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TELE-HEALTH AND HEALTHCARE SERVICE DELIVERY IN PUBLIC HEALTHCARE FACILITIES IN LAGOS STATE, NIGERIA

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ABSTRACT

The Lagos State public health facilities, in recent times have experienced considerable transformation with the adoption of technology-driven tool called tele-health. This study examines the effect of tele-health on healthcare service delivery in public health facilities in Lagos State. It adopted a survey research design cum quantitative approach with a sample size of 183 participants. Double sampling techniques consisted of purposive, and convenience were adopted for the study. Data for the study were gathered from primary sources. The study adopted both descriptive and inferential statistical techniques for data analysis. Descriptive statistics such as simple frequency distribution and percentages were adopted in data presentation and analysis, while relevant hypotheses were tested using inferential statistics such as Friedman rank test and Simple regression analysis. Findings of the study revealed that the rank-order analysis of tele-health adoption was evident from improved medical consultation, work stress reduction, providing simplicity and convenience at work for the public healthcare workers, while healthcare service delivery was also evident through prioritizing high-risk patient, early detection of patient's medical history, patient engagement and reduced mortality rate. The study further revealed that for both tele-health and healthcare service delivery metrics, a positive but low relationship was established between tele-health and healthcare service delivery among public healthcare workers in Lagos State. The study concludes that tele-health has a significant relationship with healthcare service delivery in public healthcare facilities.

Keywords*: Healthcare, Public health facilities, Service delivery, Tele-health*

Introduction

Tele-health has emerged as a promising solution to address healthcare challenges, particularly considering its significant support in ensuring compliance to lockdown and movement restriction during Covid-19 (Allagoe et al., 2020). Nigeria is one of the most populous nations in Africa, with a population of over 200 million people and a healthcare budget of $31.9 billion in 2024 (Alikor, 2024). This shows that Nigeria spends less than $7 per citizen on healthcare, making it challenging to cater to the healthcare needs of every citizen (Abubakar et al., 2022). As a result, every Nigerian is at risk of falling into sickness, debt, and even death due to inadequate access to healthcare services through telemedicine (Adeniran et al., 2022). Tele-health offers several advantages, including reducing hospital queues and freeing up medical physical space for emergencies (Barbosa et al., 2021). According to Sun et al.,2020, tele-health enables less critical cases to be addressed remotely, thereby reducing the burden on hospitals and freeing up space for emergencies. Tele-health can help address the challenge of inadequate medical infrastructure in developing countries like Nigeria (Haleem et al., 2021). Combi and Pozzi (2016) noted that tele-health could serve as a viable alternative to building new healthcare facilities. This is important given that Nigeria has the highest death rate in Africa, with statistics revealing 10.833 deaths per 1000 people in 2024 (Macrotrends, 2024).

Allagoe et al. (2020), averred that tele-health can be effective, safe, and patient-centered. In England, the Care Quality Commission (CQC) reported that PushDoctor, a digital primary care provider, offered safe, effective, and responsive service (CQC, 2019). However, the inadequate doctor-to-patient ratio in Nigeria renders tele-health a vital instrument in healthcare delivery, enhancing access to medical services in rural and underserved regions while optimising the utilisation of healthcare professionals' expertise (Adenuga et al., 2020). The quest to improve healthcare service delivery through tele-health platforms is becoming a priority of the state government. In light of the emerging possibilities that tele-health seems to offer, the study intends to examine the relationship between tele-health and healthcare service delivery among public healthcare facilities in Lagos State.

2 Literature Review

2.1. Conceptual Review

2.1.1 Tele-Health

Tele-health refers to the use of technology, such as video conferencing, online communication, and automated doctor's offices, to provide remote medical care and services to patients (Allagoe et al., 2020). It allows doctors to consult with patients, provide medical advice, monitor chronic illnesses, and offer treatment and prescriptions, all without the need for an in-person visit (Ebenu et al., 2020). Tele-health facilitates remote consultations between patients and healthcare providers, ensuring continuity of care for chronic

conditions and extending healthcare access to underserved areas (Adio et al., 2021). By reducing the need for in-person visits, tele-health mitigates the risk of disease transmission and transforms the healthcare landscape by making services more accessible and convenient. (Egbewande et al., 2023). Moreover, tele-health allows healthcare providers to extend their services, especially to rural or remote patients, facilitating routine consultations, follow-ups, and enhancing workflow efficiency (Johnson, 2024). Barbosa et al. (2022) assert that the government perceives tele-health as a means to decrease the overall expenses of healthcare delivery by lowering hospital admissions, cutting consultation durations, and diminishing the necessity for physical infrastructure.

