

Research Article

Assessment of Information Technology Literacy Among Health Records Management Professionals at the Jos University Teaching Hospital

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Abstract

Background: Information technology (IT) literacy is crucial for effective health record management in modern healthcare systems, enabling efficient data handling, enhanced patient care, and informed decision-making. However, disparities in IT literacy persist among health records professionals, particularly in developing countries. This study assessed IT literacy among health records management professionals (HRMP) at the Jos University Teaching Hospital (JUTH). **Methods:** A descriptive cross-sectional design was used, and a sample size of 310 was determined from a population of 1,380 using the Taro Yamane formula. A total of 341 questionnaires were administered, with 305 completed and analyzed, giving an 89.4% response rate. Data were collected using a validated and reliable (Cronbach's Alpha ≥ 0.7) semi-structured questionnaire. Analysis was conducted with SPSS version 25, using descriptive statistics to summarize IT literacy levels, Chi-square and Fisher's exact tests to assess associations, and binary logistic regression to identify predictors. Statistical significance was set at $p < 0.05$. **Results:** The results showed that the majority of respondents demonstrated moderate IT literacy, while a smaller proportion exhibited high or low levels. Out of the total participants, 77.2% of those aged 26–45 years had high IT literacy, compared to 2.5% among those ≤ 25 years. Gender was significantly associated with IT literacy ($p < 0.001$), with males more likely to have high literacy (AOR = 0.142; 95% CI: 0.069–0.294). Educational level significantly influenced IT literacy ($p = 0.042$), with holders of a B. Sc./HND degree showing higher odds of proficiency (AOR = 2.449; 95% CI: 1.042–5.758). Years of experience were significantly related to IT literacy ($p < 0.001$), with the highest competence seen among those with 6–10 years of service. Personal motivation (AOR = 0.339; $p = 0.003$), receipt of formal IT training (AOR = 2.632; $p = 0.021$), and availability of IT resources (AOR = 0.349; $p = 0.004$) were also significant predictors. **Conclusion:** IT literacy among HRMP at JUTH is significantly influenced by gender, education, work experience, personal motivation, formal IT training, and access to resources. Improving digital competence requires targeted interventions, equitable training opportunities, gender-responsive capacity-building, and strategies to enhance resource utilization.

Keywords

Information Technology Literacy, Health Records Management, Determinants, Nigeria, Training, Digital Skills

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1. Introduction

The 21st century has witnessed a rapid expansion in the use of information and communication technologies (ICTs), profoundly influencing nearly all aspects of human endeavour, including healthcare [1]. Worldwide, digital systems have been integrated into health service delivery to enhance data accuracy, improve efficiency, and support evidence-based decision-making. Tools such as Electronic Health Records (EHRs), Health Information Systems (HIS), and decision-support platforms have transformed clinical practice by providing real-time access to patient information, reducing duplication of services, strengthening communication among providers, and facilitating continuity of care [2, 3]. These innovations form the backbone of modern health system reforms and remain central to efforts aimed at improving patient outcomes and organizational performance [4].

The successful deployment and utilization of digital health technologies depend heavily on the information technology (IT) literacy of healthcare professionals. IT literacy, broadly defined as the ability to use digital tools, applications, and networks to access, manage, evaluate, and communicate information, is now regarded as an essential competency in contemporary healthcare systems [5]. For Health Records Management Professionals (HRMPs), whose responsibilities include organizing, storing, retrieving, and safeguarding patient information, IT literacy is indispensable. Their roles increasingly require proficiency in using EHR platforms, managing digital databases, ensuring system interoperability, and upholding data security and confidentiality standards [6, 7]. Consequently, IT literacy is not merely a technical skill but a critical determinant of healthcare quality, safety, and efficiency [8].

In developed countries, substantial investments in digital health infrastructure and capacity-building have led to marked improvements in IT competencies among health professionals. Structured training programs, continuous professional development pathways, government-driven digital health policies, and sustained funding have enabled countries such as the United States, Canada, and the United Kingdom to institutionalize IT literacy within the healthcare workforce [9-11]. Evidence from these settings shows that improved IT competencies contribute to reduced medical errors, enhanced workflow efficiency, improved documentation quality, and better clinical decision-making [11].

Conversely, in many developing countries, including Nigeria, the adoption of ICT in healthcare has been relatively slow and fragmented. Barriers such as inadequate infrastructure, unstable electricity supply, poor internet connectivity, insufficient funding, and limited training opportunities continue to undermine the effective integration of digital health technologies [12-14]. These systemic challenges often translate into low levels of IT literacy among healthcare workers, creating inefficiencies in record management and service

delivery. Previous studies have identified determinants such as age, educational background, years of professional experience, exposure to ICT training, and institutional support as critical factors shaping the IT literacy levels of healthcare workers in Nigeria [15-17].

The role of Health Records Management Professionals is especially crucial in this context. As the primary custodians of patient records, their skills with IT tools directly impact the accessibility, confidentiality, and accuracy of health data. Insufficient IT literacy among HRMPs not only hampers record-keeping but also delays data retrieval, decreases the accuracy of health statistics, and hinders the smooth shift from paper-based to electronic systems [18, 19]. Improving their IT skills is therefore vital for developing strong health information systems that support effective planning, monitoring, and delivery of healthcare services [20].

