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# Assessment of Chatbot Powered App on Doctor-Patient Communication at Chukwemeka Odumegwu Ojukwu Teaching Hospital, Awka, Anambra State

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***Abstract:*** *This study assessed the impact of chatbot-powered applications on doctor–patient communication at Chukwuemeka Odumegwu Ojukwu Teaching Hospital. The research explored the extent of app usage, its effectiveness in enhancing clarity, feedback, and timeliness, the challenges faced by doctors and patients, and the overall effect on communication quality. A sample size of 283 was determined using Taro Yamane's formula from a total population of 958 (comprising doctors and patients), with 270 valid responses retrieved through online questionnaires. Data were analyzed using descriptive statistics and simple percentages. Findings revealed that most respondents were aware of the chatbot app and acknowledged its contribution to improving communication. The app was reported to enhance clarity, timeliness, and the provision of accurate medical information. Respondents also noted that it made understanding medical instructions easier and fostered trust between doctors and patients. However, challenges such as technical issues, limited handling of complex queries, and concerns about privacy and data security were highlighted. Despite these, the app's overall impact on doctor–patient communication was largely positive. The study recommends continuous improvement of the chatbot app by integrating advanced features, ensuring stronger privacy safeguards, and enhancing technical support. For doctors, training on effective use of the app is advised, while patients should be sensitized to increase adoption. Policymakers are encouraged to support the integration of artificial intelligence in healthcare to strengthen communication systems in hospitals. The study concludes that chatbot-powered apps can play a vital role in transforming healthcare communication when properly optimized.*

***Keywords:*** *assessment; chatbot; communication; doctor-patient; powered app*

## I. Introduction

Effective doctor–patient communication is widely recognized as the cornerstone of quality healthcare delivery. Clear and open exchanges between doctors and patients not only foster mutual trust but also enhance the accuracy of diagnosis, adherence to treatment, and overall patient satisfaction. When communication is poorly managed, the outcomes can include misinterpretation of medical advice, reduced compliance with prescriptions, and diminished trust in the healthcare system (Street et al., 2009). This makes communication a crucial determinant of patient-centered care.

Health communication has emerged as a vital area that studies the processes and effects of conveying health-related information. Health communication explores the interaction between doctors, patients, institutions, and technologies, focusing on how messages influence


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health behaviors and outcomes (Kreps, 2011). With the integration of media and digital platforms, health communication has shifted from face-to-face consultations

Over the last decade, the healthcare sector has witnessed a rapid digital transformation, largely driven by artificial intelligence (AI). AI technologies are increasingly being deployed to assist in diagnostics, treatment planning, patient monitoring, and communication. Digital innovations such as mobile health apps, telemedicine platforms, and AI-powered chatbots are designed to supplement traditional doctor–patient interactions, making healthcare more accessible and efficient (Topol, 2019). These developments have reshaped how communication occurs in hospitals and clinics worldwide.

Among the emerging AI tools, chatbot-powered applications have gained prominence. These apps simulate human conversation using natural language processing, enabling patients to access information, schedule appointments, ask health-related questions, and receive reminders. Chatbots are praised for improving communication efficiency by reducing waiting times and facilitating continuous engagement between doctors and patients (Miner et al., 2020; Airaoje et al., 2024). However, their effectiveness often depends on contextual factors such as technological infrastructure, literacy levels, and user acceptance.

In developed countries, chatbot-powered apps are increasingly used as supplementary tools to improve doctor–patient communication. Studies in the United States and Europe have shown that patients appreciate their immediacy and convenience, while doctors benefit from reduced workload and improved patient engagement (Vaidyam et al., 2019). Despite these advantages, concerns have been raised about the inability of chatbots to fully replicate human empathy, as well as issues of privacy and data security (Nadarzynski et al., 2019). These mixed findings make it necessary to assess their impact in different healthcare settings.

In Nigeria, communication challenges in healthcare are compounded by high patient loads, insufficient medical staff, and limited time for consultations. Patients often experience delays in accessing medical advice, and doctors are burdened with administrative responsibilities that reduce the quality of personal interactions (Airaoje et al., 2023). Although digital health tools have begun to emerge in the country, their adoption has been slow and uneven. The integration of chatbot-powered apps offers potential solutions, but little is known about their actual effectiveness in Nigerian hospitals.

At Chukwuemeka Odumegwu Ojukwu Teaching Hospital, efforts to integrate digital solutions into healthcare delivery reflect a growing recognition of the role of technology in improving communication. The hospital, being a key tertiary healthcare provider in Anambra State, serves a large patient population with diverse needs. The introduction of chatbot-powered applications is intended to enhance communication between doctors and patients by providing timely responses, reminders, and information exchange. Yet, the extent to which these apps have improved communication outcomes remains underexplored (Aliough et al., 2023).

