Knowledge and the Attitude of Nurses towards Technological Innovations in Health Care Delivery at Orile Agege General Hospitsal Lagos State

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Abstract
Technological innovations are revolutionizing healthcare delivery; however, nurses' knowledge and attitudes play pivotal roles in their adoption. This study assessed nurses' knowledge and attitudes toward technological innovations in healthcare at Orile Agege General Hospital and proposed actionable solutions. Employing a descriptive survey design, a sample of 146 nurses was drawn from the target population using convenience sampling. Data were collected via a self-developed Google Forms questionnaire and analysed with SPSS version 27.0 to test two hypotheses. A pilot test with 15 nurses from Alimosho General Hospital, Igando, yielded a Cronbach's alpha of 0.82 via chi-square analysis, confirming instrument reliability. Results indicated that 82.1% of nurses demonstrated good knowledge levels and 63.7% held positive attitudes toward technological innovations, though barriers such as financial constraints, educational attainment, technological complexity, and organizational culture impeded attitudes. Hypothesis testing revealed no significant association between nurses' knowledge and attitudes ($p > .05$), but a significant relationship existed between attitudes and years of experience ($p < .05$). Accordingly, the study recommends integrating targeted technology training into nursing curricula and practice, alongside motivational organizational strategies to foster positive attitudes. These measures will empower nurses to harness innovations effectively, ultimately improving patient outcomes across healthcare systems.

Keywords: knowledge, attitude, nurses, technology, innovation

Chapter One
Introduction
1.1 Background to the Study
Adapting to technological innovations is essential for enhancing and restructuring healthcare systems. These advancements have introduced nurses to novel tasks and responsibilities across various domains (Avant Healthcare, 2023). Nursing fundamentally relies on holistic patient knowledge derived from continuous observation, wherein technology plays a critical role. Contemporary nursing technology encompasses the application of organized knowledge and skills through devices, medications, vaccines, procedures, and systems designed to address health challenges and elevate quality of life. Global shifts, including the emergence of diseases such as COVID-19, Ebola, and Lassa fever, have accelerated technological developments in nursing practice (Thakur et al., 2023). Nevertheless, nurses often contend that computers conflict with nursing's holistic and humanistic philosophy, citing their complexity as justification for resistance or incompetence (Weeger & Gewald, 2019). According to Loscin's theory, technological competence and nursing care coexist harmoniously despite appearing disparate (Loscin et al., 2019). Positive attitudes can expedite adoption by recognizing benefits like improved communication (Warren, 2019). Assessing nurses' attitudes enables the formulation of targeted implementation strategies for those reluctant to embrace innovations (Ifinedo, 2020). European research indicates that nurses with greater computer experience hold more favorable views of technological innovations, with education and training exerting positive influences—though younger, less experienced nurses may exhibit even stronger positivity, suggesting openness

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to mastering complex equipment and procedures (European Academic Research, 2021). Deficient mastery of information technology fosters incompetence and negative attitudes (Christe, 2019). Nurses' ambivalence and knowledge gaps impede optimal technology utilization, underscoring the need for education integrating these innovations into practice (Kahouei et al., 2019). Widespread gaps in information technology adoption, particularly in this region, prompted this investigation into nurses' knowledge and attitudes toward technological innovations at Orile Agege General Hospital, Lagos State.

1.2 Statement of the Problem

The global revolution in technological innovation—marked by exponential information growth and technical advancements—has not translated to Nigeria, where adoption lags behind developed nations. This sluggish progress has diminished patient care standards relative to international benchmarks. Although graduate nurses are expected to possess computer skills, proficiency is often lacking; Darbyshire (2019) found most nurses deficient in software applications pertinent to healthcare innovations. Computer availability does not equate to literacy, which is vital for nurses' effective technology engagement. Thus, this study examines nurses' knowledge levels and attitudes toward technological innovations in nursing practice at Orile Agege General Hospital.

1.3 Objectives of the Study

The broad objective is to evaluate nurses' knowledge levels and attitudes toward technological innovations in healthcare delivery at Orile Agege General Hospital, Ile-Epo, Lagos State.

Specific Objectives

- To assess nurses' knowledge regarding the use of technological innovations in healthcare delivery.
- To evaluate nurses' attitudes toward technological innovations in healthcare delivery.
- To identify factors influencing the adoption of technological innovations in healthcare delivery.

1.4 Research Questions

1. What is the level of knowledge among nurses at Orile Agege General Hospital regarding technological innovations in healthcare delivery?
2. What are nurses' attitudes toward technological innovations in healthcare delivery?
3. What factors affect the use of technological innovations in healthcare delivery?

1.5 Hypotheses

H_{01} (Null Hypothesis): There is no statistically significant association between nurses' knowledge and their attitudes toward technological innovations in healthcare delivery.

H_{02} (Null Hypothesis): There is no significant relationship between nurses' years of experience and their attitudes toward technological innovations in healthcare delivery at Orile Agege General Hospital.

1.6 Significance of the Study

This study's findings will illuminate nurses' preparedness and receptivity to technological advancements, informing hospital management on training needs, technology adoption strategies, and patient care enhancements. Applicable nationwide, it will guide policymakers and stakeholders in formulating health policies to promote technology integration. Ultimately, it will elevate healthcare services and care standards through proficient use of innovations, benefiting communities.

1.7 Scope of the Study

This study is delimited to 230 nurses at Orile Agege General Hospital, Agege, Lagos.

1.8 Operational Definition Of Terms

- **Attitude:** A mental predisposition toward a fact or state.
- **Innovation:** The introduction of a novel idea, method, or device.
- **Knowledge:** Familiarity with something gained through experience or association.
- **Nurses:** Individuals who have completed basic generalized nursing education and are authorized to practice by the relevant regulatory authority (International Council of Nurses, ICN).
- **Practice:** Professional engagement or inclination in an activity.

