Information Seeking Behaviour and Utilization of Information Communication Technology among Reproductive Health Professionals in Lagos State Hospital

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Abstract

Background: As health systems increasingly integrate information and communication technology (ICT), understanding how reprodu--ctive health professionals seek information and deploy digital tools is essential for improving care quality. This study investigated information-seeking behaviours, ICT utilisati--on patterns, and factors that influence adpot--ion among reproductive health practitioners.

Methods: A descriptive cross-sectional survey was conducted. A structured self-administered questionnaire was distributed to 169 eligible staff, yielding 160 valid responses (response rate = 94.7%). Data were analysed using descriptive statistics and bivariate inferential tests to examine relationships between information-seeking behaviour and ICT use.

Results: Respondents were predominantly female (67.5%) and aged 30–39 years (48.8%); nurse/midwives comprised the largest cadre (56.3%). The Internet and online databases, professional colleagues and work-shops/seminars were the principal information sources. Smartphones and desktop computers were the most commonly used ICT tools, whereas telemedicine applications were infreq--uently employed. Major barriers reported included poor internet connectivity (82.5% agreement), irregular power supply (81.3%) and insufficient training (75.1%). A strong, positive association was observed between frequency of information seeking and ICT utilisation ($r = 0.642$, $p = 0.001$).

Conclusion: Reproductive health professionals in the study setting rely chiefly on digital and peer sources for clinical information, yet infrastructural deficits and limited training constrain broader ICT adoption. Strengthening ICT infrastructure, providing ongoing digital -health training and implementing supportive managerial policies are recommended to enhance ICT integration in reproductive health services.

Keywords: information and communication technology; reproductive health professionals; information-seeking behaviour; ICT utilisation

Chapter one

Introduction

Background of The Study

Advances in Information and Communication Technology (ICT) have significantly altered health service delivery worldwide, particularly within reproductive health, by enabling rapid access to clinical guidance, fostering interdisciplinary collaboration, and supporting patient-centered care (Piotrow et al., 2021; WHO, 2022). ICT comprises a wide range of tools—mobile phones, the Internet, personal digital assistants, electronic health records, telemedicine platforms, and SMS systems—that are increasingly critical for addressing complex health needs in resource-limited settings (WAJU, 2020; Health Alliance, 2021). These technologies provide real-time access to evidence-based information, improve provider –patient and interprofessional communication, and facilitate epidemiological surveillance, all of which contribute to fewer medical errors and improved health outcomes (Gustafson et al., 2021; Kruk et al., 2022). Despite global

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advancements, the adoption and effective use of ICT by reproductive health professionals in sub-Saharan Africa are uneven and shaped by infrastructure availability, digital literacy, connectivity, and cost (Asangansi et al., 2012; Tilahun et al., 2021). Such constraints limit access to current reproductive health information and can adversely affect service quality (HIFA2015 Study Group, 2009). In Nigeria, a lower-middle-income nation with a population exceeding 200 million, systemic challenges—underfunded infrastructure, work--orkforce shortages, and large rural–urban disparities—compound difficulties in delivering quality reproductive health services; maternal mortality remains high (512 deaths per 100,000 live births) (World Bank, 2020; Adebayo & Iweala, 2023; WHO, 2021). ICT has potential to mitigate some of these challenges by supporting access to up-to-date protocols, continuous professional develop--ment, and timely interventions in underserved areas (Digital Opportunity Initiative, 2021; Sayki, 2023). Lagos State Hospital, functions as an important secondary referral facility serving both urban and rural populations in Nigeria's southwest. The hospital offers antenatal, delivery and family planning services but operates within a constrained technological environment and variable staff digital literacy (Akinumiju & Fabumni, 2020; Okon et al., 2021). Common barriers among Nigerian reproductive health professionals—unreliable internet, limited training, and socio-economic constraints—impede meaningful ICT use, particularly in rural settings where electricity and ICT infrastructure are inconsistent (American Nurses Association, 2021; Nwagwu & Oshiname, 2022; Pobjola, 2021; World Bank, 2022). Information-seeking behavior—the processes by which professionals identify, access and apply information for clinical and professional needs—is central to safe, evidence-based practice (Wilson, 2021). Reproductive health practitioners commonly seek clinical guidelines, research literature and patient data via online databases (e.g., PubMed, WHO e-Library), mHealth applications and communication platforms such as WhatsApp (Spink & Cole, 2022; Mayette et al., 2024; Okon et al., 2021). However, the patterns, determinants and clinical impacts of ICT-supported information-seeking among reproductive health staff at Lagos State Hospital, are under-investigated. This study therefore examines information-seeking behavior and ICT utilization among reproductive health professionals at Lagos State Hospital, with the aim of identifying opportunities to strengthen healthcare delivery and address digital inequities.

Statement of the Problem

While ICT integration promises improved access to critical information, streamlined clinical workflows and better patient outcomes in Nigeria's reproductive health sector (Piotrow et al., 2021; WHO, 2020), professionals encounter persistent obstacles that limit ICT uptake. Poor ICT infrastructure (unstable internet, obsolete hardware), low digital literacy—especially in rural areas—and socio-economic barriers hinder access to online resources and telemedicine (American Nurses Association, 2022; Adebayo & Iweala, 2023; Suyki, 2021; Nwagwu & Oshiname, 2021). Rural–urban disparities accentuate these limitations: suburban hospitals such as Lagos State Hospital, typically receive fewer technological investments than urban centres (Pobjola, 2021; World Bank, 2022). Consequently, lack of access to current guidelines and real-time patient data may undermine evidence-based decision-making, increase the risk of medical error, and compromise patient safety (Gustafson et al., 2022). Moreover, the absence of localized empirical data on information-seeking and ICT use in Lagos State constrains development of targeted interventions. This study addresses these gaps by assessing how reproductive health professionals at Lagos State Hospital, seek information and use ICT, identifying barriers and proposing evidence-based recommendations to enhance practice and reduce the digital divide.

AIM and Objectives AIM

To examine information-seeking behaviors and the utilization of Information and Communication Technology among repoduct--ive health professionals at Lagos State Hospital, Nigeria, in order to identify opportunities to improve healthcare delivery and equitable access to digital health resources.

Specific objectives

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- Assess the effects of ICT on professional practice among reproductive health professionals, including clinical decision-making, patient communication and professional development.
- Identify and evaluate the ICT tools (e.g., smartphones, internet, SMS, EHRs, telemedicine) used for information seeking and clinical practice.
- Determine the principal barriers (infrastructural, socio-economic, educational) to effective ICT utilization in reproductive health settings, with emphasis on rural contexts.
- Characterize information-seeking patterns of reproductive health professionals, including preferred sources and alignment with clinical needs.

Research Questions

- What are the benefits of ICT for professional practice among reproductive health professionals, specifically regarding clinical decision-making, patient communication and professional development?
- Which ICT tools are used by reproductive health professionals at Lagos State Hospital, for information seeking and clinical practice, and how effective are they?
- What are the primary technological, educational and socio-economic barriers hindering effective ICT utilization in this rural hospital setting?
- What are the prevailing information-seeking patterns among reproductive health professionals, and how well do these patterns satisfy clinical and professional needs?

Hypothesis

H0: There is a significant positive relationship between ICT proficiency and the frequency of information-seeking among reproductive health professionals at Lagos State Hospital.