Tele-health is particularly beneficial for patients in remote areas where healthcare facilities are scarce or unavailable, and it requires both patients and doctors to have secure hardware and software in place for accurate medical history and communication (Haleem et al., 2021). Moreso, it enables doctors to spend less time on rural assignments, provide more care to patients, and treat a larger number of patients, ultimately improving the quality of medical practice (sun et al., 2020). It also enhances the patient experience by eliminating long wait times and providing easier access to patient information (Barbosa et al., 2021).

2.1.2. Healthcare Service Delivery

Healthcare service delivery is described as the process of providing the best possible care to patients from the provider's standpoint, while also considering effective care in a cost-conscious environment from the healthcare administrator's perspective (Adio et al., 2021). From a system perspective, healthcare service delivery involves designing and implementing processes and activities that continuously meet patients' needs and expectations (Egbewande et al., 2023). Ultimately, understanding and meeting patient expectations is paramount to providing quality service, which directly impacts patient satisfaction (Abolade & Durosimi, 2019).

According to Ugwu et al. (2023), healthcare service delivery is a comprehensive provision of healthcare services, including curative services, promotion of healthy lifestyles, and prevention services. In the modern healthcare dispensation, the focus is on integrating different systems within the healthcare management framework to address complex situations and unexpected events that may arise (Hallem et al., 2021). The healthcare service delivery framework encompasses the interaction and interdependencies between the various components of the healthcare system, with the goal of maintaining or improving health (Egbunu et al., 2020). Therefore, it is important to develop a collective human intelligence from these diverse systems to provide solutions to healthcare service delivery issues (Obotu, 2019).

2.1.3. Types of Tele-Health

Okolo et al. (2024) identified the various forms in which telehealth services can be rendered, which include the following:

- Live Video Conferencing: This is the predominant mode, wherein patients and clinicians engage in real-time via video conferencing platforms such as Zoom or Skype. It facilitates in-person consultations, encompassing physical examinations restricted to observable aspects remotely.
- The store-and-forward method: In this method, patient health information (pictures, videos, or medical records) is collected and securely communicated to a healthcare provider for subsequent evaluation. This is beneficial for consultations that don't require rapid engagement, such as dermatology or radiology.
- Remote Patient Monitoring (RPM): Make use of wearable devices and sensors to gather health data from patients (such as heart rate, blood pressure, and blood glucose levels) from a distance. This information is conveyed to healthcare providers for oversight and intervention, facilitating proactive care and early identification of health concerns.
- Mobile Health (mHealth) utilises mobile devices (smartphones, tablets) and applications to facilitate health-related tasks such as symptom tracking, prescription reminders, and access to educational resources. Although it does not directly link patients to physicians, mHealth enables individuals to take a more proactive role in managing their health.
- Physician-to-Physician Teleconsultation: This form of telehealth enables communication and collaboration among healthcare providers, particularly specialists, to deliberate on complex cases and offer expert opinions remotely.

2.2.4. The Nexus between Tele-Health and Healthcare Service Delivery

The advent of tele-health has significantly transformed modern healthcare, becoming a crucial factor in improving accessibility, efficiency, and quality of healthcare services (Okolo et al., 2024). The COVID-19 pandemic has significantly expedited this transformation, requiring a swift transition to digital healthcare systems to ensure continuity of treatment while reducing the danger of virus transmission (Obotu, 2019). Moreover, incorporation of digital and communication technology in healthcare via telehealth has offered numerous advantages, such as enhanced access to care, ease, superior patient outcomes, and a more efficient healthcare system (Pogorzelska, 2022).

Tele-health has proven to be an invaluable tool in maintaining the continuity of care while minimizing contagion risks, its role in enabling healthcare and ensuring zero contagion risk highlights the adaptability and resilience of telemedicine as a healthcare service delivery model (Johnson, 2024). However, the integration of tele-health into patient care has further established the impact of telehealth ability to provide patients with access to healthcare services without the need for physical travel (Adeniran et al., 2024). This is especially crucial in rural and remote areas where healthcare facilities may be scarce removing limitation of distance as a barrier (Berhrtel-Hattingh et al., 2023).