While existing literature identifies general determinants of IT literacy among healthcare workers in Nigeria, there is a scarcity of cadre-specific, facility-level studies focusing on HRMPs [18, 20]. Most studies have aggregated different healthcare professions, overlooked managerial and certification competencies, and failed to link individual skill levels with institutional readiness for digital health transformation [12, 15]. Additionally, previous research works often rely on unvalidated or single-item measures of IT literacy, limiting reliability and comparability across contexts [6]. Consequently, the specific factors influencing IT literacy among HRMPs in tertiary healthcare settings remain underexplored, creating a knowledge gap that hinders targeted interventions for digital health strengthening [14, 18].

At the Jos University Teaching Hospital (JUTH), a major tertiary institution in North-Central Nigeria, efforts are underway to transition from paper-based to digital health records management. However, anecdotal evidence suggests considerable variation in IT competence among HRMPs, largely attributed to differences in training history, resource availability, and professional exposure to digital tools. Many HRMPs were originally trained in traditional record-keeping systems and have not benefited from systematic ICT capacity-building programs. As such, the determinants of IT literacy among HRMPs at JUTH remain understudied, raising concerns about their readiness to embrace digital transformation.

This study, therefore, aims to assess the level of IT literacy among Health Records Management Professionals at the Jos University Teaching Hospital and to identify the sociodemographic, motivational, professional, and institutional factors that influence these competencies. Findings will provide evidence to guide targeted training interventions, inform institutional digital health policies, and support the strengthening of Nigeria's health information system as the country moves toward comprehensive digitalization of healthcare.

2. Materials

2.1. Study Area

The study was conducted at Jos University Teaching Hospital (JUTH), a tertiary healthcare institution established in 1975 and affiliated with the University of Jos [21]. The hospital is situated in the Lamingo area of Jos North Local Government Area (LGA). It has an estimated bed capacity of about 600 [22]. JUTH provides a wide range of specialized services in healthcare, research, and training, and serves as a major referral center for surrounding states in North-Central Nigeria, as well as parts of the North-Western and Eastern regions [21]. As a tertiary facility, JUTH comprises various service delivery units, including internal medicine, obstetrics and gynaecology, surgery, paediatrics, community medicine, radiology, ophthalmology, pathology, laboratory medicine, otorhinolaryngology, dentistry, anaesthesia, psychiatry, and other fields [21].

2.2. Study Design, Population, and Data Source

A descriptive, institution-based cross-sectional design was adopted. This design was appropriate for evaluating the current level of information technology literacy and identifying its determinants among health records management professionals.

The population of this study comprises 1380 staff, interns, volunteers, and industrial attachment students in the Health Information Management Department of Jos University Teaching Hospital.

Data sources: Primary data

2.3. Sample Size Determination

The sample size was drawn using the following Taro Yamane formula.

$$\text{Taro Yamane formula: } n = \frac{N}{1+N(e^2)}$$

Where:

n = minimum sample size

N = Population of the study area

e = Significance level i.e. e = 0.05

1 = Constant

Applying the figures to the formula;

n=?, N = 1380, e = 0.05

Therefore,

$$n = \frac{1380}{1+1380(0.05^2)}$$

$$n = \frac{1380}{1+1380(0.0025)}$$

$$n = \frac{1380}{1+3.45}$$

$$n = \frac{1380}{4.45}$$

n = 310 respondents

2.4. Dependent and Independent Variables

The outcome variable was information technology literacy (measured at levels: low, moderate, high), while the independent variables were Age, gender, marital status, education level, professional cadre, years of service, IT training, access to ICT resources, organizational support, and perception towards IT.

2.5 Sampling Technique

A simple random sampling technique was employed to ensure representativeness and minimize selection bias.

2.6. Eligibility Criteria

The study included health records management professionals and trainees working in the department who were available during the study period and gave their consent to participate. However, individuals who showed unwillingness to participate, as well as those who provided incomplete responses to the questionnaire, were excluded from the study.

2.7. Data Collection Instrument and Procedure

Data were collected using a semi-structured, pretested questionnaire, administered in both interviewer-administered and Google Form formats. Four trained research assistants, fluent in English and Hausa, facilitated data collection. Each session lasted an average of 15-20 minutes. The researcher administered three hundred and forty-one (341) questionnaires to staff, volunteers, and IT students in the health records department of Jos University Teaching Hospital, and three hundred and five (305) of the questionnaires were properly filled and used for this analysis. This gave an 89.4% response rate.

2.8. Validity and Reliability of Instrument

Content and construct validity were ensured through expert review by supervisors and professionals in Health Information Management. Questions were simplified, unbiased, and aligned with the IT literacy assessment. For reliability, a pilot study involving 30 respondents was conducted. Data were analyzed using Cronbach's Alpha in SPSS. A coefficient ≥ 0.7 was considered acceptable for internal consistency.

2.9. Data Analysis

The data collected were systematically coded, cleaned, and entered into SPSS version 25 for analysis. Descriptive statistics, including frequencies, percentages, and mean scores, were used to summarize the socio-demographic characteristics of the respondents and their levels of information technology literacy. To explore relationships between IT literacy and categorical variables, Chi-square and Fisher's exact tests

were employed. Additionally, binary logistic regression analysis was conducted to identify significant predictors of IT literacy among the study participants. For all inferential analyses, a p-value of less than 0.05 was considered statistically significant.

2.10. Ethical Approval

Ethical approval was obtained from the Research and Ethics Review Committee of Rivers State University. Permission was obtained from the hospital management before commencement of the study. All participants were provided written informed consent before data collection. Participation was completely voluntary, and participants were informed of their right to withdraw at any time. Steps were taken to protect anonymity and ensure the confidentiality of all information shared by participants.

