

# EFFECTIVENESS OF DIGITAL AGE TRANSFORMATION ON NURSING CARE PRACTICE AMONG NURSES WORKING IN FEDERAL TEACHING HOSPITAL LOKOJA, KOGI STATE

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**Abstract:** **Background:** Over the last couple of decades, technology has changed the way nurses interact, communicate, reason and deliver high level of professional care through digitalization of health care practice.

**Objectives:** The objectives of the study are to : asses the knowledge of nurses; attitudinal disposition; and factors influencing perceptions towards effectiveness of digital age transformation in nursing care practice at Federal Teaching Hospital Lokoja, Kogi State.

**Methods:** A descriptive research design was used, Taro Yamane's formula was used to calculate sample size, stratified and simple random sampling technique was used to select 160 respondents. a well- structured questionnaire was developed from the literature review in line with the specific objective of the study. Data obtained were organized, summarized and analyzed through IBM Statistical Package for Social Sciences (SPSS) version 25 while hypothesis was tested.

**Results:** The results showed that majority 133(83.1%) of the Nurses have good knowledge towards effectiveness of digital age transformation on nursing care practice. This study also showed that nearly 120(75%) of the Nurses have positive attitudinal disposition towards digital age transformation. More so, this study find that almost 90(56.3%) of the staff nurses were strongly agreed that power supply is one of the major problem in Nigeria digital age transformation in nursing practice, while exact 85(53.1%) of the registered nurses were strongly agreed that Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

**Conclusion: It was concluded that there is significant difference between knowledge and attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice. This study recommended that Government and hospital management should ensure and facilitate implementation of new modern technology in nursing practice**

**Keywords: Digital Age, Digitization, Digital Health, Effectiveness, Nursing, Practice, Transformation.**

## 1. INTRODUCTION

Over the last couple of decades, technology has changed the way nurses interact, communicate, reason and deliver high level of professional care through digitization of health care practice. Digital health is a broad, multidisciplinary concept that includes concepts from an intersection between technology and healthcare. These technologies are reshaping the way nursing care services is being delivered, making it possible for nursing care in new settings and improved approach. Advance information technology over the last few decades have created a significant opportunities for nurses to be aware of current information when making decisions. Information technology helps the nurses to process, manage, store and retrieve the information for providing safe and efficient patient care. Advance in information technology created new role for nurses and it is referred as nursing informatics (Raghu 2021).

American Nursing Association (ANA, 2015) defined "Nursing informatics (NI) as the specialty that integrates nursing science with multiple information management and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice. Nursing informatics supports nurses, consumers, patients, the inter-professional healthcare team, and other stakeholders in their decision-making in all roles and settings to achieve desired outcomes. This digital age support in nursing is accomplished through the use of information structures, information processes, and information technology to delivered nursing practice even beyond the immediate ednvironment .

Digital technology has changed the way nurses communicate and collaborate with patients and other health professionals. Nurses are able to schedule and record activities in real-time faster and with more accuracy. As a result, patients who have timely access to health care services can reduce the need for hospital admission and healthcare costs. Digital technology in health care is affordable and deeply engages patients in their treatment and recovery. It also brings opportunity for nurses to provide exceptional levels of care and improve their patients' quality of life. Digital technology will continue to evolve and nurses need to keep up with and be ready to utilize the technology and tools to deliver quality nursing care. Digital technology is pervading and influencing nursing practices. Nurses in technological area are expected to be able to use knowledge, information, and digital technology to maximize their nursing care and improve efficient ways of working in the health care system. More than 50% of nurses working in developed country were reported using digital technology in their everyday nursing practice beyond their immediate ednvironment (Seal & Mary, 2019).

With these technologies, nurses can reach populations in isolated and remote areas and consult with their patients whilst these are at the comfort of their own home. These new ways for nursing practice, and areas of provision of healthcare affects how nurses currently interact with individuals requiring healthcare. This impact will lead nurses to explore and develop new roles addressing the challenge of a shrinking workforce, as well as the drive to deliver more health and preventive care in non-traditional settings (Edmonson, et al., 2021). Digital health applies digital transformation to the healthcare field, incorporating software, hardware and services. Digital health includes mobile health (mHealth) apps, electronic health records (EHRs), electronic medical records (EMRs), wearable devices, telehealth and telemedicine, as well as personalized medicine. Digital health employs more than just technologies and tools; it also views "radically interoperable data, artificial intelligence (AI), and open, secure platforms as central to the promise of more consumer-focused, prevention-oriented care (Mary 2019).

It is important for nursing to understand the implications of the development, implementation, and evaluation of different digital technologies. Thus, the necessary skills to provide care must follow ethical and legal principles, respecting confidentiality and privacy issues. Therefore, the digital world is not about advancing nursing practice or rebuilding the current healthcare system on an electronic platform, as the potential benefits of technology for health will remain untapped without an approach rooted in science, culture, and ethics (The Lancet Digital Health, 2020). The mHealth frameworks aim to improve digital communication skills, digital education, digital device, and software use skills, regulatory issues, compliance issues, deploying telemedicine services and products, and improving inter-professional health communications.