Furthermore, tele-health facilitates the seamless transmission of medical data for the analysis and assessment of health trends, research, and ongoing professional education and training of healthcare practitioners (Chukwudi et al., 2024). Tele-health interactive platforms further enable healthcare practitioners to learn, cooperate, and share best practices, thereby keeping them updated about new medical strategies and fostering a culture of lifelong learning within the health community (Okolo et al., 2024).

Tele-health therefore represents a significant transformation in healthcare service delivery, offering a measurable and efficient framework that addresses several challenges faced by traditional healthcare systems (Abubakar,2023). The rapid growth and widespread support from patients and healthcare professionals highlight its critical impact on the future of healthcare service delivery (Adeniran et al., 2024).

As tele-health progresses, it is imperative for healthcare systems, policymakers, and technology developers to collaborate in establishing an environment that promotes the sustainable integration of telehealth services, ensuring that the benefits of this digital healthcare platform is accessible to all segments of the population (Okolo et al., 2024).

2.2. Theoretical Review

2.2.1. Theory of Modernization

The Walt Whitman Rostow's theory of modernisation (1960) asserts that developing countries ought to replicate the structures of developed nations during their transition from traditional or underdeveloped societies to industrialised states. Modernisation theory offers a valuable framework for understanding and determining elements influencing the acceptability of telemedicine in developing nations, such as economic, social, cultural, and industrialisation levels (Thaha et al., 2022). However, Fred Davis (1989) in his technological acceptance theory, challenges such as perception of usefulness and ease of use can hinder this transformation, especially in healthcare systems.

Resistance to change can also lead to implications like queues and long wait times, as identified by Agner Krarup Erlang in her queuing theory (1909). In the case of Nigeria, factors such as varying technology, familiarity between urban and rural areas, power disruptions, and poor telecom networks can further complicate the implementation of modern healthcare systems (Pezzuto, 2019). Jalagat (2016) and (Adeniran et al.,2022) underscore the necessity of recognising the need for change and highlighting the various stakeholders involved. In Nigeria's case, there's a pressing need to transform the healthcare system with modern technology to manage wait times, queues, and death rates in the healthcare facilities. (McIntyre et al., 2020).

However, as McIntyre et al., (2020) and Pezzuto (2019) highlights the point, that the belief that technology will automatically reduce wait times in the medical field might be overly optimistic. It is crucial to ensure there are enough medical professionals available within the

healthcare facilities even with the introduction of tele-health. While the benefits of modernizing Nigeria's healthcare system are clear, careful consideration of the unique challenges and the best ways to address them is necessary for its successful implementation (Egbewande, 2023). Furthermore, the modernization theory provides a broad framework for societal progression towards a more technologically advanced healthcare system particularly in the Nigerian context. These theories help us to understand how healthcare service delivery takes-off from the traditional society to the urban age where health services can now be done via different technological platforms with the provision of necessary infrastructure.

2.3. Empirical Review

Abolade & Durosimi (2019) evaluated the use of ICT for healthcare service delivery with respect to developing economies. The study was aimed at assessing the increasing cost of healthcare in Nigeria. The findings of the study revealed that aside building an effective system, important focus should be placed on right personnel, connectivity and creating commitment for telehealth among medical personnel. The study implication was that information communication technology can rapidly change the face of clinical reality through tele-health which would enable quality health service provision.

Adenuga et al., (2020) examined tele-health system service adoption and implementation in Nigeria. The study adopted a semi-structured interview to sample the opinions of clinicians in two government hospitals. The findings of the study revealed that factors such as technology unavailability, social factors & cultural influence, human indifference, data security, copyright protection and lack of awareness all form part of the under-utilization of tele-health facilities in Nigeria. The implication of the study was that technological innovation awareness and data security assurance will ensure a robust and safe platform for tele-health implementation.

Egbewande et al., (2022) assessed the application of tele-health in the provision of healthcare in Nigeria. The study examined the potential of tele-health as an alternative option for delivering quality healthcare service in Nigeria. The study employed a thematic analysis using google scholar and PubMed data base. The findings from the study revealed that the under-utilization of tele-health in Nigeria can be linked to considerable factors like absence of policy on visual healthcare, insufficient funding, technological and infrastructural constraint. The implication of the study was that the imbalance implementation of tele-health system requires immediate stakeholder attention to establish supporting legislation for tele-health and provide suitable infrastructure.

