Universal Health Coverage is access to essential Medicines and this is one of the key responsibilities of pharmacists. In Nigeria today, there are about 20,000 patients to one pharmacist and the statistics keep worsening by the day due to mass emigration of pharmacists [1, 2].

Easy access to community pharmacists has made community pharmacies highly sought after by persons seeking medical attention. It is easy to purchase medicines and obtain good medication counselling, from reliable sources in the urban areas, as more than half of the population of pharmacies and pharmacists are concentrated in the urban areas, but in the rural areas, this is not the case [1,3].

Telepharmacy is defined as “the provision of pharmacist care by registered pharmacists and pharmacies through the use of telecommunications, to patients located at a distance” [4]. The term is used to describe a system of provision of pharmaceutical care in which the patient and the pharmacist are not in the same physical location but can interact using information and communication technology (ICT) facilities which can be audio or video connections. Pharmaceutical care services that can be delivered via Telepharmacy include comprehensive medication management, drug therapy monitoring, patient education and counselling, prior and refill authorization of prescriptions, amongst others. In other climes, Telepharmacy has been adopted to provide pharmaceutical services to underserved areas and to address the problem of shortage of pharmacists. With Covid-19 outbreak and the lockdown in 2020, the implementation of Telepharmacy increased [5].

Telepharmacy has been adopted as a solution to one of the major challenges of access to good quality medicines and dearth of the pharmacy workforce, as practiced in other regions of the world, however, the success of any intervention depends on the acceptance and active uptake by the end-users. Hence, the need to assess the respondents' awareness of the availability of Telepharmacy services, their attitude towards it and their readiness to utilize it.

Methods

Study Design

This is a cross-sectional descriptive study conducted on residents of Abuja, Nigeria who receive pharmaceutical care services in community pharmacies offering Telepharmacy services, using simple random sampling method.

Study Setting

Abuja is the capital city of Nigeria located at the center of the country within the Federal Capital territory (FCT). There are six (6) local government areas in the FCT and they are Bwari, Abaji, Abuja Municipal Area Council (AMAC), Gwagwalada, Kuje, and Kwali. Abuja was selected for this study because Telepharmacy is relatively new in Nigeria, hence not many pharmacies offer these services, however, in Abuja this service is available and was being accessed by some patients especially during the Covid-19 pandemic and lockdown.

Study Instrument

This study was conducted using a thirty-eight (38) item, well-structured questionnaire, composed of five (5) sections. The questionnaire was developed after an extensive literature review. This questionnaire was pretested by administering to 10 clients visiting the selected community pharmacies at the time the researcher (myself) was present to collect data although the data collected was not included in the study.

The study questionnaire was modified based on results of the pretest and the final version administered to the respondents.

Sample Size

The population in this case, is the number of clients who visit the selected pharmacies in a month. This is equivalent to 13206 per month. The sample size was calculated to be approximately 410 plus 10% attrition.

Data Collection

This study was conducted in four (4) community pharmacies in Abuja. These pharmacies were selected because they provide Telepharmacy services in Abuja. The respondents were obtained from different branches of the selected pharmacies, for those pharmacies having several branches. Questionnaires and consent forms were distributed via direct administration to clients who consented to participate and could spare few minutes of their time.

Inclusion Criteria

Clients who were visiting the selected community pharmacies

at the time of interview were included. Clients who are the primary users of the pharmacy services of the chosen community pharmacies were also included. Adults aged 18 or older were included.

Data Analysis

Descriptive statistics such as frequencies and percentages were calculated. Chi-square test was used to determine the level of association between variables. Inferential analysis was done using Microsoft Excel and IBM SPSS Statistical Software Version 23.

Ethical Consideration:

Approval of the study was obtained from the Federal Capital Territory Health Research Ethics committee with the ethical approval number FHREC/2021/01/94/09-08-21.

Results

Out of the 410 questionnaires that were distributed, 381 (93%) were returned, and found usable, giving a response rate of 93%. Of the 381 respondents, 314 (82.4%) were between 18- 40 years and 0.3% older than 81 years. About 203 (53.3%) of the respondents were males; 210 (55.1%) were single while 250 (65.6%) are urban dwellers. Result obtained also show that 173 (45.5%) of the respondents have acquired tertiary education and 182 (47.8%) work in the private sector. About 305 (80.1%) of the respondents purchase data out of their pockets, 40 (10.5%) purchase data out-of-pocket and also use office Wi-Fi while only 6% do not have access to the internet

Findings from this study show that 182 (47.6%) of the respondents are aware of Telepharmacy while 230 (60.4%) do not know what Telepharmacy entails. About 208 (54.6%) seek information for treatment and self-care from the internet. The mean awareness of the respondent was calculated to be 4.3622 ± 2.28 . The result obtained shows that less than 50% (48.8%) of the respondents had a good awareness of Telepharmacy services while the rest had a poor awareness.