Scope of the Study

This investigation is limited to reproductive health professionals—obstetricians, gynecol--ogists, midwives and nurses—employed at Lagos State Hospital. It examines their strategies for locating clinical and professional information and their use of ICT tools (smartphones, internet, SMS, EHRs, telemedicine) for clinical practice, professional development and patient communication. The geographic focus is Lagos State Hospital, a suburban secondary facility; therefore, findings are intended to provide a localized understanding of ICT adoption in a resource -constrained setting and may be cautiously transferable to similar suburban or rural contexts. Non-reproductive health staff and patients are excluded.

Significance of the Study

This study will produce evidence to inform administrators, educators and policymakers seeking to enhance reproductive health services through targeted ICT investments and capacity building. By identifying commonly used tools, training needs and infrastructural gaps, the research can guide resource allocation and the design of tailored digital-literacy programs for reproductive health staff at Lagos State Hospital, (Gustafson et al., 2021; WHO, 2022). The findings will contribute to national and regional policy discourse— supporting imple--entation of frameworks such as Nigeria's National Health ICT Strategic Framework— and may inform initiatives to expand rural/suburban ICT infrastructure and integration (FMOH, 2022; Digital Opportunity Initiative, 2021). Academically, the study fills a local evidence gap on information-seeking and ICT utilization in rural Nigerian reproductive health services, supporting progress toward global health objectives including Sustainable Development Goal 3 (Good Health and Well-being) by identifying strategies to improve access to evidence-based care and reduce maternal mortality (UN, 2022).

Operational Definitions

- **Lagos State Hospital:** The state-owned secondary health facility in Alimosho L.G.A, Lagos State, Nigeria, providing reproductive and other health services; the site of this study.
- **Information-seeking behaviour:** Deliberate activities by reproductive health professionals to identify, locate and obtain information required to support clinical duties, decision-making and professional developm--ent.
- **Information and Communication**

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Technology (ICT):
Digital devices, applications and systems (computers, mobile phones, internet services, databases, hospital information systems) used to access, store, retrieve and share reproductive health information.

- **Reproductive health professionals:** Health workers (doctors, nurses, midwives and allied personnel) working in the reproductive health unit and providing services such as antenatal, postnatal, family planning and sexual health care.
- **Utilization:** The extent to which reproductive health professionals apply accessible information and ICT tools in clinical practice and other work-related tasks.

Chapter Two
Literature Review
Introduction
This chapter synthesizes existing literature related to the study objectives. It is structured into conceptual review, theoretical framework, and empirical studies, and addresses ICT applications, adoption, barriers, determinants of information-seeking, and the relationship between ICT utilization and information behaviour.

Conceptual Review
Information-seeking behaviour denotes purposive activities through which healthcare professionals identify, access and apply information to meet clinical, professional or research needs (Wilson, 2021). In reproductive health—characterized by time-sensitive and complex clinical scenarios—this behaviour is essential for evidence-based decision-making (Spink & Cole, 2022). Globally, practitioners consult peer-reviewed journals, online databases (e.g., PubMed, Cochrane), colleagues and increasingly digital platforms including mobile applications and social media (Davies & Harrison, 2022; Lwoga & Questier, 2023). In low-resource African settings, mobile phones are often the primary channel for guideline access and peer consultation when physical libraries or desktop resources are unavailable (Hampshire et al., 2020; Lester et al., 2021). Nigerian studies show a preference for internet sources where accessible, with informal colleague networks used as a pragmatic alternative when digital access is unreliable (Nwagwu & Oshiname, 2023). These patterns reflect the influence of contextual intervening variables—such as infrastructure and digital skills—on information behaviour (Wilson, 2021).

ICT in reproductive health
ICT modalities—mHealth applications, online databases, EHRs, telemedicine and SMS systems—have transformed reproductive health practice by improving diagnostic support, patient follow-up and public-health monitoring (Piotrow et al., 2021; WAJU, 2020). ICT supports rapid access to clinical guidelines, strengthens patient–provider communication and facilitates health education (WHO, 2021). In sub-Saharan Africa, mHealth programs have demonstrated measurable benefits; for example, SMS and mobile app use have been associated with increased antenatal care attendance and reduced referral delays (MacLeod et al., 2022; Hampshire et al., 2021). In Nigeria, initiatives such as SMS-based maternal health monitoring have yielded improvements in surveillance and attendance, though implementation and uptake remain heterogeneous across regions (Okon et al., 2021).

ICT adoption in Nigeria's healthcare system
Nigeria's adoption of health ICT is constrained by inadequate infrastructure, limited funding and low digital proficiency among health workers, particularly in rural areas (American Nurses Association, 2021; Sayki, 2023). Public healthcare expenditure is low relative to need, and many facilities lack reliable electricity and internet connectivity, prompting reliance on personal smartphones for clinical information (World Bank, 2022; Okon et al., 2021).
Although national strategies such as the National Health ICT Strategic Framework underscore ICT integration, implementation has been slow and uneven: a minority of facilities have dependable internet or functional EHR systems (FMOH, 2022; World Bank, 2021). These disparities limit reproductive health professionals' capacity to access online journals, telemedicine and digital patient records.

Barriers to ICT utilization

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Barriers to effective ICT use in Nigerian healthcare are technological (intermittent connectivity, power outages, obsolete hardware), educational (limited training, low digital literacy) and socio-economic (high data costs, low incomes), with rural settings disproportionately affected (Pobjola, 2021; SCIPICH, 2022). Studies report that many facilities lack consistent power, and staff may incur substantial personal expenses for mobile data (Okon et al., 2021; World Bank, 2022). Gendered differences in access and training also influence ICT uptake, given the predominance of women in nursing and midwifery roles (WHO, 2021). Comparisons with peer countries (Kenya, Uganda) reveal similar rural connectivity challenges, though Nigeria's vast and varied geography amplifies the scale of implementation issues (Hampshire et al., 2023).

Relationship between information-seeking behaviour and ICT utilization

ICT serves as a pivotal enabler of efficient information seeking by furnishing rapid access to databases, clinical updates and collaborative platforms, thereby supporting timely clinical responses and improved outcomes (Mayette et al., 2024). However, the strength of this relationship is moderated by digital literacy, infrastructure, organizational support and cost. In resource-limited environments, ICT can either narrow or exacerbate information inequities depending on access and training levels. Understanding how reproductive health professionals use ICT in their information-seeking processes is therefore critical for designing interventions that enhance clinical decision-making and reduce dependence on outdated or informal information sources.

Determinants of information-seeking behaviour among healthcare professionals

Information-seeking is shaped by individual factors (professional role, education, experience, age, intrinsic motivation) and institutional factors (availability of ICT and library resources, leadership support, workload) (Wilson, 2021; Davies & Harrison, 2022). For example, senior clinicians often consult peer-reviewed journals and formal guidelines, whereas junior staff may rely on supervisors or quick-access tools in urgent situations (Nwagwu & Oshiname, 2023). Time pressures during obstetric emergencies promote the use of rapid resources such as mobile apps or colleague consultation. Evidence from Ethiopia indicates that ICT training markedly increases the likelihood of evidence-based information seeking (Tadesse et al., 2022).

Benefits of ICT for information seeking

ICT has reconfigured how professionals locate and apply information, producing several benefits for reproductive health practitioners:

- Faster access to evidence-based guidelines via mobile databases (e.g., WHO Reproductive Health Library, UpToDate), reducing delays in decision-making (Kruk et al., 2022).
- Improved professional communication through platforms such as WhatsApp and telemedicine software, which enable remote specialist consultations (MacLeod et al., 2022).
- Enhanced opportunities for continuous professional development via online courses and webinars (Lwoga & Questier, 2023).
- Better data management and continuity of care through EHRs and mHealth platforms (WAJU, 2020).