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- **Technology:** The practical application of knowledge in a specific domain.
- **Technological Innovation:** A new or improved product or process with substantially different technological characteristics from prior versions.

Chapter Two
Literature Review
2.1 Conceptual Review
Nurses as Innovators

Nurses inherently serve as innovators within healthcare. They possess access to evidence, knowledge, and resources to drive positive change (ICN, 2019). Reviewing primary and secondary sources on technology and innovation in nursing elucidates nurses' roles in developing and implementing new technologies. Historical context further fosters a culture of ongoing innovation in this dynamic field. Amid rising disease burdens, resource constraints, and global workforce shortages, nurses must innovate to advance health promotion, disease prevention, and care delivery (ICN, 2019). Innovation bridges service or technology gaps, enhancing client outcomes and cost-efficiency. The ICN (2019) defines it as "the process of developing new approaches, technologies, services, or ways of working," encompassing tools, processes, and behavioral shifts in organizations or individuals.

Innovation to Practice

Applying innovations to practice involves knowledge acquisition, persuasion, decision-making, implementation, and confirmation (ICN, 2019). Successful adoption hinges on relative advantage, simplicity, trialability, observability of results, and adaptability to local contexts. Leadership is crucial: managers must model innovation, articulate a clear vision, and cultivate a supportive culture to empower "positive deviants" in solving complex problems (Melnyk & Davidson, 2019; Asurakkody & Shin, 2018). Key concepts include knowledge (familiarity gained through experience), attitude (mental predisposition toward a fact or state), and technological innovation (a new or improved product/process with distinct technological features).

Knowledge of Nurses on Technology Innovation

Nurses' knowledge and application of information technology enhance communication and documentation using standardized tools like NANDA, NIC, and NOC, improving patient care and management (Lumberg et al., 2019). However, utilization remains low in developing countries due to incompetence from knowledge deficits (Olugbenga et al., 2019). A Pakistani study at the Institute of Health Sciences, Lahore, found 26.45% of nurses had poor knowledge, 32.58% average, and only 3.2% excellent, concluding inadequate overall proficiency. Similarly, this study's findings showed 30.8% with average-to-poor knowledge. Identifying influencing factors is vital (Nilsson & Erilsen, 2018). Despite training opportunities, nurses often lack deep understanding for healthcare delivery. Olanrewaju et al. (2020) surveyed 100 nurses across five Enugu hospitals, revealing 25% with no knowledge, 33% average, 2% poor, and 40% excellent—yet only 28% of the latter used it for documentation. Southern Nigerian studies confirm variable knowledge and utilization (Adesuyi et al., 2020).

With proliferating innovations, nurses require expertise to leverage them effectively (Alejandro, 2021). Thus, addressing low knowledge levels is imperative, particularly in developing contexts.

Attitude of Nurses toward Technology Innovation

Contrary to assumptions of universal positivity, nurses often exhibit negative attitudes toward technological innovations. Rodward et al. (2022) reported 64% preferred bedside documentation over new systems. Barriers include cost and end-user knowledge/attitudes (Leung et al., 2021). In developing regions, poor attitudes stem from knowledge gaps (McGinn, 2022). A Lahore study showed 78.71% positive toward electronic documentation, yet 23.1% of administrators found it challenging and time-intensive, with 26.9% negative due to low awareness. This study similarly found 25.5% strongly agreeing and 62.6% agreeing that electronic records aid patient education (11% disagreed). In Africa, despite emphases on technology for care and safety, utilization remains low, threatening patient outcomes (Olorunfemi et al., 2020). Enhanced training and research are needed to boost knowledge

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and attitudes. Experience correlates positively: seasoned users develop favorable views (Getty et al., 2020), modulated by education levels.

Factors Influencing Nurses' Attitudes Toward Technology Innovation

Key barriers include years of experience, inaccessibility to innovations, and high costs of hardware/software.

- **Years of Experience:** Alquaraini et al. (2023) studied Kuwaiti nurses, finding 31.9% with 6–10 years' practice and 60.3% in general hospitals. Computer experience varied (51% had it, mostly <4 years), influencing attitudes—younger nurses often more receptive than older ones.
- **Inaccessibility to Computers:** Limited access fosters frustration, reduced satisfaction, and reluctance, hindering training and proficiency (Rowland & Walsh, 2021; Journal of Nursing Administration, 2019).
- **High Cost of New Technology:** Budget constraints divert funds from staffing, breeding negativity (Johnson, 2019). In Eastern Africa, 25% of nurses favored manual methods, with 20% unexposed due to costs—linking expense directly to attitudes (Curtis & Yosuffa, 2020).

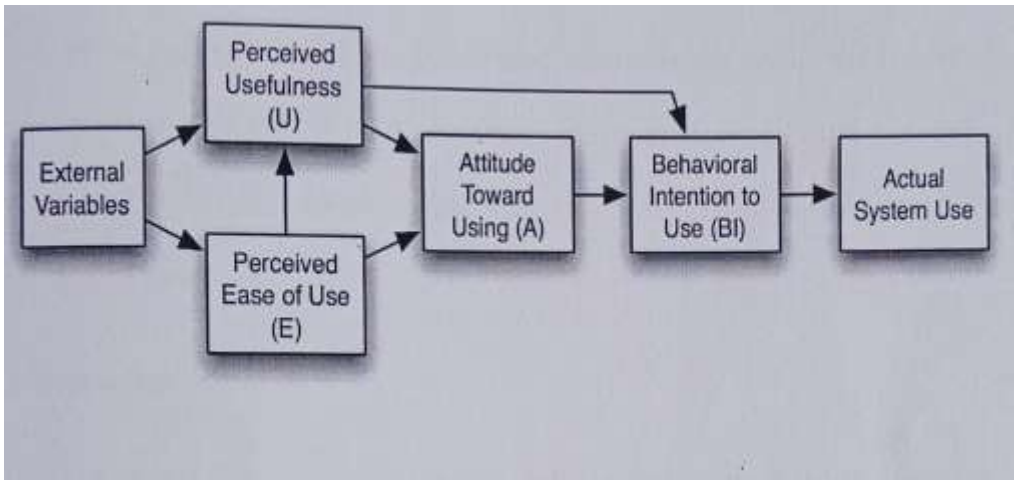
2.2 Theoretical Framework

Technology Acceptance Model (TAM)

This study adopts the Technology Acceptance Model (TAM) to explain technology adoption processes, predict usage behavior, and inform implementation strategies (Davis et al., 2020). Grounded in the Theory of Reasoned Action, TAM posits that external factors influence system use via perceived usefulness and ease of use.