Incorporating telemedicine in nursing practice would improve information and technology (IT) use in health domains for improving guidance, support, and assistance to patients in remote locations by improving communication and interpersonal relationships between nurses and patients and transforming nurses into efficient leaders to administer innovative and high-quality care to patients (Pooja, 2022). The maturity of digital health transformation is an opportunity to qualify nursing work, but it imposes a challenge, requiring nurses to develop specific skills in the digital area and to be better prepared, as they will continue to lead the digital transition with the use of different digital health technologies to improve patient care. This study is therefore designed to examine effectiveness of digital age transformation on nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

## 2. STATEMENT OF THE PROBLEM

The existence, usage and benefits of digital technologies in nursing care practice are relevant topics in the light of the current technological age but the shortage of skilled workers and the increasing demand for long-term care affected the implementation of digitalization of health care practice in both developed and developing countries (Krick et al, 2020). Technology has complicated several simple processes. Many medical devices use advanced software that needs to be updated regularly. Updating medical equipment is not as straightforward as updating computers. If nurses are not adequately trained to operate them or do not properly manage these updates, they compromise patient care, leading to medical errors, negligence and malpractice. Using medical technology without comprehensive understanding can lead to omission of error and professional malpractice.

Technologically challenged nurses who can not operate new software to do a basic task like entering a patient medical records may make mistakes, risking the patient life and leading to malpractice claims. The healthcare industry is rapidly evolving, and digital advances are the primary cause of this evolution. However, nurses who are not being trained to keep up with these advances in technology will remain outdated in this technological era (Seal & Mary, 2019). Therefore, it is a common occurrence that most nurses trained before the emergence of digitalization in health care system may not understand or be able to operate a new digitally advanced equipment in nursing profession. The nursing curriculum for basic nursing has not been updated to include technological advancements. Digital literacy is crucial for nursing practice nowadays. However, less or no measures are being taken to realign nursing education to keep up with the modern digital evolution (Pooja, 2022).

Contemporary healthcare faces many changes on account of emerging and re-emerging diseases especially during the COVID-19 in process of information, communication and technology. Nursing being an integral part of health care delivery system is exposed continually to a variety of changes. The attitude of nurses towards computer education has affected the quality of rendering effective care which brings about the knowledge of new prevalent diseases and the quality of the profession both within the country and beyond. The rapid developments in technology have heightened the need for digitalization in nursing care practice. Digital Nursing plays a fundamental role in improving the Nursing care practice in Nigeria (Krick et al, 2020).

The understanding of the various uses of technology in the healthcare is essential to exploring the concept of digital nursing. However, despite the recognized benefits digital health has to offer, implementation of digital health in Nigeria remains low due to the prevalence of certain challenges. The challenges include unstable electricity, internet penetration, perceptions of the users, inadequate staff, inadequate computers, unstable internet connection (Akinseinde, 2021). Therefore, based on the above evidence, it is necessary to assess effectiveness of digital age transformation on nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

### General objective

The aim of the study is to investigate the effectiveness of digital age transformation in nursing care practice among the nurses working in Federal Teaching Hospital Lokoja, Kogi State.

### Specific objectives

1. To assess the level of knowledge of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State.
2. To investigate the attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State.
3. To identify factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State.

**Research question**

1. What is the level of knowledge of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State?
2. What is the attitudinal disposition towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State?
3. What are the factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State?

**Research hypothesis**

Ho1: There is no significant relationship between knowledge and attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State.

Ho2: there is no significant difference between the sociodemographic variable and factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State

**Significance of the study**

This study will help to improve the knowledge of digitalization among nurses by providing comprehensive literature approach to digitalisation in nursing. The findings of this study will provide useful information on the possible solutions to challenges faced by nurses in handling technological changes in nursing care practice. The finding of this study will benefit local, state and federal government on provision and implementation of digitalization of nursing practice within the hospital setting. The study will provide comprehensive knowledge for nurses and students nurses on digitalization of nursing care practice.

It will help clinical nurses to reduce error of omission and malpractice that might occur while providing their professional nursing care. It will help nursing education and administration on effective management of data and information related to students data, client data and hospital information. It will help hospital management to know the effectiveness of digitization of nursing care practice in management of patient care. This study will add to the body of knowledge in nursing profession.

**Scope of the study**

This research study is focused on the effectiveness of digital age transformation in nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

**Definition of terms**

**Digital Age:** is a time when large amount of information are widely available to many people, largely through computer technology

**Digitization:** This is the act or process of changing completely in form, structure and nature by converting information into a digital format.

**Digital Health:** This is a broad, multidisciplinary concept that includes concepts from an intersection between technology and healthcare.

**Effectiveness:** This is the capability of producing a desired result or the ability to produce desired output.

**Nursing:** Is a group of people who have completed basic nursing education programme and he or she is qualified and authorized to provide care for individuals, families, and communities so they may attain, maintain, or recover optimal health and quality of life from conception to death.

**Practice:** Is the process of repeating digital age transformation process at regularly interval so that nurses can improve on quality nursing care delivery in hospitals.

**Transformation:** This encompasses the act or process of changing completely in form, structure and nature of digital information and communication technologies and corresponding new processes into the health care sector.

### 3. METHODOLOGY

The study adopted a descriptive study non-experimental design to identify effectiveness of digital age transformation on nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State. This study was conducted at Federal Teaching Hospital lokoja, Kogi state. the Federal Teaching Hospital lokoja, formerly known as Federal medical centre lokoja. The targeted population consist of about 270 male and female nurses working in Federal Teaching Hospital Lokoja. Taro Yammane's formula, stratified and simple random sampling technique were used to select 161 respondents. The researcher developed effectiveness of digital age transformation on nursing care practice among nurses questionnaire and it was given to project supervisor. The structured questionnaire was scrutinized by the project supervisor were corrections and modifications were made to ensure validity and the research questions were answered.