Behrtel-Hattingh et al., (2023) investigated the impact of tele-health on healthcare delivery and service quality from patients' perspectives in Quatar. The study adopted a quantitative approach for data collection. The findings from the Study revealed that patients have enjoyed better access to medical care and shown involvement in their respective healthcare. The

implication of the study was that more legal framework should be established on data privacy and the need for clear guidelines and instructions on how to navigate tele-health platforms.

Johnson (2024) explored the use of Tele-health for healthcare service delivery and application. The study employed an explorative research design for data gathering. The findings of the study revealed that tele-health seems to have a promising future for healthcare service delivery and with its continued revolution, it is poised to provide unique healthcare service modalities. The implication of the study was that the various actors in the health sectors like health insurers, health administrators, health professionals and others, should convene a uniform front determined to provide a strong guideline for tele-health delivery and regulation.

3. Research Methods

The study adopted a survey research design to offer an enhanced understanding of the relationship between tele-health and healthcare service delivery in public healthcare facilities in Lagos state. The study employed a structured questionnaire cum a double sampling technique consisted of purposive and convenience sampling techniques. For purposive sampling, the judgment and expert opinions of the public healthcare workers were required for proper attention to the instrument. For convenience sampling, the preparedness and availability of the researcher and public healthcare workers were considered in the data gathering exercise. Lagos State, being an area of focus, consisted of three senatorial districts out of which one hospital was chosen from each of district to make up a total number of three hospital which comprised of Alimosho General Hospital, Ikorodu General Hospital and Lagos Island General Hospital were considered for the study. The justification for the selection of these hospitals was to enable the researcher for ease of data gathering and experts' judgments of the selected respondent which includes Doctors, Nurses and Lab Technician. However, two-hundred and fifty-four (254) questionnaires were distributed among the public health care workers in the three senatorial districts. From this number, 183 participants' responses (73 percent) made up the basis of analysis. For data analytical Procedure, both descriptive and inferential statistics were employed. For descriptive statistics, tabular, graphical were used while Friedman rank test and simple regression technique were used for inferential statistics. The study observed tests of validity which comprised of theoretical and content validity. For theoretical validity, construct related to the study were sourced from past literatures; while content validity sort cognizance of the expertise and opinions of relevant professionals and academia in the field of public administration and healthcare policy; for an improved understanding of the research instrument. More so, test-retest reliability was conducted to test the participants in this study twice for results consistency. Also, the reliability test was conducted with a Cronbach alpha above the standard 0.7 for the variables of

interest. The outcomes were in line with statistical interventions of the validity of the scale, and the sacrosanctity of the internal consistency.

4 Results and Discussion

4.1. Analytical Descriptions of Participants' Opinions

Table 1: Participants' Bio-Data Information

Variable	**Response Label**	**Frequency**	**Perc**The majority of participants fall within the age brackets of 30 but less than 40 years and 40 less than 50 years, accounting for 36.6% and 22.4%, respectively. **entages (%)**
Gender	Male	80	43.7
	Female	103	56.3
Age	18 but less than 30	23	12.6
	30 but less than 40	67	36.6
	40 but less than 50	41	22.4
	50 but less than 60	23	12.6
	60 & above	29	15.8
Marital Status	Single	29	15.8
	Married	100	54.6
	Separated	20	10.9
	Widow	16	8.7
	Widower	18	9.8
Educational Qualification	BSc/HND	57	31.1
	Master's Degree	61	33.3
	Doctorate	19	10.4
	Others	46	15.2
Position	Doctors	79	43.2
	Nurses	62	33.8
	Lab Technicians	42	23.0