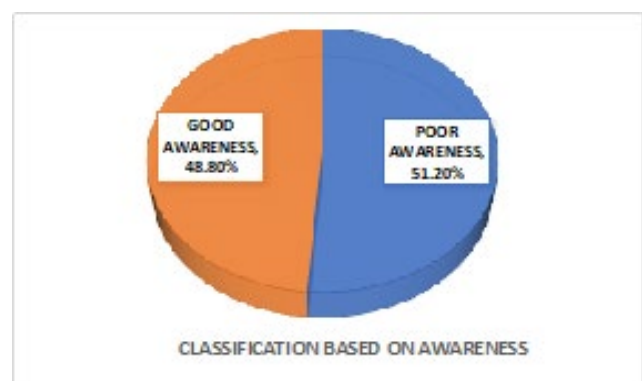


Figure 1: Total Awareness of Telepharmacy

There was a significant association between marital status, location, educational level, employment status and awareness of telepharmacy service. However, access to internet services had a weak association with awareness of telepharmacy services.

Table 1: Association between Demographic characteristics and Total Awareness

Demographic Characteristics	Frequency (%)		CHI Square Value	Degree of Freedom	P-value
	Poor Awareness	Good Awareness			
Gender					
Male	95(46.8%)	108(53.2%)	3.341	1	0.068
Female	100(51.3%)	78(49.1%)			
Marital Status					
Single	116(55.2%)	94(44.8%)	12.805	2	0.002
Married	71(43.6%)	92(56.4%)			
Others	8(100.0%)	0(0.0%)			
Age					
18-40	165(52.5%)	149(47.5%)	5.394	3	0.145
41-60	27(50.9%)	26(49.1%)			
61-80	3(23.1%)	10(76.9%)			
>80	0(0.0%)	1(100.0%)			
Location					
Urban	110(44.0%)	140(56.0%)	15.466	2	0.000
Semi-urban	48(67.6%)	23(32.4%)			
Rural	37(61.7%)	23(38.3%)			
Educational Level					
Primary	29(59.2%)	2(33.3%)	37.116	4	0.000
Secondary	8(17.4%)	29(32.2%)			
Tertiary	104(57.1%)	78(45.1%)			
Post-graduate	48(50.0%)	77(71.3%)			
Informal	6(75.0%)	0(0%)			
Employment Status					
Student	29(59.2%)	20(40.8%)	26.735	4	0.000
Civil Servant	8(17.4%)	38(82.6%)			
Private worker	104(57.1%)	78(42.9%)			
Self-Employed	48(50.0%)	48(50.0%)			
Unemployed	6(75.0%)	2(25.0%)			
How do you access internet					
Personal connection	173(50.1%)	172(49.9%)	5.747	2	0.057
Office Wi-Fi	5(38.5%)	8(61.5%)			
No internet access	17(73.9%)	6(26.1%)			

About 203 (53.3%) of the respondents strongly agreed that the Internet is very vital in getting healthcare information. Also, 189 (49.6%) of the respondents strongly agreed that Telepharmacy plays a major role in the reduction of number of visits to healthcare institutions however, 204 (53.5%) strongly agreed that face to face discussion with the pharmacists is best for them About

266 (69.2%) agree or strongly agree that Telepharmacy is a solution to poor access to pharmacy services which is experienced in the rural areas. The mean attitude of the respondent was calculated to be 35.6115±3.94. Findings revealed that about 187(49.1%) of the respondent had poor attitude towards Telepharmacy services while the rest had a good attitude as shown in Fig 2

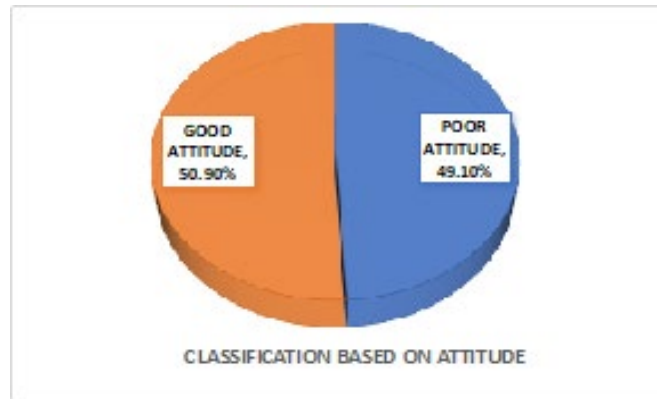


Figure 2: Respondents Total attitude towards Telepharmacy services

There was significant association between attitude to Telepharmacy and gender ($p=0.000$), age ($p=0.036$) and educational level (0.049) while there was no association with other demographic characteristics (see Table 2)

