Research article

Information and communication technology skills among Health Information Management practitioners in Jigawa State, Nigeria

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ABSTRACT

Background/Objectives: Information and Communication Technology (ICT) plays a crucial role in improving healthcare service delivery and health information management. Health Information Management (HIM) practitioners are expected to demonstrate high proficiency in ICT to ensure effective health data processing and dissemination. This study assessed ICT skills among HIM practitioners in Jigawa State, Nigeria, focusing on their level of competence, frequency of ICT use and factors influencing proficiency. *Design/Methods:* A descriptive cross-sectional design was employed among HIM practitioners across healthcare institutions in Jigawa State. Data were collected through structured questionnaires administered to 100 practitioners and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics (t-tests and one-way ANOVA) were used to summarize and test hypotheses at a 0.05 significance level. *Results:* Findings revealed high ICT proficiency among participants in tools such as electronic medical records (EMR), health information systems (HIS) and spreadsheet software. The t-test and ANOVA results showed no significant differences in ICT proficiency by gender, education or years of experience ($p > 0.05$). This indicates a uniformly distributed ICT skill level among HIM practitioners in the study area. *Conclusion:* Health Information Management practitioners in Jigawa State exhibit strong ICT competencies. Continuous training, access to digital resources and policy reinforcement are recommended to sustain and enhance these skills.

INTRODUCTION

Information and Communication Technology (ICT) has become an essential foundation for modern healthcare, transforming the methods used for collecting, storing, processing and utilizing health information across different levels of care. In contemporary health systems, ICT enhances patient data accessibility, improves diagnostic accuracy, supports clinical decision-making and strengthens communication among healthcare providers[1,2]. As healthcare services increasingly transition from manual to digital processes, the proficiency of HIM practitioners in ICT tools has emerged as a critical determinant of the quality of health information and overall service delivery[3].

Health Information Management practitioners are responsible for organizing, preserving, analyzing and securing health records, as well as managing data quality and ensuring compliance with data protection regulations. These responsibilities require competency in operating technologies such as Electronic Medical Records (EMR), Hospital Information Systems (HIS), coding and classification software,

statistical packages, spreadsheet applications and digital communication platforms[4,5]. Consequently, ICT skills have become a core professional requirement, enabling practitioners to improve workflow efficiency, minimize documentation errors, support evidence-based decision-making and contribute to digital health transformation[6].

In Nigeria, the Federal Ministry of Health and state governments have initiated several ICT-driven reforms to strengthen health information systems and enhance healthcare delivery[7]. These efforts include the implementation of electronic health platforms, digital reporting systems such as the District Health Information System (DHIS2) and automated record-keeping mechanisms. Wide variations continue to exist in ICT adoption and proficiency across states and institutions, largely due to inequities in infrastructure, training opportunities and digital readiness[8,9]. Many health facilities in northern Nigeria, including Jigawa State, still grapple with challenges such as limited ICT resources, inadequate power supply and insufficient digital capacity-building systems[10].

Jigawa State has made commendable progress in improving healthcare delivery, especially through investments in human resources and basic infrastructure. Yet, like many states in Northern Nigeria, several challenges persist with respect to ICT integration into health services[11]. The HIM practitioners in Jigawa State operate across primary, secondary and tertiary health facilities, where they manage patients' health records, support disease surveillance and provide administrative and reporting services. Their ICT proficiency is therefore crucial to the reliability and efficiency of these functions.

Earlier studies have documented varying ICT skill levels among healthcare workers in Nigeria. While many possess basic ICT literacy, they often lack advanced competencies required for tasks such as data analysis, health information system navigation and electronic documentation[12-16]. Barriers frequently cited include inadequate computer access, irregular training, insufficient funding for ICT facilities and limited institutional support[15]. For HIM practitioners specifically, ICT competency is indispensable because their daily tasks depend on accurate data entry, coding, indexing and statistical reporting[16].

Global professional guidelines also underscore the relevance of ICT in HIM practice. Organizations such as the American Health Information Management Association (AHIMA) and the International Federation of Health Information Management Associations (IFHIMA) highlight the need for ICT skills in HIM educational curricula and continuing professional development[17]. In Nigeria, the Health Records Officers' Registration Board of Nigeria (HRORBN) similarly mandates ICT proficiency as a requirement for licensure and the promotion of best practices in health records management[18].

The increasing adoption of digital health applications ranging from electronic reporting dashboards and health surveillance tools to telemedicine platforms has further amplified the importance of ICT competency among HIM professionals[19]. The COVID-19 pandemic also accelerated digitization across the health sector, compelling practitioners to key into online reporting tools, virtual communication systems and remote learning technologies[20]. As the healthcare environment becomes progressively digitized, the need for HIM practitioners with robust ICT skills becomes more pronounced.

Given these developments, there is a necessity to assess ICT competency levels among HIM practitioners in different parts of the country. This includes identifying patterns in ICT usage, understanding the influence of demographic or professional factors and determining areas requiring targeted capacity building. Such assessments provide evidence that can guide training programme, resource allocation, curriculum reform and digital health policy formulation.