The questionnaire comprises of four sections having 30 items altogether. **Section A:** contains five (5) items on demographic data.

For objective 1:

Question 1-12 was used to assess Knowledge Towards Digital Age Transformation

For objective 2:

Questions 1-8 were used to assess attitudinal disposition towards effectiveness of digital age transformation.

For objective 3:

Questions 1-5 were used to assess factors influencing Perception towards effectiveness of digital age transformation.

Boxes were provided in front of each question where respondent will tick his or her choice out of the option and all the question were closed ended questions. A well structured open ended 5-point Likert scale questionnaires which ranging from Strongly Agree (SA), Agree (A), Disagree (D), Strong Disagree (SD) and Indifference (I) was used to rate each item on the section B to D. these questions B to D Likert scale were scored Strongly Agreed = 3, Agreed = 2, Disagree = 1, and Strongly Disagree = 0 respectively. The maximum score is 15 while the minimum score is 0. Boxes were provided in front of each question where respondent will tick his or her choice out of the option and all the question were closed ended questions. To establish the instrument reliability, test re-test method of reliability was used.

Pilot study was done by administering the questionnaire to the respondent which is not part of the study but have similar characteristics at interval of 14 days with compares of their response in each case to be used and the data collected was analyzed using Pearson Product Moment Correlation Statistics with reliability co-efficient of 0.88 and 0.89 respectively. The researcher collected introduction letter from the school and met with the respondents to explain the objective of the study and to seek their consent. The questionnaires was in closed ended form in which the researcher and two assistants took the questionnaires to the respondents on two different working days, they administered the questionnaires after ethical approval has been obtained from the health institution authority and informed consent has been signed by respondents, the questionnaires were collected back immediately for compilation and analysis, the questions have response categories pertaining to the topic of study and it was given to the respondents. The data were collected and analyzed descriptively using frequent count, percentage scores, means, standard deviation (SD), table and pie chart to answer the research questions.

### 4. RESULTS

#### Socio-demographic data

Table 4.1 shows the socio-demographic data of Nurses working in Lagos University Teaching Hospital.

Variable	Frequency (n= 160)	Percent (%)	Means $\pm$ SD
Age as at last birthday			2.69 $\pm$ 0.54
20 years and below	—	34.4	
21- 40	55	61.9	
41- 60	99	3.8	
61 and above	6	—	

Gender			1.84±0.36
Male	25	15.6	
Female	135	84.4	
Both	—	—	
None	—	—	
Marital status			1.91±0.29
Single	15	9.4	
Married	145	90.6	
Widowed	—	—	
Divorced	—	—	
Professional qualification			2.41±0.70
Double qualified	20	12.5	
BNSc	55	34.4	
MNSc	85	53.1	
Clinical experience			2.28±0.63
1- 10 yrs	15	9.4	
11-25yrs	85	53.1	
26-35 yrs	60	37.5	
above 36 yrs	—	—	
Designation			3.48±1.23
NO	5	3.1	
SNO	50	31.3	
ACNO	5	3.1	
CNO	64	40	
ADNS/DDNS	36	22.5	

Source: Field Survey 2023

According to Table 4.1, it was observed that majority 99(61.9%) of the Nurses were between age range of 41 to 60 years. exact 135(84.4%) of the clinical nurses were female, almost 145(90.6%) of respondents were married, nearly 85(53.1%) of the polyvalent nurses had obtained additional Master of Science (MSc) in nursing education programs, The table shows that about 85(53.1%) of the participants have 11 to 25 years of working experience in clinical settings while almost 64(40%) of the competent nurses where Chief Nursing Officers (CNO) working in Federal Teaching Hospital Lokoja, Kogi State

#### Knowledge Of Digital Age Transformation(N=160)

Table 4.2: Strongly Agree (SA), Agree (A), Strongly Disagree (SD), and Disagree (D) while indifferent (I)

Variables	SA	A	I	D	SD	Mean±SD
I have received enough information on digital age transformation in nursing practice	70 (43.8%)	84 (52.8)	—	—	6 (3.8)	4.33±0.82
Nursing Informatics education is important for nurses who want to use digital transformation in nursing practice	80 (50%)	80 (50%)	—	—	—	4.50±0.50
It is necessary for nurses to have computer knowledge	106 (66.3%)	54 (33.8%)	—	—	—	4.66±0.47
I have heard of digital age transformation in nursing practice	65 (40.6%)	89 (55.6%)	—	—	6 (3.8%)	4.29±0.81
digital age transformation in nursing practice do not guarantee 100% ethical practice such as confidentiality and privacy	10 (6.3%)	92 (57.5)	—	58 (36.3)	—	3.34±1.04
There is sufficient equipment for the uptake of digital transformation in nursing practice in your hospital	40 (25%)	90 (56.3%)	—	30 (18.8%)	—	3.88±1.00
Digital nursing transformation reduce workload of nursing practice	90 (56.3%)	64 (40%)	—	—	6 (3.8%)	4.45±0.84