Source: *field survey (2024)*

The data presented in Table 1 provides insights into various demographic variables. These statistics offer a glimpse into the composition of the surveyed population, allowing for valuable observations and implications. The gender distribution indicates a relatively balanced representation, with 56.3% identified as female and 43.7% as male reveals a slight skew towards females. This gender disparity might influence perspectives on various aspects, potentially affecting responses and attitudes towards the survey's subject matter. Regarding age demographics, the data illustrates a progressive incline in participation towards the survey. Regarding age distribution, the data reflects a diverse age range within the sample. Comparatively smaller proportions are observed in the older age groups, with 12.6% falling between 50 but less than 60 years, and 15.8% each for 60 and above category. This distribution indicates a relatively younger cohort dominating the sample. The marital status presents an interesting facet of the demographic profile. The majority, constituting 54.6%, are identified as married, while 15.8% are single. Separated individuals comprise a smaller segment, representing 10.9%, and widows and widowers constitute 18.5% of the sample. Educational qualifications within the sample population exhibit varying levels of attainment. A considerable portion, accounting for 31.1%, holds a BSc/HND qualification, followed by 33.3% possessing a Master's degree. Smaller proportions are observed among those holding a Doctorate degree (10.4%), while 15.2% fall under the category of 'Others'. As for the position of the selected participants, doctors was recorded to have responded the most with (43.2%), while Nurses were recorded as (33.8.0%), and (23.0%) was recorded for Lab Technician.

4.2. Descriptive Analysis of Research Variables

Table 2. Tele-Health Metrics

Variables	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
Tele-health is more convenient for healthcare provider in discharging their duties	3.8	2.2	11.5	59.0	23.5	3.96	.886
Tele-health enhances effective medical consultation in your healthcare facility	3.8	0.0	13.7	54.1	28.4	4.03	.876
Tele-health has helped in reducing work stress among healthcare providers	2.2	0.0	16.4	57.4	24.0	4.01	.777
Tele-health is user friendly for patients	7.7	1.6	10.9	47.5	32.2	3.95	1.091

Source: Researchers' Computations, 2024

The tele-health survey items that were collected from all participants in Table 2 (Fig.1) include *providers' convenience, enhanced medical consultation, job stress reduction, and simplicity.* The participants responded to the various issues, with 6.0 percent expressing disagreement regarding the *providers' convenience*, while 11.5 percent were undecided. 87.5% expressed their approval. Regarding *enhanced medical consultation*, 3.8 percent of participants voiced their lack of support for this issue, while 13.7 percent remained undecided. Subsequently, 82.67 percent expressed their support. In terms of *job stress reduction*, 2.2 percent of all participants expressed their dissent, 16.4 percent were uncertain, and 85.8 percent agreed. For *simplicity*, 9.3 percent of people disagreed, 10.9 percent were undecided, and 79.7 percent stated their agreement. The mean and standard deviation scores provided evidence for the results of all the surveyed items. This indicates that the participants' evaluations of the survey items followed a normal distribution and were focused around the average. The descriptive statistics analysis of tele-health reveals that all measures exhibit consistent evaluations of the distribution of participants' judgements on the subject matter.

Fig.1: The graphical model explaining the tele-health metrics among public healthcare facilities in Lagos State