Evidence from Nigeria and neighbouring countries demonstrates measurable improvem--ents—such as increased antenatal attendance with SMS reminders and reduced referral delays with mHealth interventions—although outcomes vary by context and implementation fidelity (Okon et al., 2021; Hampshire et al., 2021).

Challenges integrating ICT into routine reproductive health practice

Adoption obstacles include resistance to change, especially among older staff; limited in-facility technical support resulting in prolonged downtime; and policy–practice gaps where national strategies have not translated into functional systems at facility level (Sayki, 2023; Pobjola, 2021; FMOH, 2022). In Oyo State, anecdotal reports indicate widespread smartphone ownership among reproductive health workers but minimal hospital-wide ICT integration due to budgetary constraints and weak network coverage.

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Theoretical Models Guiding The Study
This study adopts Wilson's Model of Information Behaviour (2021), which frames information seeking as a dynamic process initiated by recognition of an information need and shaped by activating mechanisms and intervening variables (personal, organizational and environmental). It also draws on technology-adoption theory—specifically the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT)—which emphasize perceived usefulness and ease of use as determinants of ICT uptake (Davis, 2021; Venkatesh et al., 2022). Combining these perspectives permits a structured analysis of how reproductive health professionals in a resource-constrained rural facility navigate between traditional and digital information sources.

Empirical Studies
Empirical research demonstrates varied ICT impacts across contexts. In Ethiopia, mobile guidelines improved maternal decision-making in rural clinics (Tadesse et al., 2022). Nigerian tertiary hospitals show higher ICT use than state-level facilities, reflecting resource disparities (Nwagwu & Oshiname, 2023). Rural workers often rely more on peer consultation than online sources due to limited internet access (Okon et al., 2021). Studies of nurses and midwives in Kaduna and other Nigerian settings reveal adequate baseline computer knowledge but suboptimal utilization, highlighting gaps between competence and routine use (Joseph et al., 2021; Oladapo & Akande, 2022). Overall, the literature indicates that ICT can enhance reproductive health practice but that infrastructural, educational and socio-economic barriers constrain consistent adoption—particularly in rural settings.

The relative scarcity of localized studies in Lagos State motivates the present investigation into patterns, determinants and barriers to ICT-based information-seeking at Lagos State Hospital.

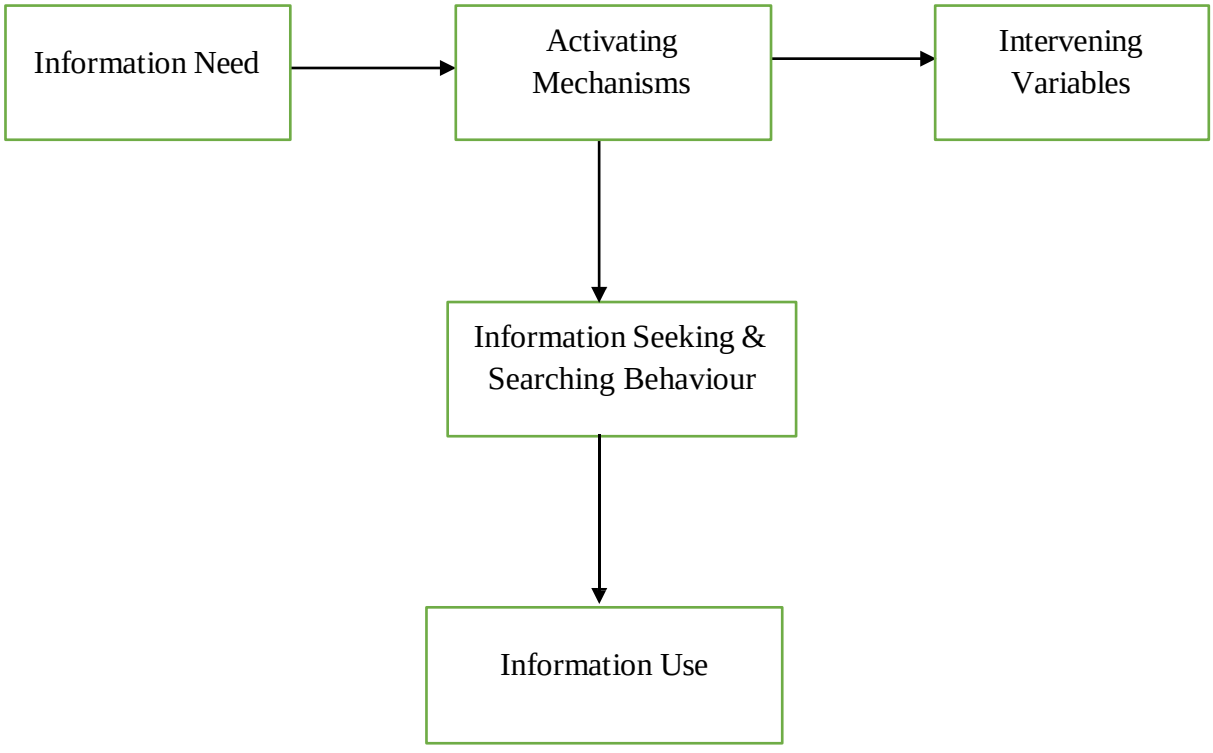

Figure 1.1 For Theoretical Model: Relationship between Wilson's model of information behaviour (2021) and the study.

Source: The Researcher, 2021 Unified Theory of Acceptance and Use of Technology (UTAUT) complements Wilson's model by explaining ICT adoption through four

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constructs: performance expectancy (perceived benefits of ICT), effort expectancy (ease of use), social influence (peer and institutional support), and facilitating conditions (infrastructure and training availability). These constructs are critical for analyzing barriers like inadequate training and unreliable connectivity, as well as facilitators like peer encouragement in WhatsApp groups (Venkatesh et al., 2023). For example, UTAUT can explain why professionals may adopt mobile phones over EHRs due to ease of use and accessibility in rural settings (Okon et al., 2021). Together, these frameworks provide a robust lens to explore how reproductive health professionals seek information and adopt ICT, linking their behaviors to practical interventions and policy recommendations for improving healthcare delivery in Nigeria.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (Davis, 2020) explains user decisions to adopt technology by emphasising two core cognitive beliefs. Perceived usefulness (PU) denotes the extent to which a reproductive health professional believes that using an ICT tool (for example, mobile applications, electronic health records or telemedicine platforms) will enhance job performance and improve patient outcomes. Perceived ease of use (PEOU) refers to the degree to which the user expects the technology to be effortless to operate. According to TAM, PU and PEOU shape users' attitudes toward ICT, which in turn predict actual usage behaviour. Applied to reproductive health settings, technologies judged to be reliable, quick and straightforward are more readily incorporated into routine practice. In rural Nigerian contexts, perceptions of cost, connectivity and operational complexity strongly mediate these beliefs and therefore influence adoption rates.