Given these developments, it becomes necessary to conduct an assessment of chatbot-powered applications in the hospital. While international literature provides insights into their potential benefits and limitations, there is limited empirical evidence from Nigerian contexts, where infrastructural challenges, cultural attitudes, and resource limitations may influence outcomes. By focusing on Chukwuemeka Odumegwu Ojukwu Teaching Hospital, this study.

seeks to fill an empirical gap and provide evidence-based insights into how chatbot-powered apps are shaping doctor–patient communication.

### 1.1 Problem Statement

Efficient interaction between doctors and patients is essential for accurate diagnosis, building trust, and ensuring adherence to medical advice. Yet, in many healthcare systems, particularly in low and middle-income countries like Nigeria, such interaction is often hampered by limited consultation periods, heavy patient loads, and systemic challenges (Ogunyemi & Olatunji, 2021). These obstacles not only weaken the doctor–patient relationship but also reduce patient satisfaction and treatment outcomes (Msughter et al., 2023). The introduction of artificial intelligence-powered applications, such as chatbots, has been promoted as a way to bridge communication gaps by providing timely responses, reminders, and interactive platforms (Topol, 2019). Despite these potentials, empirical evidence on their effectiveness in Nigerian healthcare institutions remains limited.

While global studies show that chatbot-powered tools can improve healthcare delivery by enhancing patient engagement, minimizing delays, and offering round-the-clock communication (Miner et al., 2020), other research has noted challenges, including lack of human empathy, privacy concerns, and differences in user acceptance (Nadarzynski et al., 2019). These mixed results suggest that context-specific studies are necessary to understand how these technologies perform in different healthcare environments. In Nigeria, where communication barriers remain a major concern, the absence of localized research on chatbot integration presents a significant knowledge gap (Aondover et al., 2022). This gap limits the ability of hospital administrators and policymakers to make evidence-based decisions regarding their implementation.

At Chukwuemeka Odumegwu Ojukwu Teaching Hospital (COOUTH), Anambra State, chatbot-powered applications have been adopted to strengthen communication between doctors and patients. However, it is not clear whether these innovations have achieved their intended goals, such as improving information exchange, reducing waiting time, or fostering stronger doctor–patient relationships (Hile et al., 2022). Without an assessment of their actual impact, it is difficult to know whether these technologies are effectively addressing the hospital's communication challenges or whether barriers such as digital literacy, accessibility, and technical issues undermine their success. This study therefore seeks to assess the influence of chatbot-powered applications on doctor–patient communication at COOUTH.

### 1.2 Objectives of the Study

The study was anchored on the following objectives:

1. To assess the extent of utilization of chatbot-powered apps in doctor–patient communication at Chukwuemeka Odumegwu Ojukwu Teaching Hospital.
2. To evaluate the effectiveness of chatbot-powered apps in improving clarity, feedback, and timeliness in doctor–patient communication.
3. To examine the challenges faced by doctors and patients in the use of chatbot-powered apps for communication.
4. To determine the impact of chatbot-powered apps on the quality of doctor–patient communication.

### 1.3 Empirical Review

Recent systematic reviews and syntheses of conversational agents in healthcare provide an important empirical baseline for assessing chatbot applications in clinical

communication. Laranjo et al.'s (2018) systematic review examined studies of conversational agents across health domains and concluded that chatbots are most commonly used for consumer-facing tasks (information provision, self-care, symptom checking), with promising but still mixed evidence for measurable clinical outcomes. Montenegro et al. (2019) similarly surveyed conversational-agent studies and identified recurring technical limitations (natural language understanding errors, limited contextual awareness) and heterogeneity in evaluation methods. Car et al. (2020) mapped gaps in the evidence and emphasized the need for context-sensitive assessments of chatbots' effects on patient–provider communication. These syntheses collectively highlight that while chatbots often improve access to information and convenience, robust, standardized outcome measures and real-world evaluations remain limited (Laranjo et al*.,* 2018; Montenegro et al., 2019; Car et al., 2020).

Randomized and prospective experimental studies have demonstrated that chatbots can perform well on structured informational tasks, even when compared with clinicians. Bibault and colleagues (2019) conducted a randomized non-inferiority trial in oncology showing that a chatbot could provide information to breast-cancer patients with patient-rated satisfaction comparable to physician responses for specific informational queries, though the authors cautioned that relational and diagnostic roles remain the province of clinicians. Chaix et al.'s (2019) one-year prospective evaluation of chatbot interactions with breast cancer patients provided large-scale, longitudinal evidence that users frequently relied on chatbots for logistical information and emotional support, reporting perceived improvements in access and reduced anxiety despite limited objective clinical outcome data. These empirical trials indicate that chatbots can reliably address structured informational needs and support patient engagement over time (Bibault et al*.,* 2019; Chaix et al., 2019).