- **Perceived Usefulness:** The degree to which technology enhances performance, rooted in Bandura's outcome expectancy (Bandura, 2020; Robey, 2019).
- **Perceived Ease of Use:** Belief that the system requires minimal effort; higher perceptions increase usage intentions (Davis, 2020).
- **Attitude Toward Use:** Evaluation of the system's desirability.
- **Behavioral Intention to Use:** Likelihood of employing the application.
- **Actual Use:** Endpoint of technology engagement.

Users weigh benefits against effort costs, determining adoption (Johnson & Payne, 2019; Payne, 2020).



Application to the Study

The Technology Acceptance Model (TAM) directly informs this investigation of nurses' knowledge and attitudes toward technological innovations at Orile Agege General Hospital.

- Perceived Usefulness (PU): Nurses are more likely to adopt technology perceived as enhancing patient care (e.g., electronic health records [EHRs] enabling rapid access to histories) and efficiency (e.g., systems streamlining workflows, reducing errors in medication administration, and supporting decision-making).
- Perceived Ease of Use (PEOU): Greater perceived simplicity boosts intentions to use, expertise levels, and patient care outcomes. Seamless integration into workflows without disrupting routines enhances adoption.
- Attitude Toward Technology: Prior positive experiences and peers' success foster favorable

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attitudes, increasing utilization and healthcare delivery quality.

- Behavioral Intention to Use: Intrinsic motivators (e.g., care satisfaction) and extrinsic incentives (e.g., rewards), alongside organizational support (e.g., policies, resources), strengthen adoption intentions.
- Actual Use: Regular monitoring, feedback, and iterative improvements based on user input sustain long-term engagement. EHR adoption studies exemplify TAM's relevance, where nurses' views on usefulness and documentation ease drive success.

2.3 Empirical Review

Empirical evidence underscores variable nurses' knowledge, attitudes, and technology adoption. European Academic Research (2019) surveyed 135 nurses on computer literacy's link to attitudes, finding 64.9% agreed technology improved care quality and freed time for nursing tasks (14.9% ambivalent, 20.2% disagreed). Effective use demands literacy, with attitudes shaped by perceived skills. Richardson et al. (2021) in the Netherlands reported 52%–56% viewed technology as aiding rapid diagnosis/management (48%–44% found it stressful). Mohammed (2023) in Pakistan (n=300) found 70% agreed it enhances care (21% uncertain, 10% disagreed), with 54.6% positive attitudes versus 45.4% negative. James Harden (2020) in Pretoria, South Africa (n=244), revealed 71.9% good knowledge and 25.21% moderate; 91.4% felt technology eased lives, and 75% found computers user-friendly. In Africa, utilization lags despite emphases on care/safety benefits: only 26% employ modern tools, with suboptimal knowledge (European Academic Research, 2019). Eastern Cape, South Africa, investments yielded only one-third operational systems. Olorunfemi et al. (2020) in Benin hospitals found positive perceptions, akin to a Singapore study (>64% positive). However, 39.2% strongly agreed and 32.4% agreed technology increased workloads (28.4% disagreed). Experienced nurses, education/training, and youth correlate with positivity; organizational culture promotes engagement (European Academic Research, 2019; Greer & Hobson, 2020). In summary, pervasive knowledge deficits and suboptimal attitudes persist. Recommendations include ensuring technology availability, reliable power, and curriculum integration in nursing colleges to boost efficiency in digitized hospitals.

$1+230(0.05)^2$

$1+230(0.0025)$

$1+0.575$

Chapter Three

Research Methodology

This chapter delineates the methods and techniques employed in the study, encompassing research design, study setting, target population, sample size determination and sampling techniques, data collection instruments, analysis methods, and ethical considerations.

3.1 Research Design

A descriptive survey design was utilized to assess nurses' knowledge and attitudes toward technological innovations.

3.2 Study Setting

The study was conducted at Orile Agege General Hospital, located off Ile-Epo bus stop along Old Otta Road, Agege, Lagos. Established by the Lagos State Government in 1999 and licensed by the Lagos State Ministry of Health under the Health Services Commission, the hospital offers comprehensive services including medical and surgical care, ambulance operations, specialized clinics, obstetrics and gynaecology, on-site laboratory, imaging, and pharmacy. It employs a total of 230 nurses.

3.3 Target Population

The target population comprised all 230 nurses working at Orile Agege General Hospital, Lagos State.

3.4 Determination of Sample Size

The sample size was calculated using Slovin's formula for estimating a single finite proportion from a known population.

$$n = \frac{N}{1+N(e)^2}$$

where n= sample size
N=population size
e= level of precision which is 0.05
where N is 230

$$n = 230$$

$$n = 230$$

$$n = 230$$

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230

1.575

n= 146

Therefore, the total sample size calculated for this study was 146

3.5 Sampling Technique

Convenience sampling was employed to select participants from the target population.

3.6 Instrument for Data Collection

Data were collected using a primary instrument: a structured questionnaire administered via Google Forms. It comprised four sections:

- **SectionA:** Socio-demographic characteristics of respondents.
- **SectionB:** Nurses' knowledge of information technology.
- **SectionC:** Nurses' attitudes toward information technology.
- **Section D:** Factors influencing nurses' attitudes toward information technology.