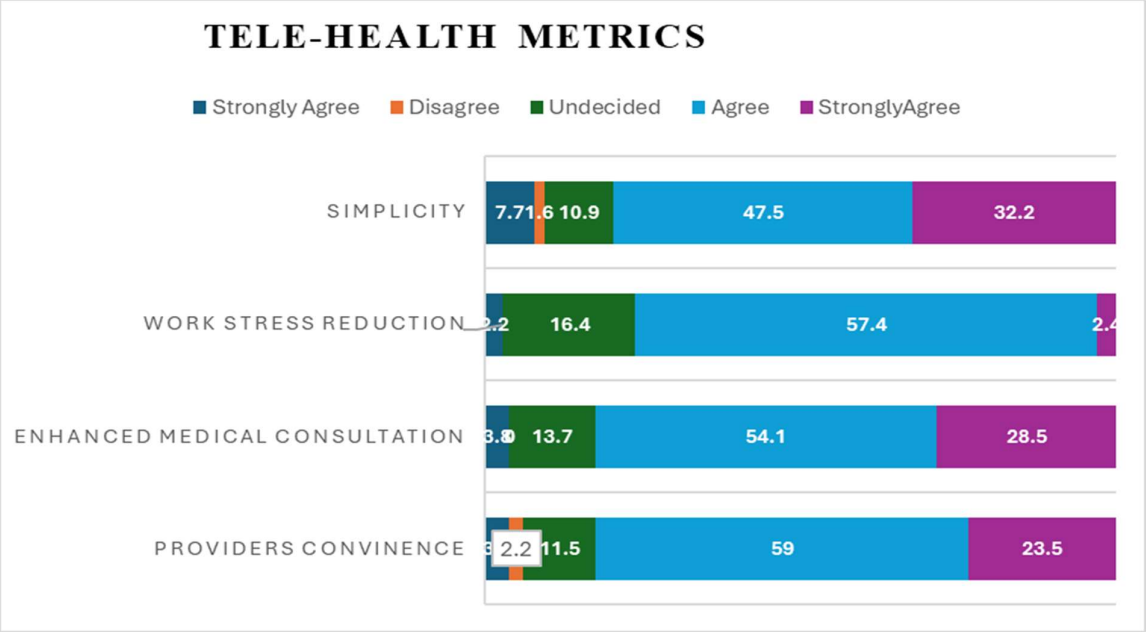


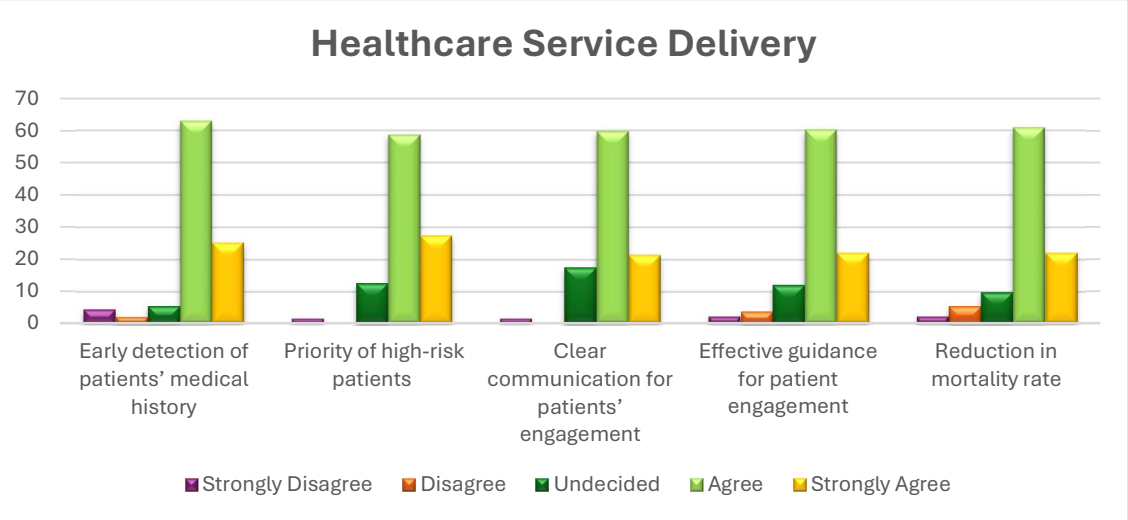
Table 3 **Healthcare Service Delivery Metrics**

Variables	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
Early detection of patient's medical history enhances effective health care service delivery	4.4	2.2	5.5	62.8	25.1	4.02	.889
Early detection of patient medical history helps to prioritize high-risk patient in the delivery of healthcare service	1.6	0.0	12.6	58.5	27.3	4.10	.735
Patient Engagement fosters clear communication among patients	1.6	0.0	17.5	59.6	21.3	3.99	.734
Patient Engagement provides effective guidance to healthcare providers on service improvement	2.2	3.8	12.0	60.1	21.9	3.96	.831
Reduced Mortality rate helps to strengthen ealthcare service delivery	2.2	5.5	9.8	60.7	21.9	3.95	.856

Source: Researchers' Computations, 2024

The healthcare service delivery survey items were collected from all participants in Table 3 (Fig.2). These items include *early detection of patients' medical histories, prioritization of high-risk patients, clear communication for patient engagement, effective guidance for patient engagement, and a reduction in the mortality rate.* The participants responded to the various items, with 6.6 percent expressing their disagreement regarding the *early detection of patients' medical histories*, while 5.5 percent were undecided. 87.9 percent expressed their agreement. Regarding the *prioritization of high-risk patients*, 1.6 percent of participants stated their lack of support for this issue, while 12.6 percent remained undecided. Subsequently, a significant majority of 85.8 percent expressed their approval. In terms of *effective communication for patient participation*, 1.6 percent of all participants expressed their disagreement, 17.5 percent were unsure, and 80.9 percent agreed. The results indicate that 6.0 percent of participants disagreed, 12.0 percent were undecided, and 82.0 percent stated their agreement about the *effectiveness of patient engagement guidance*. While *reduction in mortality rate* was disagreed with by 7.7 percent, while 9.8 percent were undecided, and 82.6 percent stated their agreement. The mean and standard deviation scores provided evidence for the results of all the surveyed items. This indicates that the participants' evaluations of the survey questions followed a normal distribution and were focused on the average. The descriptive statistics analysis of healthcare service delivery reveals that all indicators exhibit consistent evaluations of the distribution of participants' judgements on the subject matter.