This study, therefore, aims to assess ICT skills among HIM practitioners in Jigawa State, Nigeria. Specifically, it examines their level of competence across ICT tools, the frequency of ICT use in professional activities and factors that may influence proficiency. Findings from this study will offer valuable insights to policymakers, training institutions, and health administrators in

their efforts to strengthen the HIM workforce and advance digital health implementation in the state.

METHODS

Study Design

A descriptive cross-sectional study design was employed to assess ICT skills among HIM practitioners in Jigawa State, Nigeria.

Study Population

The study population included all HIM practitioners in public and private health institutions in Jigawa State.

Sample Size and Sampling Technique

The sample size of 100 was considered adequate based on similar studies assessing ICT competence among health workers in Nigeria and other developing countries[21,22]. A purposive sampling technique was adopted due to the concentrated distribution of HIM practitioners across health institutions and the need to include only qualified professionals directly involved in information management functions[23].

Data Collection Procedure

Data collection took place over a four-week period. Questionnaires were administered in person by trained research assistants familiar with HIM practices. Participants were briefed on the study objectives, confidentiality procedures and voluntary participation. Completed questionnaires were retrieved immediately to minimize response bias and ensure a high return rate[24].

Data analysis and management

Completed questionnaires were coded and entered into the Statistical Package for the Social Sciences (SPSS) version 25 for analysis. Data cleaning and validation were carried out prior to analysis. Descriptive statistics such as frequencies, percentages, means and standard deviations were used to summarize participants' demographic characteristics and ICT proficiency levels^12. Inferential statistics were applied at a 0.05 significance level.

- Independent samples t-test was used to determine differences in ICT proficiency based on gender.
- One-way Analysis of Variance (ANOVA) tested differences based on education level and years of working experience.

Ethical considerations

Ethical approval for the study was obtained from the Jigawa State Ministry of Health Research Ethics Committee. Permission was also granted by heads of participating health facilities. Participation was voluntary and informed consent was obtained from all participants. Confidentiality was assured through the anonymization of participants' data, and no identifying information was recorded.

RESULTS

Table 1 shows the demographic characteristics of the participants. Out of 100 HIM practitioners, 61% were male and 39% female. Most participants were below 25 years old (36%) and held a Diploma qualification (65%). Furthermore, 77% of the practitioners had between 1 and 10 years of work experience. Table 2 presents the ICT proficiency levels among HIM practitioners. It shows high competence in EMR (M = 3.91, SD = 0.30), spreadsheet applications (M = 3.89, SD = 0.34) and internet use (M = 3.92, SD = 0.29). Telemedicine platforms recorded perfect proficiency with 100% of participants indicating confidence in their use.

Table 3 shows the results of an independent-samples t-test comparing ICT proficiency between male and female practitioners. The result indicates no significant difference between the two groups (t(98) = 0.02, p = 0.984), suggesting comparable ICT skill levels across gender. Table 4 displays the results of one-way ANOVA tests examining ICT proficiency by educational qualification and years of experience. There were no statistically significant differences in ICT proficiency across educational levels (F(2,97) = 0.37, p = 0.689) or years of experience (F(2,97) = 0.32, p = 0.728). This indicates a

uniform distribution of ICT competence among participants.

Table 1: Demographic Characteristics of participants

Variable	Frequency (n=100)	Percentage (%)
Gender		
Male	61	61
Female	39	39
Age Group		
Below 25 years	36	36
26–35 years	34	34
Above 35 years	30	30
Educational Qualification		
Diploma	65	65
HND/Bachelor	25	25
Postgraduate	10	10
Years of Experience		
1–10 years	77	77
11 years and above	23	23

Table 2: ICT Proficiency Levels among HIM Practitioners

ICT skill area	Mean	SD
EMR	3.91	0.3
Spreadsheet Application	3.89	0.34
Internet Use	3.92	0.29
Telemedicine platform	4	0

Table 3: Independent t-test of ICT Proficiency by Gender

Gender	Mean (M)	SD	t-value	p-value
Male	3.78	0.21	0.02	0.984
Female	3.77	0.22		

Table 4: One-way ANOVA of ICT Proficiency by Education and Years of Experience

Variable	Source	df	F-value	p-value
Educational Qualification	Between Groups	2	0.37	0.689
Years of Experience	Between Groups	2	0.32	0.728

DISCUSSION

The findings demonstrate a generally high level of ICT proficiency among HIM practitioners in Jigawa State. This aligns with similar studies reporting improved ICT adoption in Nigerian healthcare institutions [6,7]. The absence of significant differences across gender and education categories suggests equitable access to ICT resources and training opportunities[8]. The need for continuous professional development remains critical as ongoing technological evolution requires constant skill updates[9]. Challenges such as inadequate infrastructure, limited internet access and lack of advanced ICT training programs have been identified as barriers to full ICT integration in healthcare[10].

CONCLUSION

The study concludes that HIM practitioners in Jigawa State possess commendable ICT competencies necessary for effective health information management. Although proficiency is uniformly distributed across demographic variables, further investment in ICT infrastructure and periodic retraining is essential to sustain competency levels and support data-driven healthcare practices.

Recommendations

1. Strengthening continuing education of digital literacy among HIM professionals.
2. Improved sensitization on digital health among other health workers.

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