3. Results

Among the 305 health record management workforce, 142 (46.6%) were male, while 163 (53.4%) were female. The majority of respondents, 235 (77.0%), were aged 26-45 years, 13 (4.3%) were 25 years or younger, and 57 (18.7%) were above 45 years. The mean age was 38.7 years, and the standard deviation was 8.3 years. For education, more than half of the respondents, 172 (56.4%), held a National Diploma (ND). 102 (33.4%) had a B.Sc./HND, and only 31 (10.2%) possessed a post-graduate qualification. For marital status, the majority, 201 (65.9%) of respondents were married, while 104 (34.1%) were not currently married, consisting of either single, divorced, widowed, or separated respondents. Most respondents, 115 (37.7%), had 1-5 years of work experience, 100 (32.8%) had 6-10 years, 66 (21.6%) had 11-15 years, and only 24 (7.9%) had over 16 years of experience. See [Table 1](#) below.

Table 1. Socio-demographic Characteristics of Respondents.

Variables	Frequency	Percentage (%)	Cumulative Percentage
Gender			
Male	142	46.6	46.6
Female	163	53.4	100
Age of respondents (years)			
≤25	13	4.3	4.3
26-45	235	77.0	81.3
46>	57	18.7	100
Mean (SD)	38.7 (10.6)		
Educational Qualification			
ND	172	56.4	56.4
B.Sc. / HND	102	33.4	89.8
Post-graduate qualification	31	10.2	100
Marital Status			
Not currently married	104	34.1	34.1
Married	201	65.9	100
Work Experience (years)			
1-5	115	37.7	37.7
6-10	100	32.8	70.5
11-15	66	21.6	92.1
16>	24	7.9	100

Information Technology Skills among Health Record Managers

The data on the distribution of responses regarding essential IT literacy skills among 305 health records management professionals at the Jos University Teaching Hospital is presented in the table below. Regarding technical skills, only 110 respondents (36.1%) indicated possessing them, while a larger proportion, 195 respondents (63.9%), reported not possessing them. In the area of development skills, however, a slightly higher proportion demonstrated capability, with 164 respondents (53.8%) reporting that they have development-related skills compared to 141 respondents (46.2%) who do not.

For emerging technologies, 133 respondents (43.6%) stated that they possess skills related to modern ICT innovations, but

172 respondents (56.4%) reported otherwise. Project and IT management skills were found to be especially low among the respondents, as only 36 individuals (11.8%) indicated having such skills, whereas 269 respondents (88.2%) reported they do not.

Furthermore, only 32 respondents (10.5%) reported having a certificate to validate their IT skills, while the vast majority, 273 respondents (89.5%), stated that they lack any form of certification.

In summary, the frequencies reflect uneven distribution of ICT literacy skills across different dimensions, with relatively higher competence in development skills and moderate familiarity with emerging technologies, but notably limited technical skills, IT/project management abilities, and formal certification. See [Table 2](#) below.

Table 2. Information Technology Skills among Health Record Managers.

Variables	(N=305) Frequency	Percentage (%)	Cumulative Percentage
Technical skills			
Yes	110	36.1	36.1
No	195	63.9	100
Development skills			
Yes	164	53.8	53.8
No	141	45.2	100
Emerging Technologies			
Yes	133	43.6	43.6
No	172	56.4	100
Project and IT Management			
Yes	36	11.8	11.8
No	269	88.2	100
Certificate to validate IT skills			
Yes	32	10.5	10.5
No	273	89.5	100

Level of Information Technology (IT) Literacy Skills among Respondents

The data on the current level of Information Technology (IT) literacy among the respondents is shown in [Figure 1](#) below. The level of IT literacy was categorized into three

levels: Low, Moderate, and High. Only 27 respondents (8.9%) reported a low level of IT literacy. The majority of respondents, 226 (74.1%) indicated a moderate level of IT literacy. Additionally, a total of 52 respondents (17.0%) reported a high level of IT literacy.

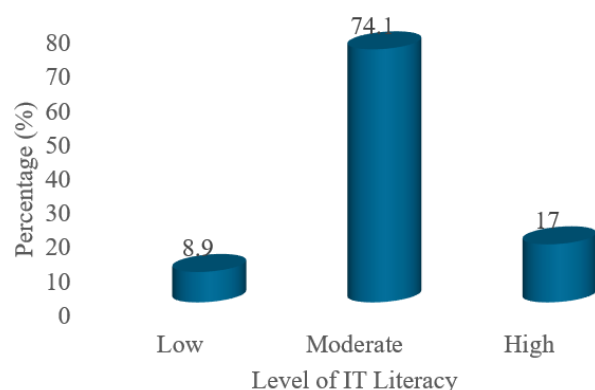


Figure 1. Level of Information Technology (IT) Literacy Skills among Respondents.