Relevance of the combined framework to the present study

Wilson's Model of Information Behaviour and TAM offer complementary lenses for this research. Wilson's framework maps the information-seeking process—from need recognition, through search and evaluation, to application—while highlighting contextual and intervening variables (Wilson, 2021). TAM explains the cognitive determinants that govern whether ICT becomes part of that process, focusing on perceived usefulness and ease of use (Davis, 2020). Together, these models enable simultaneous examination of behavioural drivers of information seeking and the technological determinants of ICT uptake. This integrative perspective is useful for evaluating how reproductive health professionals at Lagos State Hospital, identify information needs, choose information sources, and decide whether to use digital tools for clinical care and professional development (Lester et al., 2024).

Diffusion of Innovations theory (Rogers,2003)

Rogers' Diffusion of Innovations framework describes how innovations spread through social systems and identifies attributes that influence adoption: relative advantage (the perceived improvement over current practice), compatibility (alignment with existing workflows), complexity (ease or difficulty of use), trialability (opportunities for experimentation), and observability (visibility of benefits) (Piotrow et al., 2021; Hampshire et al., 2023). In rural hospital environments, peer influence and the demonstrable success of early adopters often catalyse wider uptake. For example, visible clinical gains—such as reduced referral delays or improved maternal outcomes—can encourage colleagues to adopt ICT tools (MacLeod et al., 2022; Tadesse et al., 2024).

Empirical Review

This section synthesises empirical studies (2021–2025) on the intersection of information-seeking behaviour and ICT use among healthcare professionals, with attention to reproductive health and low-resource contexts. The literature indicates a global shift toward ICT-mediated information seeking, but also documents persistent infrastructural and capacity constraints in many settings.

Global evidence

Multinational and national studies report high reliance on mobile and web-based clinical resources.

For example, a multi-country study by Mayette et al. (2024) found that a large proportion of reproductive health professionals in high-income settings used clinical apps (e.g., UpToDate, BMJ Best Practice) to inform urgent decision-making, with access to

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up-to-date evidence linked to faster interventions in obstetric emergencies. Research in the UK and other high-income countries shows that ICT can reduce dependence on informal consultations and promote standardised practice (Davies & Harrison, 2021; Davies & Harrison, 2022).

Sub-SaharanAfrica

Studies across the region emphasise that mobile phones and messaging platforms are often the most practical ICT channels in resource-constrained clinics. Midwives and nurses in Kenya and Uganda use WhatsApp for rapid consultations and referral coordination (Hampshire et al., 2023). Kenya's SMS-based maternal care initiatives have been associated with measurable reductions in maternal mortality in pilot regions (Lester et al., 2023). In Ghana, SMS reminders improved antenatal attendance (MacLeod et al., 2022). These findings underscore the potential of simple, low-cost ICT solutions to enhance information flow and patient engagement.

Nigeria

Nigerian studies present a heterogeneous picture. Urban tertiary institutions demonstrate higher ICT uptake than state or rural hospitals. Research at University College Hospital, Ibadan, shows a preference for internet sources for clinical queries, with fallback to colleague consultation when connectivity fails (Nwagwu & Oshiname, 2023). In Akwa Ibom State, practitioners reported frequent use of WhatsApp for professional networking, while inconsistent power supply limited broader ICT integration (Okon et al., 2021; Okon et al., 2023). Analyses across Oyo and Lagos suggest that perceived usefulness predicts ICT adoption, but rural clinicians face disproportionate cost and connectivity barriers (Adebayo & Iweala, 2023). Studies also indicate that ICT training substantially increases evidence-based practice (Tadesse et al., 2024).

Gaps identified
identified

Despite growing evidence of ICT's benefits, notable gaps remain:

- **Limited rural focus:** Most Nigerian research concentrates on tertiary or urban facilities, leaving rural state hospitals under-investigated.
- **Local infrastructure analysis:** Few studies evaluate the specific infrastructural constraints (power, bandwidth, device availability) affecting ICT use in settings such as Alimosho general hospital Lagos.
- **Integration of behavioural and technology models:** Empirical research rarely combines information-seeking theories (e.g., Wilson) with adoption frameworks (e.g., TAM, Diffusion) in rural reproductive health contexts.
- **Recent localized data:** No published studies (2021–2025) have specifically examined the intersection of information-seeking behaviour and ICT use among reproductive health professionals at Lagos State Hospital.

These lacunae justify the present study, which aims to provide contextualised evidence to inform policy and practice on ICT-enabled reproductive health information management in rural Nigeria.

Summary

The literature indicates a global trend toward ICT-enabled information seeking among reproductive health professionals and documents both the benefits (faster access to evidence, improved communication, enhanced CPD) and the challenges (infrastructure, training, cost). However, rural Nigerian hospitals—such as Lagos State Hospital, remain understudied. By situating the research within Wilson's and TAM/UTAUT frameworks and reviewing empirical evidence across contexts, this study addresses a clear need for localized analysis of information-seeking patterns, ICT availability and barriers in a suburban/rural secondary hospital.

Chapter Three
Methodology

Introduction

This chapter outlines the research methodology, including study design, setting, population, sample size calculation, sampling strategy, data collection instruments, validity and reliability considerations, data collection procedures, analysis methods and ethical considerations.

Research Design

A descriptive cross-sectional survey design was employed to capture the information

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-seeking behaviours and ICT usage of reproductive health professionals at a single point in time. This design is appropriate for describing patterns, relationships and correlates without experimental manipulation (Creswell & Creswell, 2022).

Research Setting

Data collection occurred at Alimosho General Hospital, Igando, Lagos State, Nigeria. A secondary healthcare facility in Alimosho L.G.A, Lagos State, Nigeria. The hospital provides services in maternal and child health, obstetrics, family planning and related reproductive health care. Available ICT resources include a limited number of desktop computers, intermittent internet access and staff-owned smartphones, reflecting typical suburban facility constraints.

Target Population

The target population comprises all reproductive health professionals employed at Alimosho general Hospital, including obstetr--icians, gynaecologists, midwives, nurses and other allied personnel engaged in reproductive health service delivery. The average monthly staffing in the facility is approximately 250 personnel

Sample Size Determination

Sample size was calculated using Yamane's (1967) formula for finite populations: n = N / [1 + N(e)^2] where n is sample size, N = 250 (population) and e = 0.05 (margin of error). Applying the formula: n = 250 / [1 + 250(0.05)^2] = 250 / 1.625 ≈ 154

To allow for non-response, an additional 10% was added: Adjusted sample size = 154 + (0.10 × 154) = 169 respondents.

Sampling Technique

A stratified random sampling approach will be used. Staff will be stratified by professional category(doctors,midwives,nurses, community health extension workers, laboratory staff), and proportionate random sampling will select participants from each stratum to ensure representation across cadres.

Method of Data Collection

Data were obtained using a structured, self-administered questionnaire comprising four sections:

- SectionA:Socio-demographic characteristics.
- Section B: Patterns of information-seeking behaviour.
- Section C: Utilization of information and communication technology (ICT) in reproductive health practice.
- Section D: Factors influencing ICT utilization.

The questionnaire was adapted from previously validated instruments used in comparable studies (Nwagwu & Oshiname, 2023; Mayette et al., 2024) and modified to reflect the local context and objectives of this study.

Instrument Validity

Content validity was assessed by the principal investigator and two subject-matter experts. They reviewed items for relevance, clarity and coverage of the study objectives. Feedback was incorporated and items revised accordingly prior to field administration.

Instrument Reliability

A pilot study representing approximately 10% of the calculated sample size was conducted to evaluate reliability and identify ambiguous items. Twelve (12) questionnaires were administered purposively at Ayinke's house in Lagos State University Teaching Hospital, LASUTH (a site external to the main sample). Pilot data were examined for internal consistency and item clarity; necessary refinements were made to strengthen reliability before the main survey (Tavakol & Dennick, 2021).