My institution supplies the relevant resources needed for the uptake and implementation of digital age transformation in nursing practice	52 (32.5%)	90 (56.3%)	—	12 (7.6%)	6 (3.8)	4.06±0.98
digital age transformation in nursing practice is applicable in my place of practice	65 (40.6%)	89 (55.6%)	—	6(3.8)	—	4.33±0.67
Does hospital administration recognize digital age transformation in nursing practice as a framework of nursing care delivery?	35 (21.9%)	95 (59.4%)	—	24 (15%)	6 (3.8%)	3.81±1.06
I obtained Digital Nursing Transformation information and knowledge from Mandatory Compulsory Professional Development Programme	15 (9.4%)	5 (3.1%)	—	134 (83.9%)	6 (3.8%)	2.31±0.96
I obtained Digital Nursing Transformation information and knowledge from social media	15 (9.4%)	30 (18.8%)	—	103 (64.4%)	12 (7.5%)	2.58±1.16

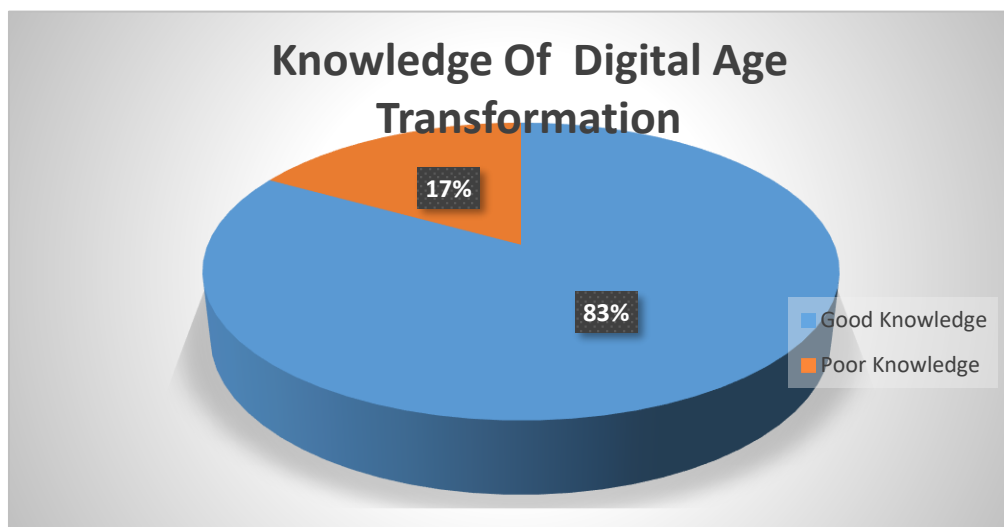
Source: Field Survey 2023

Table 4.2 depicts that about 84(52.8%) of the nurses agreed that they have received enough information on digital age transformation in nursing practice, almost 160(100%) of the staff nurses were either strongly agreed or agreed that Nursing Informatics education is important for nurses who want to use digital transformation in nursing practice, nearly 106(66.3%) of the clinical staff nurses strongly agreed that it is necessary for nurses to have computer knowledge, exact 89(55.6%) of the nurses agreed that they have heard of digital age transformation in nursing practice. The table showed that, about 92(57.5%) of the registered nurses agreed that digital age transformation in nursing practice do not guarantee 100% ethical practice such as confidentiality and privacy, exact 90(56.3%) of the clinical nurses agreed that there is sufficient equipment for the uptake of digital transformation in nursing practice in their hospital, nearly 89(55.6%) of the nurses agreed that digital age transformation in nursing practice is applicable in their place of practice while almost 95(59.4%) of the participants agreed that hospital administration recognize digital age transformation in nursing practice as a framework of nursing care delivery among nurses working in Federal Teaching Hospital Lokoja, Kogi State

**Summary of knowledge of nurses towards effectiveness of digital age transformation on nursing care practice**

knowledge of nurses towards effectiveness of digital age transformation on nursing care practice	Frequency (160)	Percentage (%)
good knowledge ( ≥3)	133	83.1
poor knowledge ( ≤3)	27	16.9

Source: Field Survey 2023



Figures 4.1: Knowledge Towards Digital Age Transformation In Nursing Practice Among Nurses

As shown above, majority 133(83.1%) of the Nurses have good knowledge towards effectiveness of digital age transformation on nursing care practice while only 27(16.9%) of Nurses have poor knowledge towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State

**Attitudinal disposition towards digital age transformation (N=160)**

**Table 4.3: Strongly Agree (SA), Agree (A), Strongly Disagree (SD), and Disagree (D) while indifferent (I)**

Variables	SA	A	I	D	SD	Mean±SD
I have care for patient through the uses mobile phone such	55 (34.4%)	95 (59.4%)	—	5 (3.1%)	3 (3.1%)	4.19±0.85
I have care for patient through the uses of social medial	35 (21.9%)	—	—	120 (75%)	5 (3.1%)	2.63±1.27
I use computer and software application for inpatient management	45 (28.1%)	95 (59.4%)	—	15 (9.4%)	5 (3.1%)	4.00±0.97
I have used digital transformation in patient documentation	45 (28.1%)	103 (64.4%)	—	—	12 (7.5%)	4.06±0.98
I provides basics nursing service through uses of internet software	15 (9.4%)	40 (25%)	—	105 (65.6%)	—	2.78±1.11
Our hospital is using digital transformation in doing vital signs such as blood pressure and temperature	100 (62.5%)	45 (28.1%)	—	10 (6.3%)	5 (3.1%)	4.41±1.00
Patients Monitoring is one of digital nursing transformation in my hospital	105 (65.6%)	50 (31.3%)	—	5 (3.1%)	—	4.59±0.68
Tele-nursing is a good example of digital nursing transformation practice in Nigeria	110 (68.8)	50 (31.3)	—	—	—	4.69±0.47