Multivariate Analysis of Determinants of IT Literacy Levels

The table presents the results of a logistic regression analysis that identifies sociodemographic, professional, and organizational factors associated with high IT literacy among respondents. The outcome variable was binary (high vs. low IT literacy). The analysis was adjusted for potential confounders, including age, gender, marital status, educational qualification, and institutional support. The relationship between respondent characteristics and IT literacy levels among health records staff was examined using descriptive cross-tabulations and binary logistic regression. The results are presented with both frequencies and percentages, along with adjusted odds ratios (AORs), confidence intervals (CIs), and p-values to assess statistical significance. In terms of age, among respondents aged ≤ 25 years, only 2 (2.5%) demonstrated high IT literacy, compared to 11 (4.9%) with low IT literacy. Regarding the age group 26-45 years, 61 (77.2%) had high IT literacy, while 174 (77.0%) had low literacy. Those aged 46 years and above comprised 16 (20.3%) with high IT literacy and 41 (18.1%) with low literacy. The adjusted odds ratio for the 26-45 group was 0.284 (95% CI: 0.026-3.117; $p = 0.303$), while that of the 46+ group was 0.459 (95% CI: 0.172-1.227; $p = 0.120$). These results showed no statistically significant association between age and IT literacy levels. Regarding marital status, 27 respondents (34.2%) with high IT literacy were not currently married, compared to 90 (39.8%) with low literacy. Conversely, 52 respondents (65.8%) with high literacy and 136 (60.2%) with low literacy were married. The adjusted odds ratio for those not currently married was 1.591 (95% CI: 0.268-1.303; $p = 0.192$), showing no statistically significant association. Gender was found to be significantly associated with IT literacy levels. Among respondents with high IT literacy, 64 (81.0%) were male, while only 15 (19.0%) were female. In contrast, within the low literacy group, 78 (34.5%) were male, and 148 (65.5%) were female. The adjusted odds ratio for males was 0.142 (95% CI: 0.069-0.294; $p < 0.001$), indicating a strong and statistically significant association, with males more likely to be IT literate than females. Educational qualification also showed a statistically significant relationship with IT literacy levels ($p =$

0.042). Among respondents with a National Diploma, 28 (35.4%) had high IT literacy, compared to 145 (64.2%) with low literacy. For those with a B.Sc. or HND, 41 individuals (51.9%) exhibited high IT literacy, while 60 (26.5%) had low literacy. Respondents with postgraduate qualifications accounted for 10 (12.7%) of the high literacy group and 21 (9.3%) of the low literacy group. The adjusted odds ratio for B. Sc./HND holders was 2.449 (95% CI: 1.042-5.758), though the reported p-value of 0.569 appears inconsistent and should be clarified. Postgraduate qualification did not show a statistically significant association (AOR = 0.738; $p = 0.260$). Furthermore, years of experience emerged as a significant predictor of IT literacy ($p < 0.001$). Among those with 1-5 years of experience, only 7 respondents (8.9%) had high IT literacy, whereas 108 (47.8%) had low IT literacy. For the 6-10 years category, 38 (48.1%) had high literacy and 62 (27.4%) had low literacy, with an AOR of 4.163 (95% CI: 0.832-20.818; $p = 0.082$), indicating a potentially meaningful association. Respondents with 11-15 years of experience included 27 (34.2%) with high literacy and 39 (17.3%) with low literacy (AOR = 0.620; $p = 0.514$). Those with more than 16 years of experience constituted 7 (8.9%) of the high literacy group and 17 (7.5%) of the low literacy group (AOR = 0.375; $p = 0.163$). Overall, those with moderate experience (6-10 years) were more likely to demonstrate higher IT literacy. Also, Institutional support was not statistically significant. Of those who received institutional support, 27 respondents (34.2%) had high IT literacy compared to 106 (46.9%) with low IT literacy. Those without institutional support comprised 52 (65.8%) of the high literacy group and 120 (53.1%) of the low literacy group. The adjusted odds ratio was 0.750 (95% CI: 0.356-1.581; $p = 0.450$), showing no significant effect. Additionally, Personal motivation had a strong and statistically significant influence on IT literacy. Among respondents with high IT literacy, 41 (51.9%) reported having personal motivation, while 38 (48.1%) did not. In contrast, among those with low IT literacy, only 55 (24.3%) were motivated, whereas 171 (75.7%) were not. The adjusted odds ratio was 0.339 (95% CI: 0.166-0.694; $p = 0.003$), confirming that motivated individuals were significantly more likely to exhibit high IT literacy. Formal IT training also showed a significant association. A large proportion of respondents with high IT literacy, 74 (93.7%), had received formal IT training, compared to 149 (65.9%) of those with low literacy. Conversely, only 5 (6.3%) of those with high literacy had not received formal training, while 77 (34.1%) of those with low literacy had not. The adjusted odds ratio was 2.632 (95% CI: 1.270-5.456; $p = 0.021$), indicating that formal IT training significantly increased the likelihood of high IT literacy. Availability of IT resources was another significant determinant. Among respondents who had access to IT resources, 36 (45.6%) had high IT literacy, while 149 (65.9%) had low literacy. In contrast, 43 (54.4%) with high literacy and 77 (34.1%) with low literacy lacked access to such resources. The adjusted odds ratio was 0.349 (95% CI:

0.169-0.720; $p = 0.004$), confirming that lack of resources significantly reduced the likelihood of IT literacy. Lastly, the combined variable of age and work experience did not show a statistically significant association with IT literacy. Of those who agreed that both factors influenced their IT skills, 14 (17.7%) had high literacy and 30 (13.3%) had low literacy.

The adjusted odds ratio was 1.959 (95% CI: 0.744-5.159; $p = 0.173$), indicating no statistically meaningful effect. In conclusion, gender, educational qualification, years of experience, personal motivation, formal IT training, and availability of IT resources were statistically significant predictors of IT literacy among health records staff. See [Table 3](#) below.