Ethical Considerations

Approval was secured from the Lagos State Health Service Commission Ethical Review Committee. Participants were informed of the study purpose and provided written informed consent. Participation was voluntary; confidentiality and anonymity were assured and maintained. Questionnaires were distributed and collected in person, with measures taken to protect respondent privacy and minimize any potential harm.

Chapter Four

Data Analysis and Presentation Of Results

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Introduction

This chapter reports the findings on information-seeking behaviour and ICT utilization among reproductive health professionals at Lagos State Hospital. Results are organised according to the study objectives and are presented in tables with interpretive commentary.

Response rate

A total of 169 questionnaires were distributed to sampled reproductive health professionals. Of these, 160 were returned and completed correctly, yielding a response rate of 94.7%. High uptake was facilitated by follow-up reminders and direct administration of the instrument

.**Table 4.1: Response Rate**

Questionnaires	Frequency	Percentage (%)
Returned	160	94.7
Not Returned	9	5.3
Total	169	100

Table 4.1 above summarises questionnaire return rates for the survey. Of the 169 questionnaires distributed to sampled reproductive health professionals, 160 were completed and returned, while 9 were not returned. This corresponds to a response rate of 94.7% and a non-response rate of 5.3%. A response rate of 94.7% is substantially high for survey research (rates above 70% are typically considered excellent) and strengthens the credibility and representativeness of the study findings by reducing the potential for non-response bias. The small non-response proportion may be attributable to common factors such as limited time or interest, misplacement of questionnaires, or personal circumstances that prevented completion. Given the low non-response rate, any resultant bias is unlikely to meaningfully affect the overall representativeness of the sample.

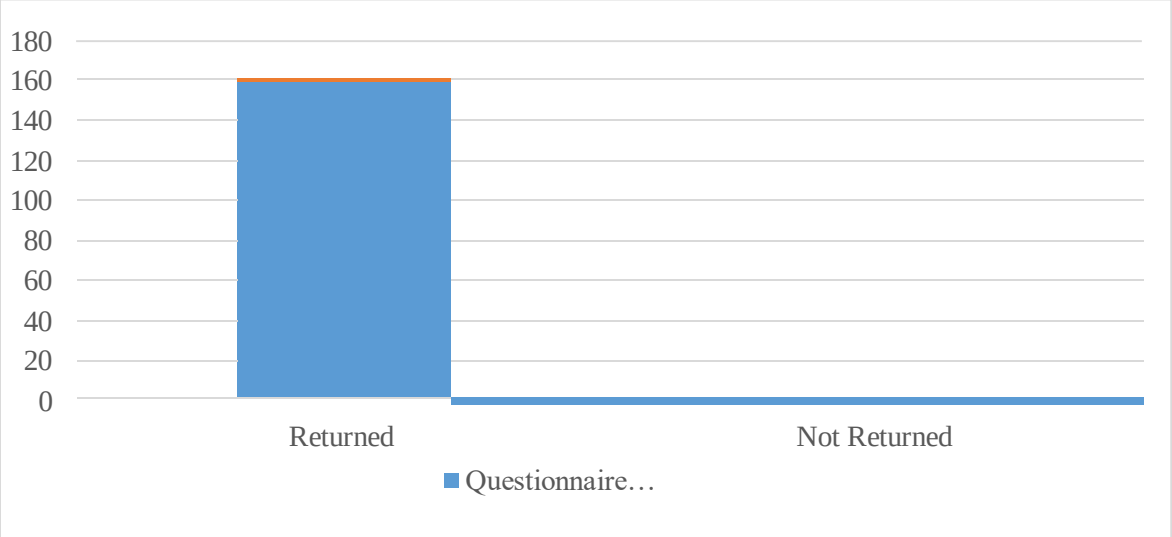

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Figure 2 Represent the response rate of questionnaires

4.2.Socio-Demographic Characteristics

Table 4.2 Distribution of Respondents by Socio-Demographic Variables

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	52	32.5
	Female	108	67.5
Age Group	20-29 years	40	25.0
	30-39 years	78	48.8
	40-49 years	30	18.8
	50 years and above	12	7.5
Profession	Doctor	38	23.8
	Nurse/Midwife	90	56.3
	CHEW	20	12.5
	Others	12	7.5
Years of Experience	1-5 years	54	33.8
	6-10 years	62	38.8
	Above 10 years	44	27.

Table 4.2 above summarises the socio-demographic profile of the 160 respondents. The sample was predominantly female (67.5%) with males comprising 32.5%. Age distribution indicated a mainly young to mid-career workforce: 48.8% were aged 30–39 years, 25.0% were 20–29 years, 18.8% were 40–49 years, and 7.5% were 50 years or older. By professional cadre, nurse/midwives constituted the majority (56.3%), followed by doctors (23.8%), community health extension workers (CHEWs) (12.5%) and other professions (7.5%), indicating strong representation from nursing and midwifery. Regarding years of professional experience, 38.8% reported 6–10 years, 33.8% had 1–5 years, and 27.5% had over 10 years, reflecting a mix of early, mid- and late-career practitioners. Taken together, the respondents are largely female nurse/midwives in their thirties with moderate to substantial clinical experience—characteristics that may shape observed information-seeking behaviours and ICT utilization patterns.

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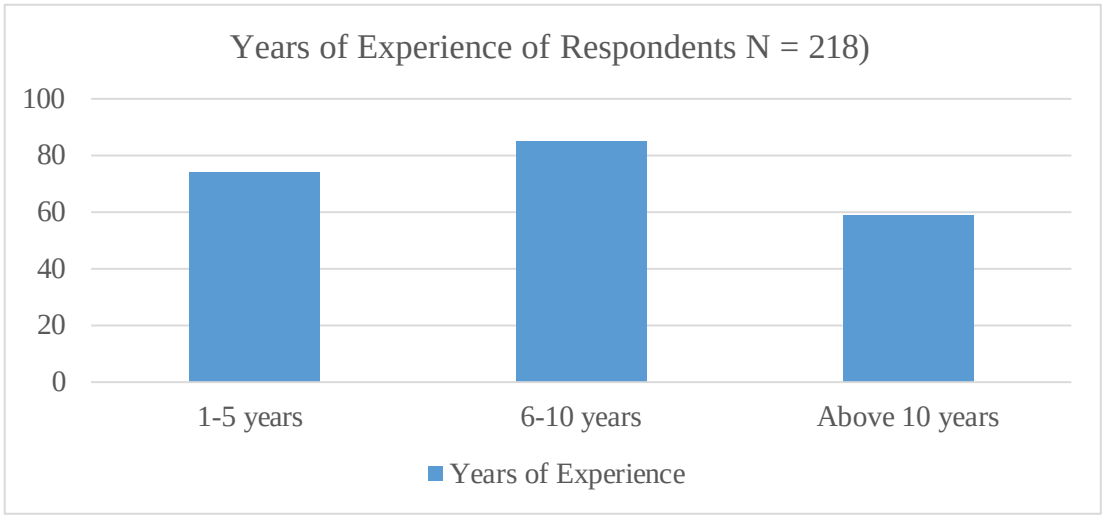