Table 2: Association between demographic characteristics and attitude toward Telepharmacy services

Demographic Characteristics	Frequency (%)		CHI Square Value	Degree of Freedom	P-value
	Poor Awareness	Good Awareness			
Gender					
Male	81(39.9%)	112(60.1%)	14.652	1	0.000
Female	106(59.6%)	72(40.4%)			
Marital Status					
Single	99(47.1%)	111(52.9%)	1.113	2	0.573
Married	83(50.9%)	80(49.1%)			
Others	5(62.5%)	3(37.5%)			
Age					
18-40	144(45.9%)	170(54.1%)	8.557	3	0.036
41-60	35(66.0%)	18(34.0%)			
61-80	7(53.8%)	6(46.2%)			
>80	1(100.0%)	0(0.0%)			
Location					
Urban	118(47.2%)	132(52.8%)	1.864	2	0.394
Semi-urban	40(56.3%)	31(43.7%)			
Rural	29(48.3%)	31(51.7%)			
Educational Level					
Primary	5(83.3%)	1(16.7%)	9.561	4	0.049
Secondary	36(40.0%)	54(60.0%)			
Tertiary	96(55.5%)	77(44.5%)			
Post-graduate	48(44.4%)	60(55.6%)			
Informal	2(50.0%)	2(50.0%)			
Employment Status					
Student	22(44.9%)	27(55.1%)	9.347	4	0.053
Civil Servant	30(65.2%)	16(34.8%)			
Private worker	80(44.0%)	102(56.0%)			
Self-Employed	49(51.0%)	47(49.0%)			
Unemployed	6(75.0%)	2(25.0%)			
How do you access internet					
Personal connection	171(49.6%)	174(50.4%)	2.721	2	0.257

About 236 (61.9%) of the respondents will buy prescription drugs online if the law allows while 228 (59.8%) will buy non-prescription drugs online if the law allows it. However, 269 (70.6%) will pay for additional charges for using technology to access health services while 112 (29.4%) will not pay an additional fee for Telepharmacy services.

The result obtained from the study showed that the mean readiness for Telepharmacy services is 4.4724±1.60. About 215(56.4%) of the respondents had good readiness for Telepharmacy services while the rest had poor readiness. See Figure 3.

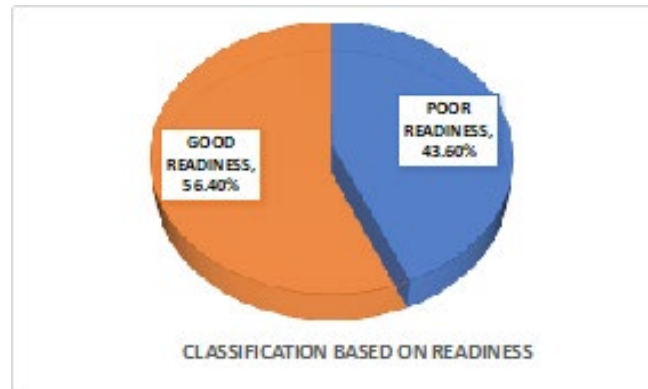


Figure 3: Total readiness for Telepharmacy services

The results also reveal that there is need for the government to invest in Telehealth promotions and campaigns, install internet facilities in primary health centers to aid accessibility, ensure

that all pharmacies that provide Telepharmacy be duly registered, and market Telepharmacy services to improve awareness and uptake of Telepharmacy services.

Table 3: Association between Demographic Characteristics and Readiness for Telepharmacy Services

Demographic Characteristics	Frequency (%)		CHI Square Value	Degree of Freedom	P-value
	Poor Awareness	Good Awareness			
Gender					
Male	77(37.9%)	126(62.1%)	5.619	1	0.018
Female	89(50.0%)	89(50.0%)			
Marital Status					
Single	102(48.6%)	108(51.4%)	6.907	2	0.032
Married	59(36.2%)	104(63.8%)			
Others	5(62.5%)	3(37.5%)			
Age					
18-40	134(42.7%)	180(57.3%)	3.436	3	0.329
41-60	27(50.9%)	26(49.1%)			
61-80	4(30.8%)	9(69.2%)			
>80	1(100.0%)	0(0.0%)			
Location					
Urban	107(42.8%)	143(57.2%)	4.643	2	0.098
Semi-urban	26(36.6%)	45(63.4%)			
Rural	33(55.0%)	27(45.0%)			
Educational Level					
Primary	3(50.0%)	3(50.0%)	4.681	4	0.322
Secondary	47(52.2%)	43(47.8%)			
Tertiary	68(39.3%)	105(60.7%)			
Post-graduate	47(43.5%)	61(56.5%)			
Informal	1(25.0%)	3(75.0%)			
Employment Status					