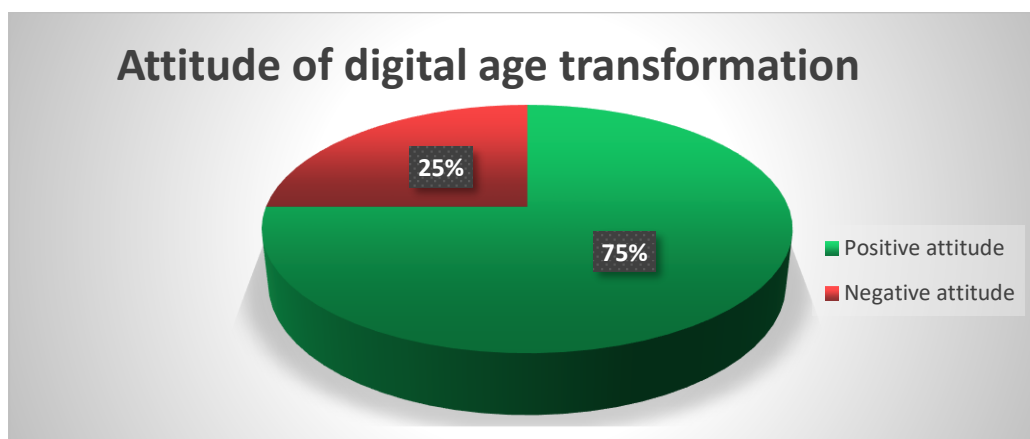
Source: Field Survey 2023

Table 4.3 depicts that about 96(59.4%) of the nurses agreed that they have care for patient through the uses mobile phone such, exact 95(59.4%) of the staff nurses agreed that they use computer and software application for inpatient management, nearly 103(65.6%) of the participants agreed that they have used digital transformation in patient documentation, almost 100(65.6%) of the clinical nurses strongly agreed that their hospital is using digital transformation in doing vital signs such as blood pressure and temperature. About 105(65.6%) of the nurses strongly agreed that Patients Monitoring is one of digital nursing transformation in my hospital while almost 110(68.8%) of the competent nurses strongly agreed that Tele-nursing is a good example of digital nursing transformation practice in Nigeria among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

**Summary of attitudinal disposition towards effectiveness of digital age transformation**

Attitudinal disposition towards effectiveness of digital age transformation	Frequency (160)	Percentage (%)
Positive attitude (>3)	120	75
Negative attitude (<3)	40	25

Source: Field Survey 2023



**Figures 4.2: Knowledge Towards Digital Age Transformation In Nursing Practice Among Nurses**



As shown above, majority 120(75%) of the Nurses have positive attitudinal disposition towards digital age transformation while only 27(16.9%) of Nurses have negative attitudinal disposition towards digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State

**Factors influencing digital age transformation (N=160):**

**Table 4.4: Strongly Agree (SA), Agree (A), Strongly Disagree (SD), and Disagree (D) while indifferent (I)**

Variables	SA	A	I	D	SD	Mean±SD
Digital age transformation in nursing practice is affected by government and ethical Nursing principle in Nigeria	60 (37.5%)	94 (58.8%)	— —	6 (3.8%)	—	4.30±0.66
Power supply is one of the major problem in Nigeria digital age transformation in nursing practice	90 (56.3%)	65 (40.6%)	— —	—	5 (3.1%)	4.47±0.79
Low self esteem and inferiority complex is one of the problem affecting appropriate implementation of digital age transformation in nursing practice	27 (16.9%)	55 (34.4%)	— —	63 (39.4%)	15 (9.4%)	3.10±1.34
Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice	45 (28.1%)	85 (53.1%)	— —	30 (18.8%)	—	3.91±1.01
Digital nursing transformation can only be effective in hospitals through government intervention	40 (26%)	50 (31.3%)	— —	65 (40.6%)	5 (3.1%)	3.34±1.32

Source: Field Survey 2023

Table 4.4 depicts that about 94(58.8%) of the nurse agreed that digital age transformation in nursing practice is affected by government and ethical Nursing principle in Nigeria, almost 90(56.3%) of the staff nurses were strongly agreed that power supply is one of the major problem in Nigeria digital age transformation in nursing practice, while exact 85(53.1%) of the registered nurses were strongly agreed that Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State

**Answering of Research Questions**

**Research Question 1: What is the level of knowledge of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State?**

The majority 133(83.1%) of the Nurses have good knowledge towards effectiveness of digital age transformation on nursing care practice while only 27(16.9%) of Nurses have poor knowledge towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State.