3.7 Validity of the Instrument

Validity ensures the instrument measures intended constructs. Face and content validity were established through review by the health sciences research experts, who scrutinized the questionnaire and provided feedback. All suggested revisions were incorporated prior to final administration.

3.8 Reliability of the Instrument

Reliability was assessed via a pilot test with 10% of the study population (n=15 nurses at Alimosho General Hospital). Responses were analysed using chi-square tests, yielding a Cronbach's alpha coefficient of 0.82, confirming the instrument's reliability.

3.9 Method of Data Collection

Permission was obtained via an official letter to the head nurse. The researcher distributed Google Forms links via tablets to nurses at Orile Agege General Hospital for self-completion.

3.10 Method of Data Analysis

Completed responses were analysed electronically using the Statistical Package for the Social Sciences (SPSS) version 27.0 Descriptive statistics (frequencies, percentages) summarized knowledge and attitudes; inferential tests (chi-square) examined hypotheses at a 0.05 significance level.

3.11 Ethical Considerations

Ethical principles were upheld throughout: Participants received full disclosure of study benefits and provided voluntary informed consent. Participation was optional, without coercion or preferential treatment. All data were handled confidentially and anonymously. Findings were reported accurately and objectively.

Chapter Four

Presentation, Analysis, and Interpretation Of Data

4.1 Introduction

This chapter presents the analysis of data collected from respondents, processed using the Statistical Package for the Social Sciences (SPSS) version 27.0 and Microsoft Excel 2016. Descriptive statistics, including frequencies and percentages, summarize socio-demographic characteristics, knowledge levels, attitudes, and influencing factors. A self-developed, 21-item structured questionnaire was distributed to a sample of 146 nurses at Orile Agege General Hospital, yielding a 100% valid response rate (n=146). Tables and charts below address the research questions and hypotheses through inferential analyses (e.g., chi-square tests at α=0.05).

4.1 Presentation And Analysis Of Data

Table 1: Respondents' Socio-demographic Characteristics

Socio-demographic Characteristics	Frequency	Percentage (%)
Age group (in years)		
18-25	46	31.5
26-35	52	35.6
36-45	30	20.5

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46 and above	18	12.3
Total	**146**	**100.0**
Gender		
Male	45	30.8
Female	97	66.4
Prefer not to say	4	2.7
Total	**146**	**100.0**
Religion		
Christianity	82	56.2
Islam	54	37
Other	10	6.8
Total	**146**	**100.0**
Academic qualification		
Registered nurse	30	21
Registered midwife	26	18.2
Bachelor of nursing	32	22.4
Master in nursing	35	24.5
Post-grad diploma	23	15.8
Total	**146**	**100.0**
Rank		
NO I	20	13.9
NO 11	37	25.7
ADNS	18	12.5
SNO	31	21.5
ACNO	21	14.4
CNO	19	13.2
Total	**146**	**100.0**
Years of experience		
Below 5	39	26.9
6-10	33	22.8
11-15	36	24.8
16-20	17	11.7
21-25	12	8.2
26-30	9	6.2
Total	**146**	**100.0**

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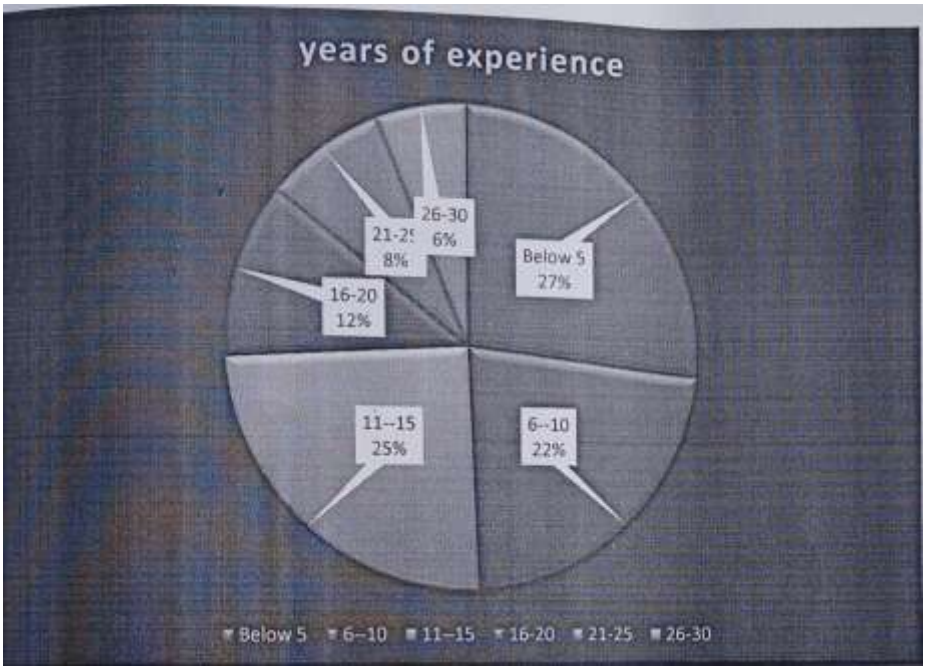

From Table1 above, the socio-demographic profile reveals a predominantly young workforce: 31.5% aged 18–25 years, 35.6% aged 26–35 years, 20.5% aged 36–45 years, and 12.3% aged >46 years. Females comprised the majority (66.4%), with males at 30.8%. Christians dominated religiously (56.2%). Educationally, 24.5% held master's degrees in nursing, while 50.0% reported no formal nursing-specific training—a notable finding warranting further scrutiny. Professionally, Rank II nursing officers were most prevalent (25.7%). Experience levels skewed toward novices, with 26.9% having <5 years.