Table 3. Multivariate Analysis of Determinants of IT Literacy Levels.

Variables	IT Literacy Levels		AOR (95% C.I)	p-value
	High N (%)	Low N (%)		
Age (in years)				
≤25	2(2.5)	11(4.9)		0.271
26-45	61(77.2)	174(77.0)	0.284(0.026-3.117)	0.303
46>	16(20.3)	41(18.1)	0.459(0.172-1.227)	0.120
Marital Status				
Not currently married	27(34.2)	90(39.8)	1.591(0.268-1.303)	0.192
Married	52(65.8)	136(60.2)		
Gender				
Male	64 (81.0)	78(34.5)	0.142 (0.069-0.294)	<0.001*
Female	15 (19.0)	148(65.5)		
Educational Level				
National Diploma	28(35.4)	145(64.2)		0.042*
B. Sc./HND	41(51.9)	60(26.5)	2.449 (1.042-5.758)	0.569
Post-graduate Qualifications	10(12.7)	21(9.3)	0.738 (0.315-1.729)	0.260
Years of Experience (years)				
1 – 5	7(8.9)	108(47.8)		<0.001*
6 – 10	38(48.1)	62(27.4)	4.163(0.832-20.818)	0.082
11 – 15	27(34.2)	39(17.3)	0.620 (0.148-2.603)	0.514
16>	7 (8.9)	17(7.5)	0.375 (0.094-1.487)	0.163
Institutional Support				
Yes	27(34.2)	106(46.9)	0.750 (0.356-1.581)	0.450
No	52(65.8)	120(53.1)		
Personal Motivation				
Yes	41(51.9)	55 (24.3)	0.339 (0.166-0.694)	0.003*
No	38(48.1)	171(75.7)		
Received Formal IT Training				
Yes	74(93.7)	149(65.9)	2.632 (1.270-5.456)	0.021*
No	5(6.3)	77(34.1)		
Availability of IT Resources				

Variables	IT Literacy Levels		AOR (95% C.I)	p-value
	High	Low		
	N (%)	N (%)		
Yes	36(45.6)	149(65.9)	0.349 (0.169-0.720)	0.004*
No	43(54.4)	77(34.1)		
Age and Work Experience				
Yes	14(17.7)	30(13.3)	1.959 (0.744-5.159)	0.173
No	65(82.3)	196(86.7)		

Significant at 5% level of significance, Adjusted Odds Ratio; CI: Confidence Interval

4. Discussion

The findings of this study highlight significant gaps across several critical competencies. More than half of the respondents lacked technical and development skills, which are essential for effectively managing and operating electronic health record systems. This supports findings by Erezina et al. [23], who reported that technical deficiencies among health information professionals in Nigeria significantly hinder the adoption of health information systems. While a relatively higher number of respondents reported possessing soft skills such as communication, adaptability, and problem-solving, these alone are insufficient without the necessary technical proficiency. This trend was similarly observed in a study by Ogunyade et al. [24], which emphasized that although healthcare workers often demonstrate interpersonal competence, they still fall short in core IT functionalities needed for digital transformation in health records management. The low level of awareness and use of emerging technologies further reflects limited exposure to current digital health tools, such as cloud computing, data analytics, and artificial intelligence. This low awareness and usage of emerging technologies align with the findings of Ajami et al. [15], Olagbuji et al. [25] in South West State, Nigeria. Project and IT management skills were the least reported among the competencies assessed, indicating a significant deficiency in strategic planning and oversight capabilities related to IT projects. This finding is supported by Dogiye et al. [26] in South-South States of Nigeria, who identified that health institutions often lack personnel trained in health informatics project planning, which affects the implementation and sustainability of digital health initiatives. Finally, the overwhelming lack of certification to validate IT skills suggests that most professionals may lack formal recognition or standardized training in IT. Akpan et al. [27] similarly found that the absence of certified training in IT among health workers correlates with lower system adoption rates and poor digital record-keeping practices. Overall, the

findings suggest that while some soft skills and emerging technology skills are present among health record professionals, there is a critical need for structured training, certification, and capacity-building in technical, development, and IT management skills.

For the current level of information technology literacy among health record managers, the distribution of information technology (IT) literacy levels among the respondents was categorized as low, moderate, and high. The findings reveal that less than a third of respondents reported a low level of IT literacy. In contrast, about two-thirds of the respondents demonstrated moderate IT literacy, while roughly one-seventh exhibited a high level of proficiency. This predominance of moderate IT literacy corroborates with studies such as those by Adeleke et al. [28], Manganello et al. [29], Ogunyade et al. [24], and Chima-Oduko et al. [30] who observed similar patterns among healthcare professionals in Nigeria. They reported that while most professionals possess functional IT skills necessary for routine tasks, higher-level competencies remain limited, constraining the full utilization of digital health systems.

Conversely, the relatively low proportion of respondents with high IT literacy contrasts with findings from Ajami et al. [15], Kuek et al. [31], who documented a more substantial presence of advanced IT skills in health workers within urban hospitals in other developing countries. This discrepancy may reflect regional differences in access to training and resources or variations in institutional support for IT capacity building. The low level of IT literacy among respondents is encouraging and suggests that basic digital competencies are widespread. However, it also highlights the need to elevate the substantial group at the moderate level to higher proficiency, particularly as healthcare systems increasingly integrate complex digital technologies. In contrast, some studies have identified a larger segment of healthcare workers with low IT literacy, especially in rural or under-resourced settings [32]. This suggests that geographic and infrastructural factors may play a significant role in shaping IT literacy levels, emphasizing the need for tailored interventions.