Research focused on mental health and behavioral support shows domain-specific promise for conversational agents while also exposing safety and appropriateness concerns. Miner et al. (2016) evaluated smartphone-based conversational agents' responses to questions about mental health and interpersonal violence, finding variable appropriateness and highlighting safety risks when agents handle sensitive content. Vaidyam et al. (2019) reviewed chatbot applications in psychiatry and concluded that chatbots can be effective for screening, monitoring, and psychoeducation, yet acceptability and clinical integration depend on design quality and governance. Nadarzynski et al. (2019) used mixed methods to examine acceptability of AI-led chatbot services and reported that while users are generally willing to use chatbots for low-risk informational tasks, trust, privacy assurances, and empathy remain central concerns. Together, these studies indicate that chatbots can augment mental-health care workflows but must be carefully constrained and evaluated for safety and user trust (Miner et al., 2016; Vaidyam et al., 2019; Nadarzynski et al., 2019).

Large-scale and domain-wide reviews additionally point to recurring technical and ethical barriers that shape real-world chatbot performance. Technical constraints such as limited natural language understanding, context loss across multi-turn conversations, and difficulties with multilingual/localized deployments reduce effectiveness in heterogeneous patient populations (Montenegro et al., 2019; Car et al., 2020). Ethical and governance issues, data privacy, algorithmic bias, and accountability in case of erroneous medical advice, further complicate deployment in clinical settings. These cross-cutting limitations imply that assessments of chatbot apps must measure not only user satisfaction and access but also reliability, safety protocols, and localizability of content (Montenegro et al., 2019; Car et al., 2020; Jobin et al., 2019).

Several reviews and empirical papers emphasize the need for context-sensitive research and real-world evaluations, a point that is especially relevant for low- and middle-income country (LMIC) settings. Phiri et al., (2023) scoping review of health chatbots in Africa found only a handful of rigorous Africa-based evaluations and underscored infrastructural constraints (connectivity), localization requirements (language and cultural adaptation), and governance gaps as barriers to effective adoption. This emergent African evidence base suggests that findings from high-income countries may not generalize to contexts like Nigeria without careful adaptation and local evaluation.

In Nigeria and comparable settings, mobile and digital health (mHealth) interventions provide useful analogues for chatbot adoption and impact. Olajubu et al. (2020) evaluated a mobile health intervention in Osun State and demonstrated improved postnatal care attendance, showing that targeted digital tools can positively influence patient behavior when implemented with local tailoring. During COVID-19, studies of telemedicine and mHealth uptake documented rapid adoption among healthcare workers but also persistent operational problems: unreliable networks, limited training, and medico-legal uncertainty. These local empirical findings point to the institutional and infrastructural preconditions (training, policy, connectivity) that determine whether chatbot deployment will translate into improved doctor–patient communication in Nigerian tertiary hospitals (Olajubu et al., 2020; Adeyemo et al., 2021; Ogundaini et al., 2021).

When synthesized, international and local empirical work indicates a consistent pattern: chatbots reliably handle transactional, informational, and monitoring tasks and can improve perceived access and convenience, but their role in nuanced, empathic, or diagnostic communication is limited and contingent on technical quality, governance, and local readiness. The international RCTs and longitudinal studies provide evidence that chatbots can achieve high user satisfaction for specific tasks, while systematic reviews and African scoping work call for more context-specific empirical assessments to capture infrastructural, cultural, and regulatory realities (Laranjo et al., 2018).

These empirical findings justify a focused assessment at Chukwuemeka Odumegwu Ojukwu Teaching Hospital that measures multiple outcome domains, extent of use, communication timeliness and clarity, user satisfaction, safety and accuracy, and institutional readiness. The Nigerian and African studies stress that such assessments must include measures of connectivity, localization, training, and policy context, while international chatbot evaluations provide instruments and outcome measures (e.g., satisfaction scales, usage logs, error rates) that can be adapted for the COOUTH setting. By bridging global evidence with local realities, the present study can fill an empirical gap and offer actionable recommendations for implementation and policy.

Although there is a growing body of research on artificial intelligence and digital health communication, very few studies have provided evidence on the specific use of chatbot-powered applications in doctor-patient communication within the Nigerian healthcare system. Most available studies are either conducted in developed countries or focus broadly on digital health tools without narrowing down to chatbot applications. This leaves limited understanding of how chatbots affect communication, trust, and interaction between doctors and patients in Nigerian hospitals.

In addition, there is a lack of empirical work that investigates patient adaptation to chatbot-powered platforms, as well as how such tools influence the quality of care and communication in teaching hospitals. Existing studies in Nigeria often generalize digital health adoption and overlook the specific impact of chatbots in healthcare delivery. This creates a research gap that this study seeks to fill by assessing the effectiveness of chatbot-powered applications on doctor-patient communication in Chukwuemeka Odumegwu Ojukwu Teaching Hospital.