Fig 2: The graphical model explaining the healthcare service delivery metrics among public healthcare facilities in Lagos State



4.3 Test of Hypotheses

4.3.1 Friedman's Rank Test

Friedman's symbiotic analysis test, represented by K, measures repeatedly identical population with same median. Friedman's test presupposes, under a null hypothetical atmosphere, that the dependent variable has similar underlying constant distribution, which thus require at least an ordinal measurement (Eisinga et al., 2017). However, data, under the Friedman's rank test, are always pitched in a symbiotic tabular model consisting of 'n' rows and 'k' column.

Friedman's test ascertains if the rank combined effects for each of the conditions estimated is different largely from the estimations which could be expected by prospect (St. Laurent & Turk, 2013).

H_{O1}: There is no rank-order analysis for tele-health among public health workers in Lagos State Public Healthcare Facilities.

Table 4: Results of Friedman's Rank Test on Metrics for Tele-health among Public Healthcare Workers in Lagos State Public Healthcare Facilities.

S/N	Survey Items	Mean Rank	Rank
1.	Providers Convenience	5.03	4
2.	Enhanced Medical Consultation	6.01	1
3.	Work Stress Reduction	5.46	2
4.	Simplicity	5.31	3

Source: Researchers' Computations, 2024

Table 5: Chi-Square Results from the Friedman's Test

N	183
Chi-Square	4.554
Df	3
Asymp.sig.	.208

a. Friedman Test

The analytical outcomes of the Friedman's test signify the existence of a statistically significant variance in tele-health metrics [*enhanced medical consultation, work stress reduction, simplicity providers' convenience*, X^2 (3, n=183) = 4.554, p > 0.05]. Consequently, taking critical scrutiny of the mean calculations suggested a descending layer in tele-health adopted in the public healthcare facilities from *enhanced medical consultation (6.01) work stress reduction (5.46), simplicity (5.31), providers convenience (5.03).* The significance of these metrics affecting tele-health in the Lagos State public healthcare facilities were plainly ranked to give grounds for the above clarifications.

H_{O2}: There is no rank-order analysis for healthcare service delivery metrics among public health workers in Lagos State Public Health Facilities.

Table 6: Results of Friedman's Rank Test on Metrics for Healthcare Service Delivery among Public Healthcare Workers in Lagos State Public Health Facilities

S/N	Survey Items	Mean Rank	Rank
1.	Early Detection of Patients Medical History	3.63	2
2.	Priotised High Risk Patients	3.69	1
3.	Clear Communication Among Patients	3.37	6
4.	Patient Engagement	3.41	4
5	Reduced Mortality Rate	3.39	5
6	Service Improvement	3.52	3

Source: Researchers' Computations, 2024

Table 7: Chi-Square Results from the Friedman's Test

N	183
Chi-Square	9.079
Df	5
Asymp.sig.	.106

a. Friedman Test

The analytical outcomes of the Friedman's test signify the existence of a statistically significant variance in healthcare service delivery metrics [*priotised high risk patients, early detection, of patients' medical history, service improvement, patients engagement, reduced mortality rate, clear communication among patients*, X^2 (5, n=183) = 9.079, p > 0.05]. Consequently, taking critical scrutiny of the mean calculations suggested a descending layer in healthcare service delivery adopted in the selected public healthcare facilities from *priotised high risk patients (3.69), early detection, of patients medical history (3.63), service improvement (3.52), patients engagement (3.41), reduced mortality rate (3.39), clear communication among patients (3.37).* The significance of these metrics comprising the healthcare service delivery adopted in the Lagos State public healthcare facilities were plainly ranked to give grounds for the above clarifications.

H_{o3}: Tele-health has no relationship with healthcare service delivery among public healthcare workers in Lagos Public Healthcare Facilities.