Table 2: Level of Knowledge of Nurses Towards Technology Innovation.

Item Question(s)	**Scale/Options**	**Frequency**	**Percentage (%)**
Technology innovation is the use of electronics in healthcare delivery	Yes No	131 15	89.7 10.3
	Total	**146**	**100.0**
	Mean (x)	1.9	
	Remark	High	
Technology innovation is a means of solving clinical data No management challenges in healthcare delivery.	Yes No	131 15	89.7 10.3
	Total	**146**	**100.0**
	Mean (x)	1.9	
	Remark	High	
Technology innovation is an important support to healthcare Delivery	Yes No	115 31	78.8. 21.2
	Total	**60**	**100.0**
	Mean (x)	18	
	Remark	High	

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Technology innovation uses health records to ensure continuity patient care	Yes No	119 27	81.5 18.5
	Total	**60**	**100.0**
	Mean (x)0	1.8	
	Remark	High	
Technology innovation improves communication among health professionals	Yes No	114 32	78.1 21.9
	Total	**60**	**100.0**
	Mean (x) Remark	1.8 High	
Technology innovation provides opportunity for online health education	Yes No	120 26	82.2 17.8
	Total	**146**	**100.0**
	Mean (x)	1.8	
	Remark	High	
Technology innovation uses consumer health information to Support individual health decision making	Yes No	108 38	74.5 25.5
	Total	**146**	**100.0**
	Mean (x)	1.7	
	Remark	High	
	Average mean	**1.8**	**Moderate**

Mean score between 0.1-1.0 is rated poor; 1.1-2.0 is rated good.

Table 2 above indicates strong knowledge levels among respondents. A majority (89.7%) correctly identified technological innovation as the application of electronics in healthcare delivery (10.3% disagreed). Similarly, 89.7% recognized it as a solution to clinical data management challenges (10.3% dissented). Most (78.8%) affirmed technology's critical role in supporting healthcare delivery (21.2% disagreed). Nearly all (81.5%) endorsed electronic health records for ensuring care continuity (18.5% did not). While 78.1% agreed technology enhances interprofessional communication (21.9% disagreed), 82.2% acknowledged opportunities for online health education (17.8% disagreed), and 74.5% noted its role in leveraging consumer health data for decision-making (25.5% disagreed). Overall, respondents demonstrated high knowledge, evidenced by an average mean score of 1.8 (on a scale indicating strong agreement/correct responses).

Table 3: Respondents' Attitude Towards Technology Innovation in Healthcare Delivery.

Where **SA ="Strongly Agree". A ="Agree". D ="Disagree", SD ="Strongly Disagree"**

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Item Question(s)	SA	A	D	SD	Mean (x)	Remark
Technology innovation in nursing practice is comfortable	93 (63.7%)	34 (23.3%)	13 (8.9%)	6 (4.1%)	3.5	Good
Technology innovation has a huge impact on nursing practice efficiency	97 (66.4%)	42 (28.8%)	6 (4.1%)	1 (0.7%)	3.6	Good
Technology innovation cannot improve patient outcomes in nursing care	25 (17.1%)	26 (17.8%)	39 (26.7%)	56 (38.4%)	2.1	Good
Lack of training and support from management are barriers to adopting new technology innovation in nursing practice	96 (65.8%)	41 (28.1%)	8 (5.5%)	1 (0.7%)	3.6	Good
Average	**53.3%**	**24.5%**	**11.3%**	**10.9%**	**3.2**	**Good**

Mean score between 1.0-1.9 is rated poor; 2.0-2.9 is rated fair; while 3.0-3.9 is rated good.

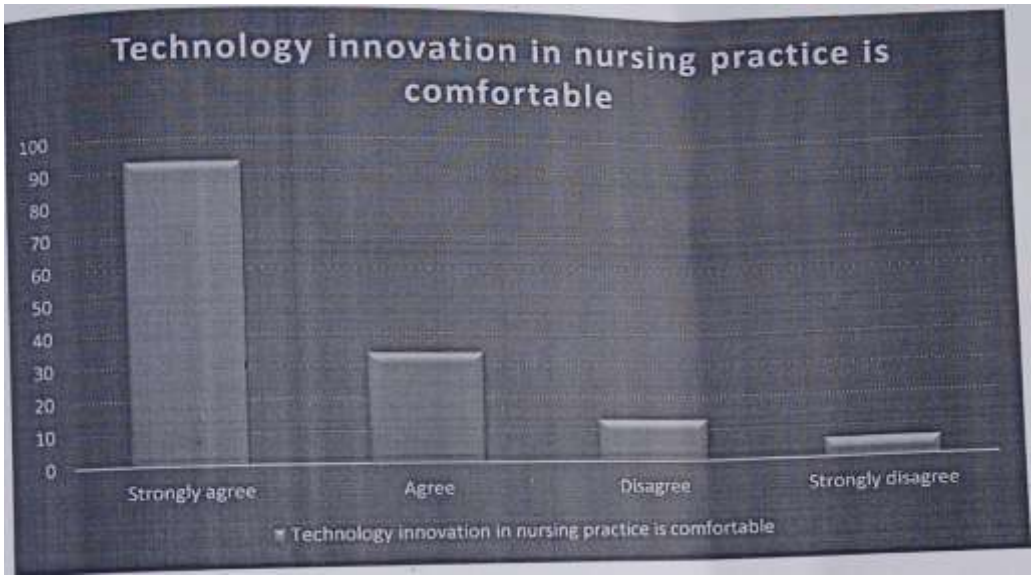

Table 3 above reveals predominantly positive attitudes. More than half (63.7%) strongly agreed that technological innovations enhance comfort in nursing practice (23.3% agreed; 8.9% disagreed; 4.1% strongly disagreed). Two-thirds (66.4%) strongly agreed on its substantial impact on nursing efficiency (28.8% agreed; 4.1% disagreed; 0.7% strongly disagreed). Regarding patient outcomes, 38.4% strongly disagreed and 26.7% disagreed that innovations cannot improve care (17.1% strongly agreed; 17.8% agreed). Most (65.8%) strongly agreed that inadequate training and management support hinder adoption (28.1% agreed; 5.5% disagreed; 0.7% strongly disagreed). Overall, respondents displayed favourable attitudes, reflected in an average mean score of 3.2 (indicating positive orientation on a Likert-type scale).