Student	22(44.9%)	27(55.1%)	10.722	4	0.030
Civil Servant	28(60.9%)	18(39.1%)			
Private worker	73(40.1%)	109(59.9%)			
Self-Employed	37(38.5%)	59(61.5%)			
Unemployed	6(75.0%)	2(25.0%)			
How do you access internet					
Personal connection	150(43.5%)	195(56.5%)	7.001	2	0.030
Office wifi	2(15.4%)	11(84.6%)			
No internet access	14(60.9%)	9(39.1%)			

Discussion

Although patients visit the internet and ask questions about their health, many are not aware of the formal Telehealth or Telepharmacy opportunities available to them. This is not only in developing nations but the world over.

Respondents within the age bracket of 18 to 40 years were most willing to adopt and use Telepharmacy, although awareness is generally poor. It is believed that persons within this age bracket have a higher rate of adoption of technology [6]. This is consistent with a 2021 study in the Philippines in which an online Telepharmacy service was developed during the lockdown and its usage assessed [7]. Higher interest of this age group has been linked to better familiarity with the use of technology and a better attitude towards technology. It is therefore probable that this age group may have a higher interest in the subject of Telepharmacy. This age group are generally early adopters who are more open to try new technology.

The Technology Acceptance Model proposed by Davies in 1989 suggests that one's intention to use a technology is influenced by his or her attitude towards that technology and his or her perception of its usefulness. Attitude is in turn influenced by a person's beliefs (perceptions) in usefulness of the technology and the ease to use the technology [8].

Most of the respondents were urban dwellers while the least were rural dwellers. This may be because data collection was done in predominantly urban and semi urban areas, as the rural dwellers had to translocate to the urban areas to be able to access this service. Telepharmacy may be a solution to the poor access to pharmacists and pharmaceutical care services faced in the rural areas, if the right policies and an enabling environment are provided. Most of the respondents who had attained Tertiary education had good awareness of Telepharmacy and this finding agrees with a 2017 study by Riddell and Song (2017) that showed that formal education increased the use of technology [9]. This is also in line with a 2015 study which showed that educational attainment, prior Internet use, and rural residence are main predictors that increase the likelihood of adoption of Telehealth [10].

Globally, there is an increase in the number of "Empowered patients". These are patients who have greater control over decisions and actions affecting their health. This has been made possible using technology which facilitates increased patient access to information largely available on the Internet, through peer sharing in patient communities, consumer health devices,

mobile apps, and online healthcare professionals. Empowered patients are believed to have some characteristics which include access to the right information, health literacy, digital literacy, and ability to effectively make decisions in partnership with the clinician. These patients can benefit from Telepharmacy as a resource to obtain health information relating to their medication. Over half of the respondents in the study strongly agreed, that the internet is very vital in getting healthcare information and Telepharmacy plays a major role in the reduction of number of visits to healthcare institutions. However, most believe face to face discussion with the pharmacists is the best for them. This may be a major reason for the poor adoption of Telepharmacy. Most of the respondents purchase data personally and a few purchase data out-of-pocket and also use their office Wi-Fi sources. This shows a population that is already willing to invest in technology. With the wider broadband penetration and increase proliferation of smartphones, more persons are open to connect to the digital world.

Conclusion

There is low level of awareness of Telepharmacy services amongst residents of Abuja, Nigeria although they have good attitude towards the services. The residents expressed a high readiness to adopt Telepharmacy services for their healthcare needs, although there are some factors such as cost and access to internet facilities, that influenced their readiness for Telepharmacy.

Recommendations

1. Bearing in mind that awareness of Telepharmacy services is low and there are several laws limiting advertising of healthcare services, it is necessary to find ways to create awareness of Telepharmacy services. One way is through content marketing
2. There is need for more pharmacist involvement in Telepharmacy, through acquiring specialized knowledge and skills required for effective Telepharmacy services implementation. Also, pharmacists should advocate for policies in favor of Telepharmacy, as this can be used as a tool to promote the recovery of the pharmacists' role as the custodian of medicines without whose authorization medicines do not get dispensed, thus sanitizing the profession.
3. There is need for government to provide stable and affordable internet facilities for the rural dwellers, especially in public healthcare facilities thereby promoting adoption of Telepharmacy services.
4. This study was done only in Abuja, Nigeria. Further research needs to be carried out in other states of the Federation to have a more balanced view as other dynamics like culture and location, may influence the choice of Telepharmacy by patients.

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