Table 8: Simple Regression Results for Tele-Health vs Healthcare Service Delivery

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	. 541[a]	.293	.289	2.720	.293	74.843	1	181	.000

a. Predictors: (Constant), Tele-health
b. Dependent Variable: Healthcare Service Delivery

ANOVA[a]

8odel		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	553.756	1	553.756	74.843	.000[b]
	Residual	1339.195	181	7.399		
	Total	1892.951	182			

a. Dependent Variable: Healthcare Service Delivery
b. Predictors: (Constant), Tele-health

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	13.755	1.199		11.470	.000	11.389	16.122
	Tele-health	.641	.074	.541	8.651	.000	.495	.787

a. Dependent Variable: Healthcare Service Delivery

Source: *Researcher's Computation, 2024*

Based on the results of the regression analysis shown in Table 8 it is evident that tele-health has relationship with healthcare service delivery in Lagos State public healthcare facilities. The model also demonstrates the fluctuations observed in the dependent variable that can be attributed to the independent variable (R square), indicating that tele-health accounts for approximately 29.3 percent of the variability in healthcare service delivery. This indicates that 70.7 percent of the healthcare service delivery experienced by the selected participants at Lagos State public healthcare facilities is attributed to characteristics other than the predictor utilized in this model, namely (tele-health). The generalization of the findings (adjusted R square) suggests that *tele-health* (*simplicity, work stress reduction, increased medical consultation, provider convenience)* accounts for a genuine 28.9 percent variability in healthcare service delivery. The result closely approximates reality, as the disparity between R square and adjusted R square is minimal. The standard error of fit, a metric indicating the accuracy of the model, quantifies the potential deviation of statistical results by 2.7 percent when employing this model for real-world predictions. The aforementioned outcome is deemed statistically significant based on the ANOVA table, with a p-value of 0.000, which is lower than the 0.05 confidence interval employed in this investigation. A value larger than 1 indicates that the F-ratio yields an efficient

model, whereas an F-ratio of 74.843 shows that this model is highly efficient.

4.4 Discussion of Findings

This study affirmed the relationship established between tele-health and healthcare service delivery in Public Healthcare Facilities in Lagos State

The results of hypothesis one indicated that tele-health adopted in the selected public healthcare facilities was evident from improved medical consultation, to work stress reduction, to providing simplicity at their work, and in the end provide convenience. This result corroborated recent studies (such as Okolo et al., 2024; Allagoe et al., 2020; Adeleke, 2021) who noted that tele-health metrics if properly adopted will enhance working conditions of the public healthcare workers and have direct benefits that would be derived among patients.

The hypothetical results two signified that healthcare service delivery adopted in the selected public healthcare facilities was evident from priotised high risk patients to early detection of patients' medical history, to service improvement, to patients' engagement, to reduced mortality rate, to clear communication among patients. In corroboration with recent studies such as Abolade & Durosimi, (2019) and Egbewande et al. (2023), emphasised the need for the development of comprehensive legal, ethical and social framework to improve access and quality of care across different geographic and economic contexts with consideration for developing countries

The hypothetical outcome three showed a positively low relationship between tele-health and healthcare service delivery among selected public healthcare facilities in Lagos State. This aligned with recent works of Adenuga et al. (2020); Adeleke, (2021); and Behtel-hattingh et al. (2023); who observed that tele-health has been helpful in creating a smooth relationship with healthcare service delivery in the studied area.

5. Conclusion and Recommendations

The findings from the study have exhibited the significance of tele-health on healthcare service delivery among selected public healthcare workers in Lagos State public healthcare facilities. Results proved that there is a rank-order analysis of tele-health and the rank-order for healthcare service delivery among selected public healthcare workers in Lagos State public healthcare facilities. This study concluded by stating a plainly ranked metrics placed on a ground justification for tele-health and healthcare service delivery. Tele-health ends up influencing, though positively low, the existing healthcare service delivery metrics among selected public healthcare workers in Lagos State public healthcare facilities.

The study recommends that the Lagos government ministry of health should collaborate with technology companies that can help in the development of tele-health platforms and medical applications to fast-track the delivery of healthcare service. The government should embark on training and re-training of public healthcare workers on the usage and

applications of tele-health platforms. Moreso, a comprehensive legal framework should be designed by the Lagos State Government to ensure the safeguarding of patient privacy and data safety, particularly in the provision of healthcare services via tele-health platforms.

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