## II. Review of Literature

The study adopted Diffusion of Innovations Theory (DOI). Diffusion of Innovations (DOI) theory was developed by Everett M. Rogers; its classic formulations date from the 1960s and have been refined across editions (Rogers, 2003). DOI synthesizes research on how innovations spread through social systems over time. DOI assumes that innovation diffusion is a process that unfolds over time and depends on characteristics of the innovation (relative advantage, compatibility, complexity, trialability, observability), the adopters (categorically distributed as innovators, early adopters, early majority, late majority, laggards), communication channels, time, and the social system (Rogers, 2003). Adoption is shaped both by individual evaluation and by social influence within peer networks.

Critics of DOI argue the model can be overly linear and deterministic, underplaying the recursive and political nature of adoption in complex organizations (Lyytinen & Damsgaard, 2001). It has been said to insufficiently account for power relations, institutional constraints, and contextual contingencies. In healthcare settings, the pathway of diffusion can be nonlinear because of regulation, professional norms, and risk concerns.

DOI's strength lies in its practical utility: it provides clear attributes for assessing why an innovation may succeed or fail and offers adopter-category concepts helpful for planning rollouts (Rogers, 2003). It has been widely applied in health settings to study telemedicine, mHealth and clinical innovations. Its weakness is that DOI can oversimplify adoption dynamics and may not adequately capture institutional resistance, ethical debates, or resource constraints that alter diffusion in real world organizations (Lyytinen & Damsgaard, 2001).

DOI fits the assessment aim because a chatbot-powered app is an innovation introduced into COOUTH's social system. DOI guides empirical inquiry in several ways:

a. Evaluate the app's relative advantage (e.g., time savings compared to standard channels), compatibility with existing practices (workflows, cultural expectations), and complexity (ease of use).
b. Identify adopter categories among doctors and patients (who are early adopters vs. laggards) and the social influences shaping uptake.
c. Examine trialability (opportunities to pilot/test the app) and observability (visibility of benefits).

These DOI dimensions align with measurable indicators in the study (usage rates, reported barriers, observed practice changes). Importantly, DOI prompts investigation into institutional factors (training, policy, infrastructure) that UGT may not foreground, making the pair complementary. UGT and DOI provide complementary lenses for an assessment study. UGT centers on individual motives and gratifications because doctors and patients use the chatbot and whether their needs are satisfied (useful for measuring perceived benefits, satisfaction, and continued use).

DOI situates those motives within a process of diffusion, how the innovation propagates through hospital structures, which social groups adopt it, and which attributes help or hinder broader uptake (Msughter et al., 2020). Together they allow the study to: measure individual user experiences and satisfactions (UGT), explain adoption patterns and organizational factors (DOI), and recommend implementation strategies (e.g., targeted training for slow adopters, design modifications to reduce perceived complexity, policy changes that make benefits observable). Using both theories strengthen the assessment by linking subjective user reports to objective diffusion dynamics, which is critical for evidence-based recommendations to hospital management and policymakers.

## III. Methodology

The study adopted a descriptive survey design to systematically investigate the use of a chatbot-powered application in doctor-patient communication at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital. This design was considered appropriate because it allows for the collection of quantitative data from a defined population to describe existing conditions, perceptions, and practices without manipulating variables. By using this approach, we were able to capture respondents' views on the effectiveness, challenges, and overall impact of the chatbot application in facilitating health communication (Msughter et al., 2022). The population of this study comprises of all doctors and patients at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka. According to records obtained from the Personnel Department of the hospital (2025), the total population was 958, consisting of 249 medical doctors and 709 patients. actively receiving treatment at the hospital.

The primary instrument for data collection in this study was structured questionnaire consisting of 19 items. This study adopted the simple random sampling technique to select respondents from the study population. Simple random sampling was considered appropriate because it gave every respondent in the population an equal and independent chance of being included in the study, thereby reducing bias and ensuring that the sample was representative of the entire population. The sample size for this study was determined using Taro Yamane's (1967) formula at a 5% margin of error. The formula is expressed as:

$n = N/1 + N(e)^2$

Where:

n = sample size
N = population size (958)
e = margin of error (0.05)
Substituting the values:
$n = 958/1 + 958\ (0.05)^2$
$n = 958/1 + 958\ (0.0025)$
$n = 958/1 + 2.395$
$n = 958/3.395$
$n = 283$

Thus, the sample size for this study is 283 respondents. The data collected from the administered online questionnaires were analyzed using simple percentage and frequency

distribution tables. This method was chosen because it provides a clear and straightforward means of summarizing responses and identifying patterns.

## III. Discussion

**Table 1.** Respondents' Awareness of the Chatbot-Powered App

| Options | Frequency | Percentage (%) |
|---|---|---|
| Yes | 206 | 76.2 |
| No | 64 | 23.8 |
| Total | 270 | 100.0 |

The result showed that a large majority of the respondents 206 (76.2%) are aware of the chatbot-powered app, while 64 (23.8%) indicated they were not aware of it. This suggests that the app has gained considerable visibility among doctors and patients in the hospital, though a small portion of respondents still lack awareness.