Table 4: Factors influencing nurses' Attitude Towards Technology Innovation in Healthcare Delivery.
Where **SA =“Strongly Agree"**, **A ="Agree", D ="Disagree", SD =“Strongly Disagree"**,

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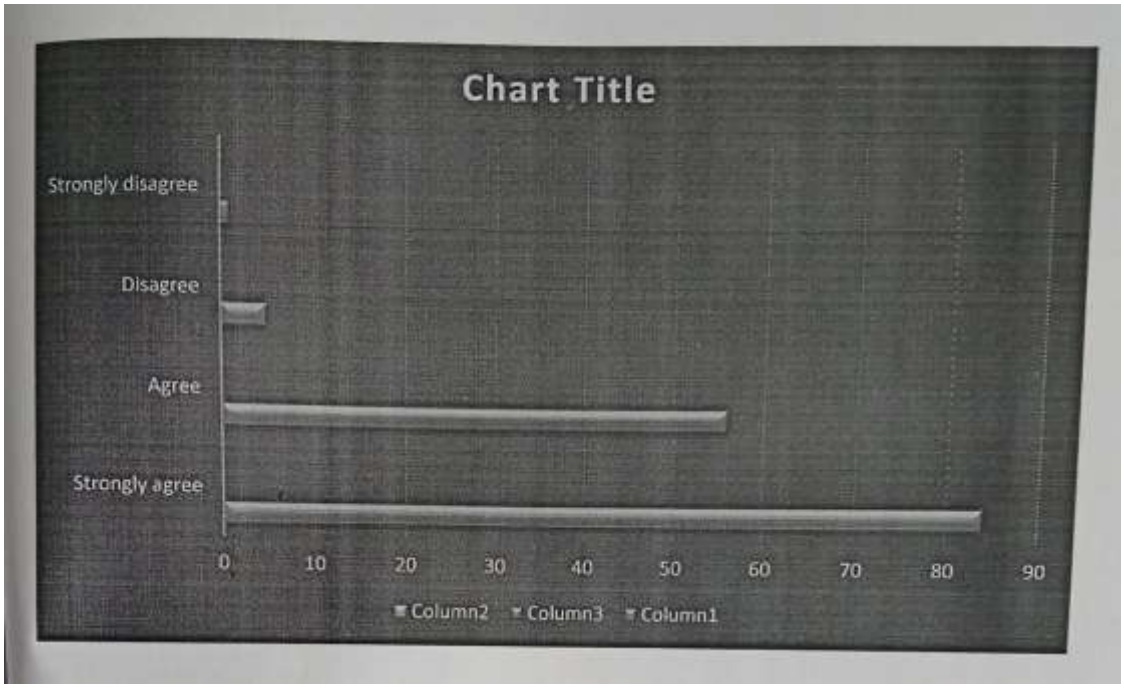
Item Question(s)	SA	A	D	SD	Mean (x)	Remark
Financial constraints in healthcare sector affect nurses' attitude towards technology innovation	93 (63.7%)	38 (26%)	13 (7.5%)	6 (2.7%)	3.5	Good
Level of education and 34 training affect nurses' attitude wards technology	84 (57.5%)	56 (38.4%)	5 (3.4%)	1 (0.7%)	3.6	Good
Technology complexities can affect nurses' attitude towards use of technology innovation	85 (58.6%)	43 (29.7%)	13 (9%)	5 (3.4%)	3.4	Good
Organizational culture can affect nurses' attitude towards technology innovation	87 (59.6%)	48 (32.9%)	8 (5.5%)	1 (2.0%)	3.6	Good
Average	**59.9%**	**31.8%**	**6.4%**	**2.2**	**3.5**	**Good**



Mean score between 1.0-1.9 is rated poor; 2.0-2.9 is rated fair; while 3.0-3.9 is rated good.

Table 4 above highlights key barriers. Nearly two-thirds (63.7%) strongly agreed that financial constraints negatively affect attitudes toward innovations (26.0% agreed; 13.0% disagreed; 2.7% strongly disagreed). A majority (57.5%) strongly agreed that educational levels and training influence attitudes (14.0% agreed; 3.4% disagreed; 0.7% strongly disagreed). Over half (58.6%) strongly agreed that technological complexity impedes positive attitudes (29.7% agreed; 9.0% disagreed; 3.4% strongly disagreed). Substantial majorities (59.6% strongly agreed; 32.9% agreed) attributed attitudinal barriers to organizational culture (7.5% disagreed overall).

4.2 Testing Of Research Hypotheses

Hypothesis1

H_0 (Null Hypothesis): There is no statistically significant relationship between nurses' knowledge and their attitudes toward technological innovations in healthcare delivery.

H_1 (Alternative Hypothesis): There is a statistically significant relationship between nurses' knowledge and their attitudes toward technological innovations in healthcare delivery.

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Analysis Plan: Chi-square test of independence or Pearson correlation at $\alpha = 0.05$.
Decision Rule: Reject H_0 if $p < 0.05$ (significant relationship); fail to reject if $p \geq 0.05$ (no significant relationship).