Overall, the data indicate a promising foundation of IT literacy among the respondents but underscore the necessity for targeted capacity-building efforts to promote higher-level skills. Enhancing IT literacy is critical for optimizing the management of electronic health records and supporting the digital transformation of healthcare services.

The analysis of sociodemographic factors associated with IT literacy levels among HRMs in the University of Jos teaching hospital revealed that gender, work experience, and education significantly influence IT literacy among health record professionals, while marital status showed no statistical significance $p > 0.05$. Age did not show a statistically significant relationship with IT literacy levels. Despite a general trend suggesting that younger and middle-aged staff might be more likely to possess digital skills, the absence of statistical significance aligns with findings by Kuek et al. [31] and Jarahi et al. [33], who argued that digital literacy in healthcare settings is increasingly influenced by exposure and training opportunities rather than age alone. Therefore, chronological age may be less relevant than digital engagement and professional development when predicting IT competency.

Similarly, marital status did not emerge as a significant predictor. While some studies, Gholampour et al. [34], have proposed that unmarried individuals may have more time or flexibility to pursue digital learning, the current findings suggest that marital status does not independently predict IT literacy among health records professionals. This finding, however, corroborates previous studies such as Olaleye et al. [35], who reported that personal demographic characteristics like marital status often play a minimal role in technical skill acquisition, especially in formal institutional settings. However, it slightly diverges from Liu et al. [36], who hypothesized that marital responsibilities could affect time available for professional development, particularly among women.

In contrast, gender displayed a highly significant association with IT literacy, with males more likely to possess higher digital skills than their female counterparts. A disproportionate number of females were represented among those with low IT literacy, reinforcing long-standing concerns about gendered access to digital tools and training. However, these results contradict findings from Qazi et al. [37], who reported narrowing gender disparities in IT access and skills in more tech-integrated healthcare environments.

Education significantly influenced IT literacy at $p < 0.05$; those with higher qualifications were more likely to possess high IT literacy. These results echo the assertions by Ajami et al. [15] and Zhao et al. [38] that higher education correlates with improved technological competence, particularly when coupled with exposure to formal training. Educational background remains a critical enabler of digital readiness. This pattern corroborates the studies of Adeleke et al. [28], who emphasized the role of tertiary education in fostering digital awareness, especially when IT courses are embedded in academic curricula. This pattern is well supported by Ogunyade

et al. [24], Akpan et al. [27], Edeki et al. [32], and Tolera et al. [39] in Ethiopia, who found that formal education enhances digital literacy by building critical thinking and adaptability.

Years of experience showed a noteworthy influence on IT literacy. Respondents with moderate experience had higher odds of IT literacy compared to those with less than five years of experience. Although some comparisons did not reach statistical significance, the general trend supports the findings of Matsunaga [40], who found that mid-career professionals often represent a balance between adaptability to new technologies and sufficient exposure to institutional systems. This suggests that digital skills development may peak among professionals who have had time to integrate IT into their workflow but are not yet disengaged from emerging innovations.

Personal motivation emerged as one of the strongest predictors of IT literacy. Motivated individuals were significantly more likely to exhibit higher IT literacy, confirming the relevance of internal drive and self-efficacy in digital learning outcomes. This finding is consistent with the self-determination theory discussed by Ajami et al. [25] and supported by healthcare-specific studies such as Muthuri et al. [41], which linked intrinsic motivation to improved ICT engagement among health staff in sub-Saharan Africa.

Formal IT training was also strongly associated with higher IT literacy. Those who had participated in structured IT training were significantly more likely to demonstrate advanced digital skills. This result aligns with findings by Edeki et al. [32], Erezina et al. [23], and Nicol  -Agust  n et al. [42], which underscore the value of institutional investment in continuous professional development, especially in developing countries where on-the-job learning often supplements academic gaps in digital education. Furthermore, the availability of IT resources has a significant influence on IT literacy levels. Respondents who had regular access to computers, internet connectivity, and other digital tools were more likely to exhibit high IT literacy. This finding corroborates those of Megbowon et al. [43] and Awosiku et al. [44], who reported that infrastructure deficiencies are a significant barrier to digital health adoption in Nigerian hospitals. It also supports the view that access is a precondition for usage, as articulated by Van Dijk's Digital Divide Theory [45].

Furthermore, institutional support, though conceptually important, did not show a statistically significant effect. This finding may be due to varying perceptions of what constitutes support or the possibility that support mechanisms are passive rather than proactive. Studies by Soltovets et al. [46] and Ahammad et al. [47] highlight that unless institutional support translates into actionable access to tools, time, or mentorship, its impact on digital literacy may be limited. Finally, the variable combining age and work experience did not significantly predict IT literacy. While theoretically relevant, the lack of association suggests that experience and age must be accompanied by continuous learning and training to translate into digital competence [3].

5. Conclusion and Recommendation

The findings of this study showed that most health record management professionals at the University of Jos Teaching Hospital had a moderate level of IT literacy, with a smaller proportion demonstrating high literacy. In contrast, only a few had low literacy. Although this indicates a generally functional level of digital skills, the assessment of IT abilities revealed significant gaps in technical, development, project management, and certification-based competencies. This suggests that while many professionals can perform routine digital tasks, they lack the advanced skills needed to optimize electronic health records and support the broader digital health goals.