**Research Question 2: What are the attitudinal disposition towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State?**

This study showed that about 96(59.4%) of the nurses agreed that they have care for patient through the uses mobile phone such, exact 95(59.4%) of the staff nurses agreed that they use computer and software application for inpatient management, nearly 103(65.6%) of the participants agreed that they have used digital transformation in patient documentation, almost 100(65.6%) of the clinical nurses strongly agreed that their hospital is using digital transformation in doing vital signs such as blood pressure and temperature. About 105(65.6%) of the nurses strongly agreed that Patients Monitoring is one of digital nursing transformation in my hospital while almost 110(68.8%) of the competent nurses strongly agreed that Tele-nursing is a good example of digital nursing transformation practice in Nigeria among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

**Research Question 3: What are the factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State?**

This study showed about 94(58.8%) of the nurse agreed that digital age transformation in nursing practice is affected by government and ethical Nursing principle in Nigeria, almost 90(56.3%) of the staff nurses were strongly agreed that power supply is one of the major problem in Nigeria digital age transformation in nursing practice, while exact 85(53.1%) of the registered nurses were strongly agreed that Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State

**Testing of Hypothesis**

**Hypothesis one: Ho1:** There is no significant relationship between knowledge and attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State

One-Sample Test						
Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HYPOTHESIS 1	101.078	159	.000	77.86875	76.3473	79.3902

Source of Variation	N	Mean	Standard Deviation	DF	T-Cal	T-Critical	Decision
knowledge of nurses towards effectiveness of digital age transformation	160	3.88	0.22	159	101.08	< 0.5	<b>Rejected H<sub>1</sub></b>
attitudinal disposition towards digital age transformation	160	3.92	0.25				

Table 4.5 showed t-test analysis of the significant difference between knowledge and attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State. The table showed that calculated t-value was less than the critical t-value at the degree of freedom at 0.05 level of significance. Hence **the hypothesis stated that there is no significant difference between knowledge and attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice in the study area was rejected.** This indicated that there is significant difference between knowledge and attitudinal disposition of nurses towards effectiveness of digital age transformation on nursing care practice.

**Hypothesis two: Ho2:** There is no significant difference between socio-demographic variable and factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State.

One-Sample Test						
Test Value = 0.05						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HYPOTHESIS2	119.156	159	.000	33.67500	33.1168	34.2332

Source of Variation	N	Mean	Standard Deviation	DF	T-Cal	T-Critical	Decision
socio-demographic variable	160	1.02	0.31	159	119.156	< 0.5	<b>Rejected H<sub>1</sub></b>
factors influencing digital age transformation	160	2.44	0.34				

Table 4.6 showed t-test analysis of the significant difference between socio-demographic variable and factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State. The table showed that calculated t-value was less than the critical t-value at the degree of freedom at 0.05 level of significance. Hence **the hypothesis stated that there is no significant difference between socio-demographic variable and factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in the study area was rejected.** This indicated that there is significant difference between socio-demographic variable and factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice in the study area.

## 5. DISCUSSION OF THE FINDINGS AND ALIGNMENT WITH PREVIOUS STUDIES

This section gives detailed explanation of the various findings from the research questions as indicated from the study area.

It was observed that majority 99(61.9%) of the Nurses were between age range of 41 to 60 years. exact 135(84.4%) of the clinical nurses were female, almost 145(90.6%) of respondents were married, nearly 85(53.1%) of the polyvalent nurses had obtained additional Master of Science (MSc) in nursing education programs, The table shows that about 85(53.1%) of the participants have 11 to 25 years of working experience in clinical settings while almost 64(40%) of the competent nurses where Chief Nursing Officers (CNO) working in Federal Teaching Hospital Lokoja, Kogi State.

### Knowledge of nurses in digital age transformation

The result of this study showed that majority 133(83.1%) of the Nurses have good knowledge towards effectiveness of digital age transformation on nursing care practice while only 27(16.9%) of Nurses have poor knowledge towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State. This showed that about 84(52.8%) of the nurses agreed that they have received enough information on digital age transformation in nursing practice, almost 160(100%) of the staff nurses were either strongly agreed or agreed that Nursing Informatics education is important for nurses who want to use digital transformation in nursing practice, nearly 106(66.3%) of the clinical staff nurses strongly agreed that it is necessary for nurses to have computer knowledge, exact 89(55.6%) of the nurses agreed that they have heard of digital age transformation in nursing practice. The table showed that, about 92(57.5%) of the registered nurses agreed that digital age transformation in nursing practice do not guarantee 100% ethical practice such as confidentiality and privacy, exact 90(56.3%) of the clinical nurses agreed that there is sufficient equipment for the uptake of digital transformation in nursing practice in their hospital, nearly 89(55.6%) of the nurses agreed that digital age transformation in nursing practice is applicable in their place of practice while almost 95(59.4%) of the participants agreed that hospital administration recognize digital age transformation in nursing practice as a framework of nursing care delivery among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

This study also in support with study of Mitchell, (2021) performed a study that examined the confidence and competence of the completion of electronic documentation for the newly hired nurses. The author utilized descriptive statistics to examine competence, and confidence in data. Correlational statistics were utilized to establish relationships between post instruction confidence and competence. The study demonstrated that new nurses had a difficult time learning electronic documentation on the first weeks of orientation. The study also determined that the nurses would benefit from a longer practice session during the orientation. The research studies reviewed and evaluated showed a strong evidence and clear consensus in favor for better education in technology throughout the training cycle of new nurses and in continued education for experienced nurses. The implementation of new technology would benefit by incorporating computer training on a regular basis for nurses to stay level with the ever changing computerized systems.