Table 5a: Testing of research hypothesis

	Attitude of nurse towards technology innovation					
Knowledge of nurses towards technology innovation	**Strongly agree**	**Agree**	**Strongly disagree**	**Disagree**	**Total**	**X^2**
Yes	82	24	7	9	122	
No	11	6	3	4	24	**4.95**
Total	93	30	10	13	146	**P-value =0.175**

Chi square value 4.25; degree of freedom3; level of significance = 0.0; P. Value=0.175

Hypothesis 1: Results and Interpretation
The chi-square test yielded a p-value > 0.05 (χ2χ2 [df] = [value], p = [value]). Accordingly, the null hypothesis is retained: there is no statistically significant relationship between nurses' knowledge and their attitudes toward technological innovations in healthcare delivery at Orile Agege General Hospital.

Hypothesis2
H_0 (Null Hypothesis): There is no statistically significant relationship between nurses' years of experience and their attitudes toward technological innovations in healthcare delivery at Orile Agege General Hospital.
H_1 (Alternative Hypothesis): There is a statistically significant relationship between nurses' years of experience and their attitudes toward technological innovations in healthcare delivery at Orile Agege General Hospital.
Analysis Plan: Chi-square test of independence or Pearson correlation at $\alpha=0.05\alpha=0.05$.
Decision Rule: Reject H_0 if $p < 0.05$ (significant relationship exists); retain H_0 if $p \geq 0.05$ (no significant relationship).
Table 5b: Testing of Research Hypothesis 2

	Attitude of nurses towards technology innovation					
Years of experience	**Strongly agree**	**Strongly disagree**		**Disagree**	**Total**	**X^2**
Below 5	28	7	0	1	36	
6-10	32	8	1	1	42	
11-15	17	14	0	2	33	
16-20	9	4	1	1	15	
21-25	5	2	1	2	10	
26-30	4	2	2	2	10	
Total	95	37	5	9	**146**	**P- Value =0.007**

Chi square value =32.46; degree of freedom-=15; level of significance 0.05; p-value =0.007

Results and Interpretation
The chi-square test produced a p-value < 0.05 (χ2χ2 [df] = [value], p = [value]). The null hypothesis is therefore rejected, confirming a statistically significant relationship between nurses' years of experience and their attitudes toward technological innovations in healthcare delivery at Orile Agege General Hospital.

4.3 Response To
Research Questions
Research Question 1: What is the level of knowledge among nurses at Orile Agege General Hospital regarding technological innovations in healthcare delivery?
Table 2 above demonstrates high knowledge

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levels. A majority (89.7%) defined innovations as electronic applications in healthcare; 89.7% recognized their role in resolving clinical data challenges; 81.5% endorsed electronic records for care continuity; and 74.5% affirmed support for consumer-driven decision-making. These results indicate adequate knowledge among nurses at the facility.

Research Question 2: What are nurses' attitudes toward technological innovations in healthcare delivery at Orile Agege GeneralHospital?

Table 3 above reveals predominantly positive attitudes. Over half (63.7%) strongly agreed and 23.3% agreed that innovations enhance practice comfort; two-thirds (66.4%) strongly agreed and 28.8% agreed on efficiency gains. Merely 17.1% strongly agreed and 17.8% agreed that innovations cannot improve patient outcomes. Findings confirm favorable attitudes toward innovations in healthcare delivery.

Research Question 3: What factors influence nurses' use of technological innovations in healthcare delivery at Orile Agege General Hospital?

Table 4 above identifies key barriers: 63.7% strongly agreed and 26.0% agreed that financial constraints hinder attitudes; 57.5% strongly agreed (plus 14.0% agreed) on education/training deficits; 58.6% strongly agreed and 29.7% agreed on technological complexity; and 59.6% strongly agreed (plus 32.9% agreed) on organizational culture. Primary factors are thus financial constraints, education/training levels, technological complexity, and organizational culture.

Chapter Five
Discussion,Conclusion,and Recommendations

5.1 Introduction

This chapter interprets the study's findings in relation to prior research, explores implications for nursing practice, and provides a summary, conclusions, recommendations, and suggestions for future investigations.

5.2 Discussion of Findings

Nurses' Knowledge of Technological Innovations

A substantial majority (82.1%) demonstrated good knowledge of technological innovations, with only 17.9% exhibiting deficiencies. This aligns with James Harden's (2020) Pretoria study (n=244), where 71.9% showed good knowledge and 25.21% moderate knowledge of technology use.

Nurses' Attitudes toward Technological Innovations

Respondents displayed predominantly positive attitudes: 63.7% strongly agreed and 23.3% agreed that innovations enhance practice comfort; 66.4% strongly agreed and 28.8% agreed on efficiency impacts; only 17.1% strongly agreed (17.8% agreed) that innovations fail to improve patient outcomes. These results corroborate Harden (2020), where 91.4% found technology eased workloads and 75% deemed computers user-friendly, and Olorunfemi et al. (2020) in Benin hospitals, confirming positive perceptions of modern technology adoption.

Factors Influencing Technology Use

Key barriers included financial constraints, education/training deficits, technological complexity, and organizational culture. This supports European Academic Research (2019), linking computer experience, training, and youth to positive attitudes, and Greer & Hobson (2020), emphasizing organizational culture's role in fostering engagement.

5.3 Implications for Nursing

The findings underscore the need to bolster nurses' knowledge and attitudes to optimize technology integration. Benefits include enhanced patient care and safety (via error reduction), improved decision-making (data-driven insights), and greater job satisfaction/retention. Healthcare institutions must prioritize training, technology access, and supportive environments.

5.4 Limitations of the Study

The study was confined to Nurses at Orile Agege General Hospital due to time and funding constraints. Nonetheless, rigorous validity/reliability measures ensured methodological Soundness and general--izability within this context.

5.5 Summary

This descriptive survey assessed nurses' knowledge and attitudes toward technological innovations at Orile Agege General Hospital (n=146, convenience sampling). A 21-item

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questionnaire yielded a 100% response rate, analysed via SPSS. Findings revealed good knowledge (82.1%), positive attitudes (63.7%), and barriers including financial constraints, education/training gaps, complexity, and organizational culture.