Key determinants of IT literacy identified in this study included gender, educational qualification, years of professional experience, personal motivation, formal IT training, and the availability of IT resources. Professionals with higher qualifications, access to training and infrastructure, and stronger personal motivation were more likely to demonstrate high IT literacy. Conversely, institutional support and marital status showed no significant effect.

These findings highlight the urgent need for targeted interventions to strengthen IT literacy among health record managers, as digital competence is essential for improving health information management, data accuracy, and healthcare decision-making. Addressing these gaps will not only enhance individual performance but also contribute to Nigeria's digital health transformation goals.

Based on the results, it is recommended that regular and mandatory IT training and certification be implemented, infrastructure be improved, and gender-sensitive strategies be adopted to bridge existing divides. Regulatory bodies should further integrate IT literacy requirements into professional licensing and continuing education frameworks. Future studies should also investigate the socio-cultural and institutional barriers to IT adoption and compare findings with other contexts to generate broader evidence for policy and practice.

Abbreviations

ICT	Information and Communication Technology
EHRs	Electronic Health Records
HIS	Health Information System
IT	Information Technology
CI	Confidence Interval
AOR	Adjusted Odds Ratio
HRMPs	Health Records Management Professionals

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Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Kurokeyi, E. T., Bakare-Fatungase, O. D. Data Literacy Skills of Health Information Management Professionals in Tertiary Hospital, Bayelsa State, Nigeria. *Lead City International Journal of Library, Information & Communication Sciences*. 2024, 1(1), 171-8. <https://doi.org/10.63741/>
- [2] Kruse, C. S., Stein, A., Thomas, H., Kaur, H. The use of electronic health records to support population health: a systematic review of the literature. *Journal of Medical Systems*. 2018, 42(11): 214. <https://doi.org/10.1007/s10916-018-1075-6>
- [3] World Health Organization (WHO). Global strategy on digital health 2020-2025. Geneva: WHO; 2021.
- [4] Upadhyay, S., Hu, H. F. A qualitative analysis of the impact of electronic health records (EHR) on healthcare quality and safety: clinicians' lived experiences. *Health Services Insights*. 2022, 15, 11786329211070722. <https://doi.org/10.1177/11786329211070722>
- [5] Rauwerdink A., Kasteleyn, M. J., Chavannes. N. H., Schijven, M. P. Successes of and lessons from the first joint eHealth program of the Dutch university hospitals: evaluation study. *Journal of Medical Internet Research*. 2021, 23(11), e25170. <https://doi.org/10.2196/25170>
- [6] Elikwu, I. M., Igbokwe, A. C., Emokhare, G. Effect of Electronic Health Information System on Medical Records Management in Public Healthcare Institutions. *Unizik Journal of Business*. 2020, 3(1). <https://doi.org/10.36108/unizikjb/0202.30.0140>
- [7] Ariyo, A. O., Adebayo, A. D. Constraints of Information and Communication Technology on Teaching of Physical and Health Education in Adeyemi College of Education, Ondo, Nigeria. *AJHCER* [Internet]. 2022 Jun. 30 [cited 2025 Nov. 17], 4(1), 79-88. Available from: <https://publications.afropolitanjournals.com/index.php/ajhcer/article/view/128>
- [8] Arias López, M. D. P., Ong, B. A., Borrat Frigola, X., Fernández, A. L., Hicklent, R. S., Obeles, A. J. T., Rocimo, A. M., Celi, L. A. Digital literacy as a new determinant of health: A scoping review. *PLOS Digit Health*. 2023, 2(10), e0000279. <https://doi.org/10.1371/journal.pdig.0000279>