**Table 2.** Frequency of Use of the Chatbot-Powered App

| Options | Frequency | Percentage (%) |
|---|---|---|
| Daily14.1 | 38 | 14.1 |
| Weekly | 105 | 38.9 |
| Occasionally | 86 | 31.8 |
| Never | 41 | 15.2 |
| Total | 270 | 100 |

The table showed how often respondents used the chatbot-powered app. A majority of the respondents, 105 (38.9%), reported using the app weekly, while 86 (31.8%) used it occasionally. Only 38 (14.1%) indicated daily usage, suggesting that consistent engagement with the app is relatively low. Meanwhile, 41 (15.2%) of the respondents reported never using the app, highlighting that although awareness of the app exists, full adoption is yet to be achieved.

**Table 3.** Respondents' Perception of the App Providing Accurate Medical Information

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 33 | 12.2 |
| Agree | 158 | 58.5 |
| Neutral | 66 | 24.4 |
| Disagree | 13 | 4.9 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

This table showed respondents' perception of the app's ability to provide accurate medical information. A majority of the respondents, 58.5% (158), agreed that the app provides accurate medical information, while 12.2% (33) strongly agreed, making a combined 70.7% who expressed confidence in the app's reliability. However, 24.4% (66) were neutral, indicating some uncertainty, and only 4.9% (13) disagreed. This suggests that overall, respondents generally trust the accuracy of the medical information provided by the chatbot-powered app.

**Table 4.** Perceived Ease of Using Chatbot powered Apps

| Options | Frequen | Percentage (%) |
|---|---|---|

| | cy | |
|---|---|---|
| Strongly Agree | 34 | 12.5 |
| Agree | 176 | 65.0 |
| Neutral | 60 | 22.5 |
| Disagree | 0 | 0 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

Table 4 reveals the respondents' perception of the ease of using the chatbot-powered app. A large majority, 65.0% (176), agreed that the app is easy to use, while 12.5% (34) strongly agreed, giving a total of 77.5% who found the app user-friendly. Meanwhile, 22.5% (60) remained neutral, suggesting they neither found it particularly easy nor difficult to use. Notably, no respondents disagreed, indicating that the app's design and usability are generally satisfactory among the users.

**Table 5.** Respondents' Comfort Level in Using the Chatbot Powered App

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 39 | 14.6 |
| Agree | 165 | 61.0 |
| Neutral | 59 | 22.0 |
| Disagree | 7 | 2.4 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The table showed that most respondents felt comfortable using the chatbot-powered app, with 61.0% (165) agreeing and 14.6% (39) strongly agreeing. A smaller portion, 22.0% (59), remained neutral, while only 2.4% (7) disagreed. This indicates that overall, the app enjoys high acceptance in terms of user comfort, although the neutral responses suggest that further improvements in design and user support could enhance confidence among all users.

**Table 6.** Respondents' Perception on Whether the App Helps Save Time in Seeking Medical Assistance

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 59 | 22.0 |
| Agree | 145 | 53.7 |
| Neutral | 59 | 22.0 |
| Disagree | 7 | 2.4 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

Table 6 reveals that a majority of respondents agreed that the chatbot-powered app helps save time when seeking medical assistance, with 53.7% (145) agreeing and 22.0% (59) strongly agreeing. Another 22.0% (59) remained neutral, while only 2.4% (7) disagreed. This suggests that the app is widely perceived as a time-saving tool in healthcare communication, though the neutral responses indicate that some users may not yet fully experience or recognize its efficiency.

**Table 7.** The App Improves Communication between Doctors and Patients

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 46 | 17.1 |
| Agree | 165 | 61.0 |
| Neutral | 53 | 19.5 |
| Disagree | 6 | 2.4 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The findings indicate that most respondents view the chatbot-powered app as an effective tool for improving doctor–patient communication, with 61.0% (165) agreeing and 17.1% (46) strongly agreeing. About 19.5% (53) remained neutral, while only 2.4% (6) disagreed. This shows that the app is widely accepted as a supportive medium for enhancing clarity and interaction in medical consultations, though a small proportion of respondents remain skeptical.

**Table 8.** I Can Ask Questions Through the App That I Might Not Ask in Person

| **Options** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Strongly Agree | 66 | 24.4 |
| Agree | 151 | 56.1 |
| Neutral | 46 | 17.1 |
| Disagree | 7 | 2.4 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The result indicates that many respondents feel more comfortable asking sensitive or personal questions through the app, with 56.1% (151) agreeing and 24.4% (66) strongly agreeing. Meanwhile, 17.1% (46) remained neutral, and only 2.4% (7) disagreed. This suggests that the chatbot-powered app may reduce communication barriers often present in face-to-face consultations, thereby creating a more open environment for patients to express concerns.