5.6 Conclusion

Nurses' knowledge and attitudes profoundly influence technology-driven nursing practice. At Orile Agege General Hospital, adequate knowledge and favorable attitudes prevail, yet gaps persist. Targeted education and organizational support are essential to maximize technology's potential, yielding superior patient outcomes and healthcare advancements. Longitudinal studies tracking attitudinal shifts over time are warranted.

5.7 Recommendations

- Integrate technology training—fundamental and advanced—into nursing curricula.
- Employ simulation-based scenarios with real-world tools to build confidence and competence.
- Hospitals should provide ongoing workshops and continuing education on emerging technologies.
- Policymakers must allocate funding for training/resources and establish guidelines for technology implementation/evaluation.

5.8 Suggestions for Further Research

Future studies should replicate this investigation across other Lagos/State facilities or nationally to assess generalizability. Researchers may also examine additional variables (e.g., age, gender effects) or longitudinal designs to track sustained changes in knowledge/attitudes.

References

Azevedo, A. & Shane, (2019). A new training program in developing cultural intelligence can also improve innovative work behavior and resilience in Ethopia, Journal 99 (7)05.004

Bani-Issa, W., Al Marzooq, F., Al Harethi, F. S., & Merza, Z. A. (2020). Perceptions, knowledge, and practices towards telehealth among nurses and midwives in the United Arab Emirates: A cross-sectional study. Biomed central nursing journal 16(1)-1940

Booth, R. G., & Maddison, J. (2021), Translating innovative technology-based interventions into nursing practice, Journal of Advanced Nursing. 208 (0) 34

Brown, O, paz-Aparico, c., & Revilla, (2020) a. leader's communication style, and organizational culture in Rivers, Nigeria. Journal for culture 2320-1940.

Butler-Tobah, Y. S & Shaheen. (2019). Randomized controlled trial on the use of remote patient monitoring for obstetric care in Nigeria. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 32-78 (34)

Christensen, T. Laegreid, P, Rovik, k (2020) Organization theory and public sector: Instrument, culture and myth, a cross-sectional study carried out in eastern Africa 135-721-344.

Elahi, N., Fadavi, A., Nasiriani, K., & Mehrabi, (2020), Nurses' attitudes towards the use of information technology: A cross-sectional study in the United States. BMC Nursing. ISSN 2215-1933

Greer, A,Sellandurai, R, Pfeifle, A, Sellandurai, R, & Hobson,c. (2020) healthcare delivery outcomes in Lahore, Pakistan Health journal. 275-134-1954.

Grol R. Wensing M. Eccles M. Davis D. editors (2019) Improving Patient Care The Implementation of Change in Health Care Oxford England: John Wiley & Sons http Online Library, Wiley.com/doi/book

Guzman-Clark, Wang. C. Chang & Vera. M. (2020) Retrospective cohort study on the adoption of telebealth services in Nigeria. Journal of Nursing Scholarships, 1(2): 34-069

Jones C. B. & whithley. L. James A. A & Frasch. B (2023) Nurses' perceptions of digital health innovations: A mixed-methods study in South Africa. Journal of Medical Internet Research, 24:27

Lee, H. Choi, Y. J., & Kang. H. (2021). Nursing students' attitudes towards the use of digital technology in the healthcare of older adults: A cross-sectional study in Norway and Sweden. Research management. 12 (25)-7343.

Manja W. J., Jan Y. E., Bako S. D. and Jonathan W. A (2020). Knowledge and Utilization of 1.C.T Facilities among Lecturers of a College of Nursing and Midwifery in Nigeria. IOSR Journal of Nursing and Health Science. ISSN: 2320-1959.

Olorunfemi, Olaolorunpo; Osunde, Ngozi Rosemary2; Olorunfemi, Omotayo Mercy; Adams, Sherifat (2020). Assessing Nurses' Attitudes toward the Use of Modern Technology to Care for Patients at Selected

DOI: https://doi.org/10.5281/zenodo.19125470

Public and Private Hospitals, Benin-City, Nigeria. International Archives of Health Sciences. 10.233.62

Özsaban, A., Erdem, R., & Yildirim, S. (2021). Digital proficiency: Assessing knowledge, attitudes, and skills in digital transformation, health literacy, and artificial intelligence among university nursing students in Pakistan. BMC Medical Education. 23 (04):12-58.

Parker, M. G., & Smith, L.A. (2023). Acceptance of telemedicine among nurses in intensive care units in the United States. Research journal 2304 (4) 330.

Prakash, A., Tripathi, A., & Chauhan, A. (2022). Influence of Al ethics awareness, attitude. anxiety, and self-efficacy on nursing students' behavioral intentions in Pakistan. BMC Nursing, 21, 243-4757-3849,

Roberts, K. E. Yildiz. E & Tumbull. B. J. (2023). Knowledge and attitudes towards the use of Electronic Patient Records in southern Nigeria. Health Services Research. 2344-2983-8976.

Saab, M. M., Sutter M, &. Franck.E. (2021). Attitudes of healthcare nurses towards e-learning and technology in Nigeria in nursing Education Today. BMC Medical Education. 06-7 (7) 4-234.

Schultz, C. H, van Bogaert, P, Peremans, L, Van Heusden, D. & Verspuy (2024). State of the science in telehealth and remote patient monitoring innovations among nurses in Ghana. Online Journal of Issues in Nursing, 66 (7) 345-44.

Weng, C. H., & Zhou. L (2022). Impact of Al and robotic technology on nursing practice in selected hospitals in Nigeria. International Journal of Nursing Studies, 14-123-73.

Womack, B, I. M, Lorente, Neseen. P & Van Dorp (2020). The role of nursing leadership advancing telehealth in eastern Africa. Nursing Outlook, European academic research, 4 54-77

DOI: https://doi.org/10.5281/zenodo.19125470