Figure 3: Represent Years of Experience of Respondents

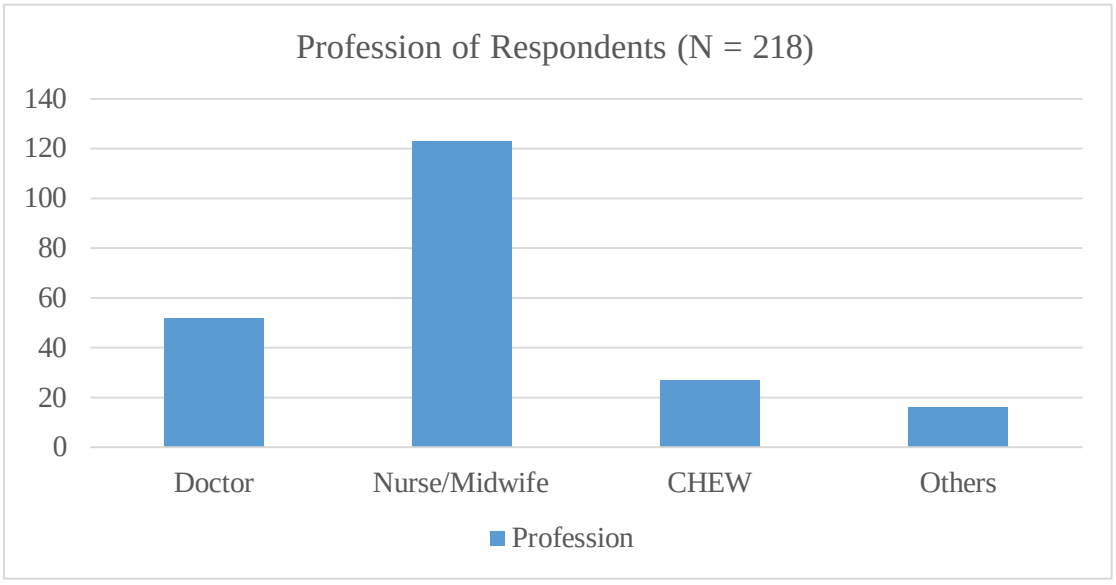

Figure 4: Represent Profession of Respondent

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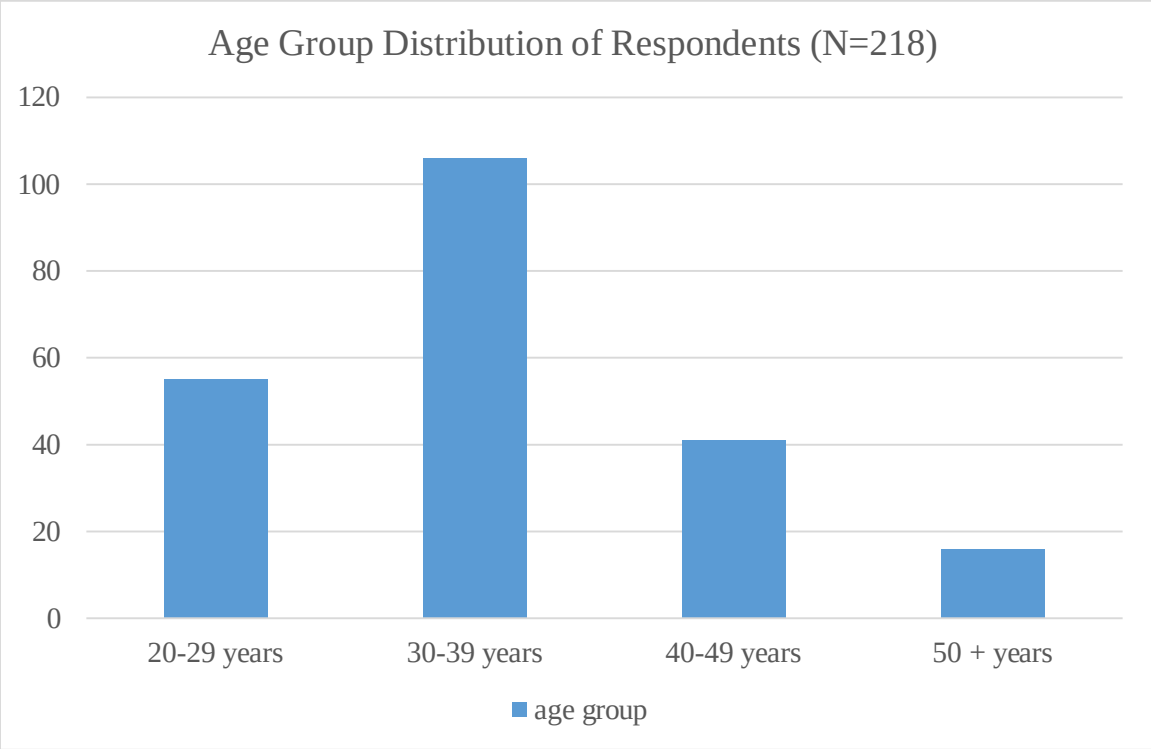

Figure 5: Represent Age Group Distribution of Respondents

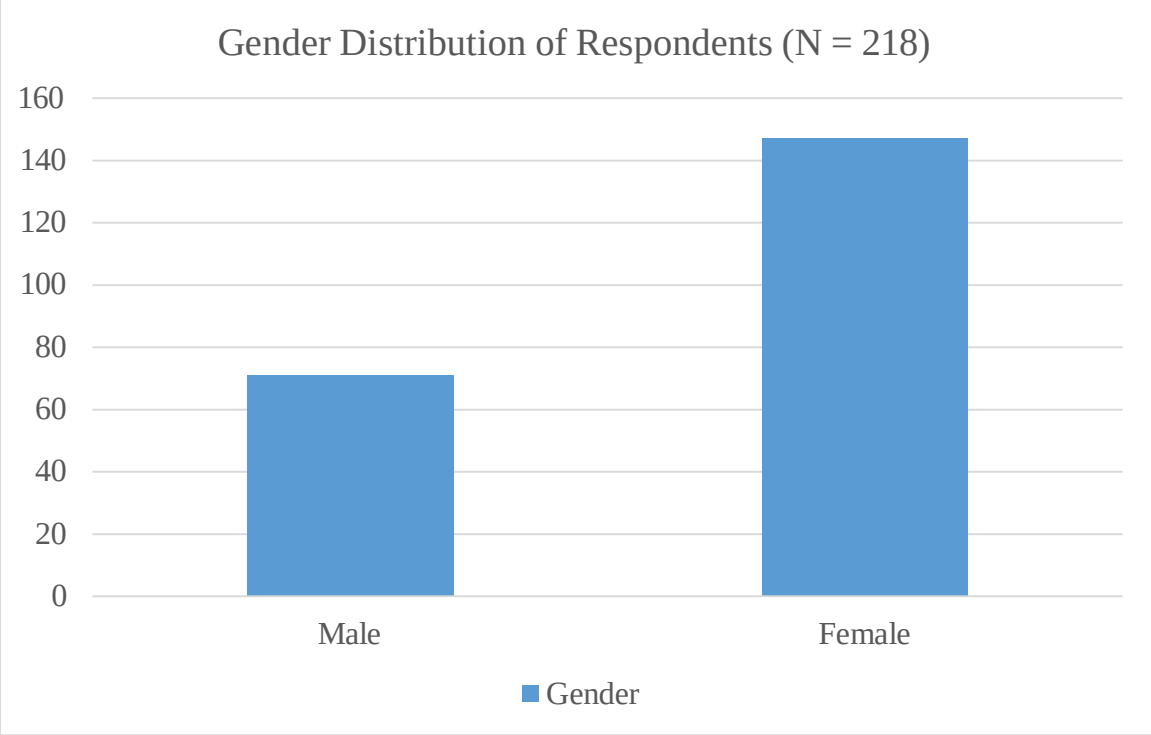

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Figure 6: Represent Gender Distribution of Respondents