**Table 9.** The App Enhances Doctors' Ability to Respond Promptly to Patients

| **Options** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Strongly Agree | 54 | 20.0 |
| Agree | 169 | 62.5 |
| Neutral | 47 | 17.5 |
| Disagree | 0 | 0 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The results show that the majority of respondents recognize the app's effectiveness in facilitating timely responses from doctors, with 62.5% (169) agreeing and 20.0% (54) strongly agreeing. A smaller group, 17.5% (47), maintained a neutral stance. This highlights that the

chatbot-powered app significantly contributes to reducing delays in medical communication, though some users may not have consistently experienced promptness.

**Table 10.** The App Makes It Easier to Understand Medical Instructions from Doctors

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 53 | 19.5 |
| Agree | 158 | 58.5 |
| Neutral | 53 | 19.5 |
| Disagree | 6 | 2.4 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The results showed that most respondents find the chatbot-powered app helpful in simplifying medical instructions, with 58.5% (158) agreeing and 19.5% (53) strongly agreeing. Another 19.5% (53) remained neutral, while 2.4% (6) disagreed. This indicated that the app contributes to better comprehension of doctors' guidance, reducing misunderstandings in medical communication, although a few respondents expressed doubts about its clarity.

**Table 11.** The App Fosters Trust in the Doctor–Patient Relationship

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 39 | 14.6 |
| Agree | 158 | 58.5 |
| Neutral | 66 | 24.4 |
| Disagree | 7 | 2.4 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

Findings indicate that a majority of respondents believe the app strengthens trust in doctor–patient relationships. Specifically, 58.5% (158) agreed and 14.6% (39) strongly agreed. Meanwhile, 24.4% (66) were neutral, and only 2.4% (7) disagreed. This suggests that the app plays a significant role in building trust, although some respondents remain unsure of its effectiveness in this regard.

**Table 12.** The App Experiences Technical Issues That Affect Communication

| Options | Frequency | Percentage (%) |
|---|---|---|
| Strongly Agree | 20 | 7.3 |
| Agree | 125 | 46.3 |
| Neutral | 92 | 34.1 |
| Disagree | 33 | 12.2 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The results show that technical issues are a notable concern for users of the app. A combined 53.6% (145) of respondents agreed or strongly agreed that technical problems affect communication, while 34.1% (92) remained neutral. Only 12.2% (33) disagreed. This suggests

that although the app is widely accepted, technical challenges persist and may hinder smooth doctor–patient interactions if not properly addressed.

**Table 13.** Adequate Support to Help Users Navigate the App

| Options | Frequency | Percentage (%) |
|---|---|---|
| Yes | 204 | 75.6 |
| No | 66 | 24.4 |
| Total | 270 | 100 |

The findings indicate that most respondents (75.6%, n=204) affirmed that there is adequate support to help users navigate the app, while 24.4% (n=66) felt otherwise. This suggests that the majority of users are satisfied with the guidance and assistance provided within the app, which likely enhances usability and adoption. However, the minority response highlights a need for continuous improvement in user support systems to ensure inclusivity and a smoother experience for all users.

**Table 14.** The App Can Handle Complex Medical Queries Effectively

| **Options** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Strongly Agree | 13 | 4.9 |
| Agree | 119 | 43.9 |
| Neutral | 112 | 41.5 |
| Disagree | 26 | 9.8 |
| Strongly Disagree | 0 | 0 |
| Total | 270 | 100 |

The results reveal that 43.9% (n=119) of respondents agreed that the app can handle complex medical queries effectively, while only 4.9% (n=13) strongly agreed. A considerable portion, 41.5% (n=112), remained neutral, indicating uncertainty about the app's capability in this regard. Meanwhile, 9.8% (n=26) disagreed. This distribution suggests that while many users recognize the app's usefulness, there are reservations about its ability to manage more advanced or nuanced medical issues, pointing to the need for further improvement in the app's diagnostic or response features.

**Table 15.** Preference for Using the App Over In-Person Consultation for Some Inquiries

| **Options** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Strongly Agree | 20 | 7.3 |
| Agree | 99 | 36.6 |
| Neutral | 112 | 41.5 |
| Disagree | 33 | 12.2 |
| Strongly Disagree | 6 | 2.4 |
| Total | 270 | 100 |

The results indicate that 36.6% (n=99) of respondents agreed and 7.3% (n=20) strongly agreed that they prefer using the app over traditional in-person consultations for some inquiries. However, 41.5% (n=112) remained neutral, while 12.2% (n=33) disagreed and 2.4% (n=6) strongly disagreed. This distribution suggests that while a notable number of

respondents appreciate the convenience of the app, many are still cautious or indifferent about replacing face-to-face consultations, reflecting a need for balancing digital interaction with personal doctor-patient engagement.