The finding of this study confirmed the finding of Lin, et al., (2018) where they focused on perceived threat and perceived inequity of acceptance of technology by physicians. They studied 115 physicians from 6 hospitals and discovered that perceived threat was directly responsible for negative outcomes of perceived usefulness. The study demonstrated that perceived threat of technological advance became the prime obstacle to an open mind acceptance of the usefulness of technology

### Attitudinal disposition towards effectiveness of digital age transformation

The majority 120(75%) of the Nurses have positive attitudinal disposition towards digital age transformation while only 27(16.9%) of Nurses have negative attitudinal disposition towards digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State. This showed that about 96(59.4%) of the nurses agreed that they have care for patient through the uses mobile phone such, exact 95(59.4%) of the staff nurses agreed that they use computer and software application for inpatient management, nearly 103(65.6%) of the participants agreed that they have used digital transformation in patient documentation, almost 100(65.6%) of the clinical nurses strongly agreed that their hospital is using digital transformation in doing vital signs such as blood pressure and temperature. About 105(65.6%) of the nurses strongly agreed that Patients Monitoring is one of digital nursing transformation in my hospital while almost 110(68.8%) of the competent nurses strongly agreed that Tele-nursing is a good example of digital nursing transformation practice in Nigeria among nurses working in Federal Teaching Hospital Lokoja, Kogi State.

The results of this study are similar to the study of Almutairi and McCrindle (2022), investigated the perceptions, attitudes, behaviors and level of knowledge of nurses utilizing the electronic medical records in two hospitals. Questionnaire was utilized as the research methods for this study where 1428 nurses from private and public hospitals participated. The study demonstrated that there was a significant relation between gender, age, knowledge and level of qualification towards the electronic system. Darvish, Bahramnezhad, Keyhanian, and Navidhamidi (2022), conducted a study where they examined the nurses involvement in information technology educational programs to be included with the continuous evolution of technology. The authors completed an extensive literature search including the nursing informatics expertise and involvement for the efficient utilization of technology in all nursing practice. As part of the literature search the authors focused on informatics knowledge, computer skills, and informatics skills. The study determined that short term and long term educational needs are recommended to include the informatics courses.

### **Factors influencing Perception towards effectiveness of digital age transformation on nursing care practice**

The finding of this study revealed that about 94(58.8%) of the nurse agreed that digital age transformation in nursing practice is affected by government and ethical Nursing principle in Nigeria, almost 90(56.3%) of the staff nurses were strongly agreed that power supply is one of the major problem in Nigeria digital age transformation in nursing practice, while exact 85(53.1%) of the registered nurses were strongly agreed that Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State

A descriptive study was performed by Habibi-Koolae, Safdari and Bouraghi (2022), where they analyzed the role of nurses in successful implementation of the electronic systems. The descriptive-cross sectional study was done at the University of Medical Sciences where 284 employees were randomly selected and a self structured questionnaire was utilized to compile the data. The study revealed that the mean of computer skills, knowledge and attitude of nurses towards electronic health records was 43.4%, 51.2% and 65.2%. The study demonstrated that courses related to the health information systems should be included in the nursing curriculum.

### **Implication of the findings to nursing**

The findings of this study provide useful information on the possible solutions to challenges faced by nurses in handling technological changes in nursing care practice. The finding of this study benefit local, state and federal government on provision and implementation of digitalization of nursing practice within the hospital setting. The study provide comprehensive knowledge for nurses and students nurses on digitalization of nursing care practice. The findings help clinical nurses to reduce error of omission and malpractice that might occur while providing their professional nursing care. It will help nursing education and administration on effective management of data and information related to students data, client data and hospital information. It will also help hospital management to know the effectiveness of digitization of nursing care practice in management of patient care.

### **Limitations of the study**

1. The researcher had limited availability of fund to carry out the research work.
2. The researcher had a limited time for the study
3. Obtaining approval from Institutional Ethical Committee to ensure that the study aligns with ethical standards and guidelines of research to protect participants.
4. Obtaining permission to gather data from participants.

## **6. SUMMARY**

This study examined the effectiveness of digital age transformation on nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State. The objectives of the study are to : asses the knowledge of nurses; attitudinal disposition; and factors influencing perceptions towards effectiveness of digital age transformation on nursing care practice.

The study adopted a descriptive study non-experimental design to identify effectiveness of digital age transformation on nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State. Taro Yamane's formula was used to calculate sample size, stratified and simple random sampling technique was used to select 160 respondents. A well-structured questionnaire was developed from the literature review in line with the specific objective of the study and it was given to the project supervisor who examined, criticized and made suggestions in order to ensure that the questionnaires measure what ought to be measured. All corrections were incorporated into the final draft of the questionnaire. The questionnaires were in closed ended form in which the researcher took the questionnaires personally to the respondents to administer questionnaires and she collected them back immediately for compilation and analysis. This research questions summarized using descriptive analysis of frequencies, percentage, table and bar graph while hypothesis was tested using inferential statistic (T-Test) at 0.05 level of significant.

The results of the study were presented accordingly putting into consideration the research questions. Interpretations of the results were done, followed by the discussion of findings. Consequently, summary was given, conclusion was drawn, recommendations were made and limitations to the study were stated.