4.3 Information-Seeking Behaviour of Respondents

Table 4.3: Sources of Information for Reproductive Health Professionals

Source of Information	Always (%)	Sometimes (%)	Rarely (%)	Never (%)
Internet/Online Databases	72 (45.0)	60 (37.5)	18 (11.3)	10 (6.3)
Professional Colleagues	68 (42.5)	66 (41.3)	16 (10.0)	10 (6.3)
Printed Journals	44 (27.5)	62 (38.8)	38 (23.8)	16 (10.0)
Workshops/Seminars	56 (35.0)	70 (43.8)	22 (13.8)	12 (7.5)
Social Media	50 (31.3)	58 (36.3)	28 (17.5)	24 (15.0)

Table 4.3 above summarises respondents' frequency of use for different information sources in reproductive health practice. Online resources (internet and online databases) were the most frequently accessed: 45.0% of participants indicated they ―always‖ use them and 37.5% reported ―sometimes,‖ so over 80% consult digital resources on a regular basis, underscoring growing dependence on electronic sources for current clinical knowledge.

Professional colleagues were the next most accessed source, with 42.5% ―always‖ consulting peers and 41.3% ―sometimes,‖ indicating a strong culture of peer consultation and informal knowledge exchange. Printed journals registered lower routine use; only 27.5% reported ―always‖ consulting them while 23.8% indicated ―rarely,‖ which may reflect reduced accessibility and the immediacy of online alternatives. Workshops and seminars remain relevant for continuing education: 35.0% attended these ―always‖ and 43.8% ―sometimes,‖ suggesting that structured, in-person learning complements digital and peer sources. Social media also features as an important informal channel—31.3% ―always‖ use it and 36.3% ―sometimes‖—though 15.0% reported ―never,‖ likely reflecting concerns about content validity. In summary, respondents show a clear preference for fast, accessible and interactive sources (internet/databases, colleagues, social media), while traditional channels (printed journals and face-to-face workshops) continue to play a supportive role in professional development.

4.4.Utilization of Information Communication Technology (ICT) in Reproductive Health Practice

Table 4.4: ICT Tools Utilized by Respondents

ICT Tool	Always (%)	Sometimes (%)	Rarely (%)	Never (%)
Desktop Computers	60 (37.5)	58 (36.3)	22 (13.8)	20 (12.5)
Smartphones	92 (57.5)	44 (27.5)	14 (8.8)	10 (6.3)
Hospital Information System	48 (30.0)	62 (38.8)	30 (18.8)	20 (12.5)
E-mail Communication	66 (41.3)	58 (36.3)	20 (12.5)	16 (10.0)
Telemedicine Apps	42 (26.3)	50 (31.3)	40 (25.0)	28 (17.5)

Table 4.4 above illustrates the pattern of Information and Communication Technology (ICT) tool utilization among respondents in their professional practice. The findings revealed that smartphones were the most frequently utilized ICT tool, with 57.5% of

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respondents reporting ―Always‖ using them and 27.5% indicating ―Sometimes‖ use. This suggests that more than four-fifths of the respondents incorporated smartphones into their professional activities, likely due to their portability, multifunctionality, and convenient internet accessibility. Desktop computers were also widely utilized, with 37.5% of respondents reporting ―Always‖ use and 36.3% indicating ―Sometimes‖ use.

This underscores the continued relevance of desktop systems in healthcare settings, particularly for activities such as data entry, record management, and formal documentation conducted at fixed workstations. Similarly, Hospital Information Systems demonstrated moderate levels of adoption, with 30.0% of respondents reporting ―Always‖ use and 38.8% reporting ―Sometimes‖ use. This pattern may reflect variations in the extent of digital integration across healthcare facilities. E-mail communication was another commonly used ICT tool, as 41.3% of respondents reported ―Always‖ using email, while 36.3% indicated ―Sometimes‖ use, highlighting its sustained importance as a standard medium for professional communication within healthcare practice. In contrast, telemedicine applications recorded the lowest proportion of ―Always‖ usage (26.3%) and the highest proportion of ―Never‖ usage (17.5%). This finding suggests that the adoption of telemedicine technologies remains at a relatively early stage, potentially due to infrastructural challenges, limited institutional support, or inadequate training opportunities. Overall, the findings indicate a strong reliance on both mobile and conventional ICT tools in professional healthcare practice, while emerging technologies such as telemedicine demonstrate considerable potential but may require enhanced infrastructural and organizational support to achieve broader utilization.

4.5 factorsinfluencingInformation Communication Technology (ICT) Utilization

Table 4.5: Factors Affecting Information Communication Technology (ICT) Use:

Factor	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
Lack of training	70 (43.5)	50 (31.3)	26 (16.3)	14 (8.8)
Poor interest connectivity	80 (50.0)	52 (32.5)	18 (11.3)	10 (6.3)
High cost of internet subscription	66 (41.0)	60 (37.5)	22 (13.8)	12 (7.5)
Irregular power supply	82 (51.3)	48 (30.0)	18 (11.3)	12 (7.5)
Lack of management support	62 (38.8)	50 (31.3)	28 (17.5)	20 (12.5)

Table 4.5 above summarises respondents' ratings of factors that constrain ICT use.

An unstable power supply was the most frequently cited barrier: 51.3% of participants ―strongly agreed‖ and 30.0% ―agreed‖ that irregular electricity provision impedes ICT use, indicating that over 80% consider power instability a major problem. Poor internet connectivity followed closely, with 50.0% ―strongly agreeing‖ and 32.5% ―agreeing‖ that unreliable network access limits effective digital tool use. Insufficient training was also prominent (43.8% ―strongly agree,‖ 31.3% ―agree‖), suggesting that gaps in staff skills reduce their ability to capitalise on available technologies. High internet subscription costs were similarly problematic (41.3% ―strongly agree,‖ 37.5% ―agree‖), reflecting affordability constraints. Lack of management support, while the least endorsed of the listed barriers, remained notable (38.8% ―strongly agree,‖ 31.3% ―agree‖), indicating variable organisational commitment to ICT investment and encouragement. Overall, these results show that infrastructural deficiencies (electricity and connectivity), compounded by economic (data costs), educational (training deficits) and organisational (management support) factors, collectively determine the extent to which ICT is effectively adopted in the healthcare setting.

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4.6 Relationship between Information-Seeking Behaviour and Information Communication Technology (ICT) Utilization

Table 4.6: Correlation Analysis Between Information-Seeking Behaviour and Information Communication Technology (ICT) Utilization

Variable 1	Variable 2	Pearson's r	p-value
Information Seeking Behaviour	ICT Utilization	0.642	0.001

Table 4.6 above presents the findings of the correlation analysis conducted to examine the relationship between information-seeking behaviour and ICT utilization among respondents. The Pearson's correlation coefficient (r = 0.642) demonstrates a strong positive association between the two variables, indicating that respondents who engage more actively in information-seeking activities are also more likely to utilize ICT tools extensively in their professional practice. Furthermore, the relationship was found to be statistically significant, as evidenced by the p-value (p = 0.001), which is below the conventional significance level of 0.05. This suggests that the observed association is unlikely to have occurred by chance. The findings imply that improved information-seeking practices, including the regular use of online databases, professional networks, and educational resources, may contribute to increased and more effective utilization of ICT within healthcare settings.