**Table 16.** Respondents' Suggestions on Improving AI-Powered Apps for Better Communication

| Options | Frequency | Percentage (%) |
|---|---|---|
| Improve response time | 105 | 39.0 |
| Add more medical information/features | 145 | 53.7 |
| Enhance user interface for easier navigation | 112 | 41.5 |
| Provide better technical support/helpdesk | 105 | 39.0 |
| Make the app compatible with more devices | 105 | 39.0 |
| Increase privacy and data security | 125 | 46.3 |
| Total | 270 | 100.0 |

The findings show that the most suggested improvement was the addition of more medical information and features (53.7% =145), followed by strengthening privacy and data security (46.3% =125). Enhancing the user interface for easier navigation (41.5% =112) and providing better technical support (39% =105) were also identified as important. Similarly, 39% (105) recommended improving response time and making the app compatible with more devices. These results highlight that while respondents appreciate the app, they desire broader functionality, stronger security, and more reliable technical support to maximize its effectiveness.

**4.1 Analysis of Research Questions**

**Research Question 1**: To what extent are chatbot-powered apps used in doctor–patient communication at Chukwuemeka Odumegwu Ojukwu Teaching Hospital? The level of usage of chatbot-powered applications among respondents provides insight into their integration into healthcare communication. Findings show that a significant majority of respondents (76.2%) indicated awareness of the app, while 23.8% had no awareness (Table 4). This suggests that the app has gained considerable visibility within the hospital environment, although not everyone is familiar with it yet. In terms of usage frequency, only 14.1% of respondents reported daily use, while 38.9% reported weekly usage. Another 31.8% used the app occasionally, and 15.2% had never used it (Table 5). The data indicates that although the app is well-known, its active and consistent use is still moderate. Weekly and occasional users form the majority, which implies that while the technology is being adopted, it is not yet a daily routine tool for most patients and doctors. This finding highlights the growing relevance of chatbot-powered apps in doctor–patient communication but also shows the need for strategies to encourage more frequent and consistent use.

**Research Question 2**: How effective are chatbot-powered apps in enhancing clarity, feedback, and timeliness in doctor–patient communication? The study reveals that chatbot-powered apps are largely effective in enhancing doctor–patient communication, particularly in improving clarity and timeliness. For instance, the majority of respondents agreed that the app provides accurate medical information, with 58.5% agreeing and 12.2% strongly agreeing

(Table 6). Similarly, a large proportion (65.0% agree, 12.5% strongly agree) in table 7, indicated that the app is easy to use, demonstrating that the design and usability of the platform encourage effective interaction. In addition, 61.0% of respondents agreed and 14.6% strongly agreed that they feel comfortable using the app, with only a small minority disagreeing (Table 8). Respondents also affirmed the time-saving benefits of the app, with 53.7% agreeing and 22.0% strongly agreeing that it helps them save time in seeking medical assistance (Table 9). More importantly, 61.0% of respondents agreed, while 17.1% strongly agreed, that the app improves communication between doctors and patients (Table 10). Collectively, these findings suggest that chatbot-powered apps are effective tools in bridging communication gaps, providing timely feedback, and enhancing the clarity of health-related information shared between doctors and patients.

**Research Question 3**: What challenges do doctors and patients face in using chatbot-powered apps for communication? While the app shows potential in improving communication, challenges remain evident from the data. A notable concern raised by respondents relates to technical difficulties: 46.3% agreed and 7.3% strongly agreed that the app experiences technical issues that disrupt communication, while 34.1% remained neutral and 12.2% disagreed (Table 15). This finding indicates that technical breakdowns remain a key barrier to the seamless functioning of the app. Another challenge identified is the app's limited ability to handle complex medical queries. Only 43.9% agreed that it could handle such queries, while 41.5% remained neutral, suggesting uncertainty, and 14.7% either disagreed or strongly disagreed (Table 17). This reveals that while the app is helpful for basic communication, it may not yet be reliable for complex medical concerns that require detailed consultation. On the positive side, most respondents (75.6%) affirmed that adequate support exists to help them navigate the app (Table 16). However, when given the opportunity to suggest improvements, respondents highlighted the need to enhance technical support, improve response times, expand the range of medical information available, and strengthen privacy and data security (Table 19). These findings show that while the app holds promise, issues such as technical reliability, query limitations, and support services must be addressed to maximize its effectiveness.