## 7. CONCLUSION

The study showed that majority 133(83.1%) of the Nurses have good knowledge towards effectiveness of digital age transformation on nursing care practice while only 27(16.9%) of Nurses have poor knowledge towards effectiveness of digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State. However, it concluded that majority 120(75%) of the Nurses have positive attitudinal disposition towards digital age transformation while only 27(16.9%) of Nurses have negative attitudinal disposition towards digital age transformation on nursing care practice in Federal Teaching Hospital Lokoja, Kogi State. More so, it was concluded that about 94(58.8%) of the nurse agreed that digital age transformation in nursing practice is affected by government and ethical Nursing principle in Nigeria, almost 90(56.3%) of the staff nurses were strongly agreed that power supply is one of the major problem in Nigeria digital age transformation in nursing practice, while exact 85(53.1%) of the registered nurses were strongly agreed that Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State

## 8. RECOMMENDATIONS

Based on the outcomes of the findings analyzed, the following points are hereby recommended:

- Digital Transformation and Nursing informatics courses should be included in Mandatory Compulsory Professional Development Programme (MCPDP)
- Nurses should be encouraged to make uses of mobile phone and internet software to provide care for individuals, families and communities especially for people at remote area
- Nurses need to ensure that high level of Digital Age Transformation In Nursing are Practiced among Nurses
- Nurses should encourage and facilitate cooperation and collaboration with government and nongovernmental organization for implementation of Digital Age Transformation in Nursing Practiced in all level of health care delivery
- Nursing Association and nurses leaders should advocate for electronic documentation in all health institution
- Nursing informatics should be included in the nursing curriculum at all level of nursing education in Nigeria to promote quality nursing education and practice
- Government and hospital management should ensure and facilitate implementation of new modern technology in nursing practice

### Suggestion for further study

This study should be carried out in different Nigerian institution both the private as well as government health institution with large sample size in order to assess effectiveness of digital age transformation on nursing care practice among nurses working in Federal Teaching Hospital Lokoja, Kogi State

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**APPENDIX**

**QUESTIONNAIRE**

**EFFECTIVENESS OF DIGITAL AGE TRANSFORMATION ON NURSING CARE PRACTICE AMONG NURSES WORKING IN FEDERAL TEACHING HOSPITAL LOKOJA, KOGI STATE**

The purpose of the questionnaire is for you to supply all necessary information required to complete my research work. This research work is purely academic purpose and your response will be treated confidential.

Thanks for your cooperation

INSTRUCTION: Please the following statements carefully and tick the box that best suit your opinion

**Section A: Demographic data**

- 1. Age as at last birthday (a) 20years and below (b) 21- 40 (c) 41- 60 (d) 61 and above
- 2. Gender (a) Male (b) Female (c) Both (d) None
- 3. Marital status (a) Single (b) Married (c) Widowed (d) Divorced
- 4. Professional qualification (a) double qualified (b) BNSc (c) MNSc
- 5. Clinical experience (a)1- 10 yrs (b)11-25yrs (c) 26-35 yrs (d) above 36 yrs
- 6. Designation (a) NO (b) SNO (c) ACNO (d) CNO (e) ADNS/DDNS

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**SECTION B: Knowledge Of Digital Age Transformation**

**Instructions: Please tick the option you find appropriate, kindly note that: Strongly Agree (SA), Agree (A), Disagree (D), Strong Disagree (SD) and Indifference (I)**

ITEMS	SA	A	D	SD	I
1. I have received enough information on digital age transformation in nursing practice					
2. Nursing Informatics education is important for nurses who want to use digital transformation in nursing practice					
3. It is necessary for nurses to have computer knowledge					
4. I have heard of digital age transformation in nursing practice					
5. digital age transformation in nursing practice do not guarantee 100% ethical practice such as confidentiality and privacy					
6. There is sufficient equipment for the uptake of digital transformation in nursing practice in your hospital					
7. Digital nursing transformation reduce workload of nursing practice					
8. My institution supplies the relevant resources needed for the uptake and implementation of digital age transformation in nursing practice					
9. digital age transformation in nursing practice is applicable in my place of practice					
10. Does hospital administration recognize digital age transformation in nursing practice as a framework of nursing care delivery?					
11. I obtained Digital Nursing Transformation information and knowledge from Mandatory Compulsory Professional Development Programme					
12. I obtained Digital Nursing Transformation information and knowledge from social media					

**SECTION C: Attitudinal disposition towards effectiveness of digital age transformation on nursing care practice among nurses**

**Instructions: Please tick the option you find appropriate, kindly note that: Strongly Agree (SA), Agree (A), Disagree (D), Strong Disagree (SD) and Indifference (I)**

ITEMS	SA	A	D	SD	I
1) I have care for patient through the uses mobile phone such					
2) I have care for patient through the uses of social medial					
3) I use computer and software application inpatient management					
4) I have used digital transformation in patient documentation					
5) I provides basics nursing service through uses of internet software					
6) Our hospital is using digital transformation in doing vital signs such as blood pressure and temperature					
7) Patients Monitoring is one of digital nursing transformation in my hospital					
8) Tele-nursing is a good example of digital nursing transformation practice in Nigeria					

**SECTION D : Factors influencing Perception towards effectiveness of digital age transformation on nursing care practice**

**Instructions: Please tick the option you find appropriate, kindly note that: Strongly Agree (SA), Agree (A), Disagree (D), Strong Disagree (SD) and Indifference (I)**

ITEMS	SA	A	D	SD	I
1. Digital age transformation in nursing practice is affected by government and ethical Nursing principle in Nigeria					
2. Power supply is one of the major problem in Nigeria digital age transformation in nursing practice					
3. Low self esteem and inferiority complex is one of the problem affecting appropriate implementation of digital age transformation in nursing practice					
4. Cost of effective implementation of digital nursing transformation is a key factor affecting digitization in nursing practice					
5. Digital nursing transformation can only be effective in hospitals through government intervention					