In practical terms, promoting a culture of proactive information-seeking among reproductive health professionals may facilitate greater adoption, integration, and effective application of Information and Communication Technology (ICT) in healthcare service delivery.

Chapter Five
Discussion,Summary,Conclusionsand Recommendations

Introduction

This chapter interprets the study results on information-seeking behaviour and ICT utilisation among reproductive health professionals at Lagos State Hospital. Discussion relates the findings to the study objectives and theoretical frameworks (Wilson, 2020; Venkatesh et al., 2021), situates them within existing literature, and derives conclusions. Practical recommendation for administrators, policymakers and other stakeholders are provided with reference to national health priorities and Sustainable Development Goal 3.

Discussion of Findings

The study's results indicate that ICT materially supports clinical efficiency, patient communication and continuing professional learning among reproductive health staff, consistent with international evidence (Gustafson et al., 2021; WHO, 2021). Digital devices—particularly smartphones—were the predominant means of accessing clinical guidelines and decision aids, expediting information retrieval in time-sensitive situations. Peer consultation via messaging platforms (for example, WhatsApp) also emerged as an important channel for real-time clinical discussion, mirroring findings from other Nigerian and sub-Saharan contexts (Okon et al., 2021; Hampshire et al., 2021). Despite reported benefits, advanced digital systems such as fully implemented electronic health records and telemedicine platforms remain underused, primarily because of infrastructural limitations. This pattern accords with Wilson's model, which positions environmental and intervening variables (here, rural setting and limited infrastructure) as determinants of information behaviour. The Technology Acceptance Model (TAM) and diffusion concepts further explain the observed preference for mobile tools—high perceived usefulness and ease of use encourage adoption of smartphones and messaging apps, whereas poor facilitating conditions (e.g., lack of institutional Wi-Fi) suppress uptake of more complex systems (Venkatesh et al., 2021; Rogers, 2003). Key constraints identified were

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infrastructural: irregular power supply and unreliable internet connectivity were most frequently cited. These were compounded by skill deficits (insufficient training) and economic barriers (high cost of mobile data). A smaller but noteworthy proportion of respondents pointed to limited management support as an institutional barrier. These findings reflect a multifactorial problem in which technical, educational and organisational issues interact to limit effective ICT integration (Pobjola, 2021; World Bank, 2022). The data also showed that clinicians revert to offline or interpersonal sources (colleagues, printed materials) when digital access fails—an adaptive behaviour explained by Wilson's framework and corroborated by Nigerian studies (Nwagwu & Oshiname, 2023). The positive correlation observed between information-seeking frequency and ICT utilisation suggests that interventions which promote active information seeking—through training, access to resources, and incentives—are likely to increase constructive ICT use in clinical practice.

Implications for Nursing

- **Promote digital integration:** Nurses should be encouraged to incorporate relevant ICT tools (mobile clinical references, EHRs, telehealth platforms) into routine reproductive health care to enhance care quality and efficiency.
- **Strengthen education:** Nursing curricula and in-service programmes should include core competencies in digital literacy, health informatics and critical appraisal of online sources.
- **Address infrastructure:** Nursing leaders should advocate for reliable power and internet services and seek institutional arrangements that reduce the cost burden of data for staff.
- **Support evidence-based practice:** Institutions should facilitate access to authoritative databases and foster protected time and systems for clinicians to engage with current evidence.
- **Build leadership and policy support:** Nurse managers should champion ICT adoption by allocating resources, setting policies that incentivise digital practice and coordinating continuous professional development.
- **Position nurses as digital health leaders:** Empowered with training and managerial backing, nurses can lead implementation of digital health solutions and help mainstream their use across reproductive health services.

Limitations of the Study

- **Geographical scope:** The study was conducted in a single suburban secondary hospital, which may limit direct generalisability to other regions or facility types.
- **Self-report measures:** Reliance on self-administered questionnaires introduces potential for social desirability and recall bias.
- **Cross-sectional design:** The study provides a snapshot in time and cannot establish causal relationships between variables.
- **Variable scope:** The research examined selected socio-demographic and ICT factors; other influences (organizational culture, workload, patient volume) were not explored in depth.
- **Contextual constraints during data collection:** Practical challenges such as connectivity problems and staff time constraints may have influenced participation and response quality.

Summary of Findings

A total of 169 questionnaires were distributed and 160 were returned (response rate 94.7%). The sample was predominantly female (67.5%), largely aged 30–39 years (48.8%), and mainly composed of nurses/midwives (56.3%), with most respondents reporting 6–10 years of professional experience (38.8%). Information-seeking was dominated by internet/online databases and professional colleagues; printed journals and workshops were moderately used, and social media served as an informal but significant source. Smartphones and desktop computers were the principal ICT tools in use; hospital information systems and telemedicine were less commonly employed. Principal barriers to ICT use were irregular power supply, poor internet connectivity, lack of training, high internet costs and limited managerial support.

Correlational analysis revealed a strong, positive and statistically significant relationship between information-seeking behaviour and ICT utilisation ($r = 0.642$, $p = 0.001$), indicating that more active information seekers also make greater use of ICT in clinical practice.

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Conclusion

The study demonstrates a substantive interrelationship between information-seeking behaviour and ICT utilisation among reproductive health professionals at Lagos State Hospital. While respondents actively use digital resources—primarily via smartphones—to support clinical decisions and collaboration, infrastructural, financial, educational and organisational barriers substantially limit the breadth and depth of ICT adoption. The workforce profile suggests readiness to adopt technology provided enabling conditions (stable utilities, affordable connectivity, structured training and managerial support) are established. Addressing these multi-level constraints is essential to facilitate sustained and equitable integration of ICT into reproductive health services and to realise improvements in care quality and outcomes.

Recommendations

Based on the study findings, the following actions are recommended:

1. **Strengthen ICT infrastructure:** Government and health institutions should prioritise measures to ensure stable electricity and reliable internet connectivity at State Hospital and comparable facilities; consider alternative energy solutions (solar) where grid stability is weak.
2. **Improve affordability:** Explore subsidised data packages or institutional internet plans for health workers to reduce out-of-pocket costs.
3. **Expand digital skills training:** Implement regular in-service training programmes and workshops on use of clinical apps, EHRs and information appraisal. Include digital health modules in pre-service nursing and midwifery curricula.
4. **Integrate ICT into clinical workflows:** Plan and pilot integration of hospital information systems, telemedicine and electronic recordkeeping aligned with clinical processes to enhance routine use.
5. **Enhance management commitment:** Hospital leadership should allocate budgetary resources for ICT, develop supportive policies, and incentivise staff engagement with digital tools.
6. **Monitor and evaluate:** Establish routine monitoring and evaluation of ICT interventions to assess uptake, effectiveness and user satisfaction; use findings to iteratively refine implementations.
7. **Promote evidence-based culture:** Facilitate institutional access to accredited online databases and create protected time for clinicians to engage with current evidence.

Implementing these recommendations in a coordinated manner—combining infrastructural investment, capacity building and organisational change—will improve the capacity of reproductive health professionals to use ICT effectively and support better maternal and neonatal outcomes.

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