**Research Question 4**: What is the impact of chatbot-powered apps on the quality of doctor–patient communication? The overall findings strongly indicate that chatbot-powered apps positively impact the quality of doctor–patient communication at the hospital. A large proportion of respondents (56.1% agree, 24.4% strongly agree) indicated that the app allows them to ask questions they might not feel comfortable raising during in-person consultations (Table 11). This highlights the app's role in encouraging openness and breaking barriers in communication. Similarly, 62.5% agreed and 20% strongly agreed that the app enhances doctors' ability to respond promptly to patients (Table 12), underscoring its contribution to timely healthcare delivery. In addition, the app was found to improve patients' understanding of medical instructions, with 58.5% agreeing and 19.5% strongly agreeing (Table 13). Trust, a crucial element of doctor–patient communication, was also reinforced through the app, as 58.5% agreed and 14.6% strongly agreed that it fosters trust in the doctor–patient relationship (Table 14). Collectively, these findings demonstrate that the chatbot-powered app has had a meaningful impact by enhancing openness, improving responsiveness, facilitating better comprehension of medical advice, and fostering trust, all of which are critical to quality communication in healthcare.

### 4.2 Discussion of Findings

The findings of this study provided meaningful insights into the assessment of chatbot-powered applications in doctor–patient communication at Chukwuemeka Odumegwu Ojukwu Teaching Hospital (COOUTH). Results revealed that a significant majority of respondents were aware of the chatbot-powered app and used it with varying frequency. While daily usage was relatively low, weekly and occasional usage were more prominent, suggesting that the app is gradually becoming integrated into healthcare communication, though not yet fully adopted as the primary medium of interaction (Namadi & Aondover, 2020). This outcome aligns with the Diffusion of Innovations Theory (Rogers, 2003), which explained that adoption of new technologies in healthcare is typically gradual and follows stages such as awareness, trial, and eventual acceptance. The relatively moderate level of usage also reflects the role of Uses and Gratification Theory (Katz et al., 1974), as patients use the app primarily when it meets their needs for convenience, quick access to information, and reduced face-to-face stress.

The study also established that the chatbot-powered app was effective in enhancing clarity, feedback, and timeliness in doctor–patient communication (Obada et al., 2024). A significant proportion of respondents agreed that the app helps them understand medical instructions, fosters timely responses, and enables them to ask questions they might hesitate to raise in person. This finding reinforces earlier empirical studies such as that of Bickmore et al. (2018), who reported that AI-driven health communication tools improved patient understanding of medical advice and encouraged openness in communication (Pate et al., 2020).

Despite the benefits, challenges were also noted. Many respondents indicated that the app sometimes experiences technical issues that disrupt communication. Concerns were also raised about the ability of the app to effectively handle complex medical queries, as well as the need for stronger privacy and data protection mechanisms. These challenges are consistent with findings from international studies such as Miner et al. (2020), which highlighted the limitations of chatbots in providing advanced medical advice and the risks of over-reliance on automated systems. From a theoretical standpoint, this reflects one of the criticisms of Uses and Gratification Theory, which assumes that media use is entirely need-driven, without fully accounting for structural limitations such as technical failures (Obada et al., 2021a). Similarly, Diffusion of Innovations Theory has been criticized for underestimating contextual barriers such as technological infrastructure, cost, and digital literacy, which can slow down adoption in settings like Nigeria.

In terms of the overall impact on doctor–patient relationships, the study revealed that the chatbot-powered app improves trust and strengthens communication between patients and doctors. Respondents noted that the app fosters a sense of confidence in their interactions and complements traditional consultations. This supports studies like Liu et al. (2019), which emphasized that digital health tools can enhance patient-centered care by improving the continuity and personalization of communication (Obada et al., 2021b).

The findings show that chatbot-powered apps are gradually transforming healthcare communication at COOUTH by improving accessibility, efficiency, and trust, while still facing adoption challenges related to technical limitations and infrastructure. By linking these findings to the theories guiding this study, it is evident that UGT explains the motivations behind patient usage of the app, while DOI accounts for the patterns of adoption and barriers faced in the process. Empirical evidence from both international and local studies reinforces

the reliability of these findings, showing that COOUTH is not isolated but part of a wider global trend of integrating artificial intelligence into healthcare communication.

## IV. Conclusion

The findings of this study indicate that the chatbot-powered app has a significant positive impact on doctor–patient communication at Chukwuemeka Odumegwu Ojukwu Teaching Hospital. It enhances clarity in medical instructions, fosters trust in the doctor–patient relationship, and provides a convenient platform for patients to ask questions they might not raise in person. The app also facilitates timely responses from doctors, contributing to more efficient and effective healthcare interactions. However, the study also revealed challenges that limit the app's full potential. Technical issues, occasional glitches, and limited capacity to handle complex medical queries were identified as barriers to optimal communication. These limitations suggest that while the app is effective for routine inquiries and general communication, it cannot yet fully replace traditional in-person consultations for all medical needs.

The study concludes that the chatbot-powered app is a valuable tool in enhancing doctor–patient communication, supporting accessibility, convenience, and engagement in healthcare interactions. Nevertheless, to maximize its benefits and encourage wider adoption, continuous improvements in technical performance, functionality, user support, and data security are necessary. The app represents a meaningful step toward integrating digital solutions into healthcare communication, with the potential for even greater impact as enhancements are implemented.

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