- [9] Greenhalgh, T., Wherton, J., Papoutsis, C., Lynch, J., Hughes, G., A'Court, C., Hinder, S., Fahy, N., Procter, R., Shaw, S. Beyond Adoption: A New Framework for Theorizing and Evaluating Non-adoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability of Health and Care Technologies. *Journal of Med Internet Res.* 2017, 19(11), e367. <https://doi.org/10.2196/jmir.8775>
- [10] Pessima, J. F. Electronic Health Records and Health Information Technology Adoption in Rural Georgia: A Quantitative Correlational Study (Doctoral dissertation, University of Phoenix).
- [11] Erfani, G., McCREADY, J., Gibson, B., Nichol, B., Unsworth, J., Jarva, E., Mikkonen, K., Tomietto, M. Factors influencing digital health competence among healthcare professionals: A cross-sectional study. *Appl Nursing Res.* 2025, 82, 151922. <https://doi.org/10.1016/j.apnr.2025.151922>
- [12] Musa M. Using Access Control to Protecting Health Information System: A Case Study of Ahmadu Bello University Teaching Hospital (Doctoral dissertation, Uganda Technology and Management University).
- [13] Dahiru, J. M. Knowledge and utilization of health informatics among medical doctors in Ahmadu Bello University Teaching Hospital, ShikaZaria. *International Journal of Informatics and Communication Technology.* 2019, 10(3), 171-81. <https://doi.org/10.11591/ijict.v10i3>
- [14] Kaboré S. S., Ngangue, P., Soubeiga, D., Barro, A., Pilabrè A. H., Bationo, N., Pafadnam, Y., Drabo, K. M., Hien, H., Savadogo, G. B. L. Barriers and facilitators for the sustainability of digital health interventions in low and middle-income countries: A systematic review. *Frontiers in digital health.* 2022, 4, 1014375. <https://doi.org/10.3389/fdgh.2022.1014375>
- [15] Ajami, S., Bagheri-Tadi, T. Barriers for adopting electronic health records (EHRs) by physicians. *Acta Informatica Medica.* 2013, (2), 129134. <https://doi.org/10.5455/aim.2013.21.129-134>
- [16] Okonkwo, O. C. ICT knowledge and utilization as determinants of job performance of Health Information Managers in health institutions in South-East Nigeria. *International Journal of Library and Information Science.* 2021, 13(2), 21-33. <https://doi.org/10.5897/IJLIS2021.0984>
- [17] Al-Barakat, A. A., Al-Karasneh, S. M., Kanaan, E. M., AlAli, R. M., Ibrahim, N. A., Aboud, Y. Z. Good Practices in Using Digital Technology for Children in Developing Their Learning Experiences. *Revista Electronica De Leeme.* 2024, 31(54). <https://doi.org/10.58262/LEEME.54.0012>
- [18] Amin, N. A. M., Yatin, S. F. M., Jali, J. M., Sahid, N. Z., Shuhidan, S. M., Noordin, S. A., Abdullah, W. A. M. W. Role of medical records management practice in improving decision making in University Hospital. *International Journal of Academic Research in Business and Social Sciences.* 2020, 10(11), 1160-1175. <http://dx.doi.org/10.6007/IJARBS/v10-i11/8193>
- [19] Olayemi, O. O., Ojo, O. A. Evaluation of ICT competence among health information professionals in selected tertiary hospitals in Nigeria. *Health Information Management Journal.* 2021, 26 48(3), 126-134. <https://doi.org/10.1177/1833358320913092>
- [20] Popescu, C., El-Chaarani, H., El-Abiad, Z., Gigauri, I. Implementation of health information systems to improve patient identification. *International Journal of Environmental Research and Public Health.* 2022 19(22), 15236. <https://doi.org/10.3390/ijerph192215236>
- [21] Afolaranmi, T. O., Hassan, Z. I., Dawar, B. L., Wilson, B. D., Zakari, A. I., Bello, K. K., Ofakunrin, A. O., Ogbeyi, G. O. Knowledge of electronic medical records system among frontline health care workers in Jos University teaching hospital, Plateau State Nigeria. *International journal of research in medical sciences.* 2020, 8(11), 3837. <https://doi.org/10.18203/2320-6012.ijrms20204867>
- [22] Tagurum, Y. O., Dogo, M. J., Adah, G. A., Maimagani, I. C., Sodipo, O. O., Adeniji, T., Daboer, J. C., Banwat, M. E., Lar, L. A., Akosu, T. J., Chingle, M. P. Comparative Assessment of the Implementation of Integrated Disease Surveillance and Response in Public and Private Health Facilities in Jos North Local Government Area of Plateau State, Nigeria. *Ann Afr Med.* 2022, 21(2), 146-152. <https://doi.org/10.4103/1596-3519.349974>
- [23] Erezina, A. E., Gift, R. A., Odipe, O. E., Raimi, M. O., Abaya, S. T., Kakwi, D. J. Level of Professional Awareness among Health Record Officers in Bayelsa State and Their Implications for Patient Care, Health Systems, and Health Policy. *Am. Journal Phys. Educ. Health Sci.* [Internet]. 2023 May 18 [cited 2025 Nov. 17], 1(1), 19-30. Available from: <https://journals.e-palli.com/home/index.php/ajpehs/article/view/1582>
- [24] Ogunyade, T. O., Oyibo, W. A. ICT proficiency of health workers in a tertiary hospital in Nigeria: Implications for e-health implementation. *African Journal of Biomedical Research.* 2017, 20(3), 225-231. <https://www.ajol.info/index.php/ajbr/article/view/165440>
- [25] Olagbuji, Y. W., Adejugbagbe, A. M. Improving the quality of health management information system: determinants of effective data management among data management officers in a South West State in Nigeria. *Arch Current Res Int.* 2018, 21, 1-1. Available from: <https://journalacri.com/index.php/ACRI/article/view/207>
- [26] Dogiye, E. L., Ayebanengimote, V., Edeki, E. Application of ICT in health information management practices in selected tertiary hospitals in South-South States of Nigeria. *INTERNATIONAL JOURNAL OF HEALTH RECORDS & INFORMATION MANAGEMENT (IJHRIM).* 2017, 5(1). <https://doi.org/10.1177/1077558708317802>
- [27] Akpan, I. J., Nwachukwu, C. E. ICT training and certification among Nigerian healthcare professionals: Implications for effective digital health implementation. *African Journal of Information Systems.* 2018, 10(3), Article 3.
- [28] Adeleke, I. T., Asiru, M. A., Oweghor, B. M., Jimoh, A. B., Ndana, A. M. Computer and internet use among tertiary healthcare providers and trainees in a Nigerian public hospital. *American Journal of Health Research. Special Issue: Health Information Technology in Developing Nations: Challenges and Prospects Health Information Technology.* 2015, 3(1-1), 1-0. <https://doi.org/10.11648/j.ajhr.s.2015030101.11>

- [29] Manganello, J., Gerstner, G., Pergolino, K., Graham, Y., Falisi, A., Strogatz, D. The relationship of health literacy with use of digital technology for health information: implications for public health practice. *Journal of public health management and practice*. 2017, 23(4), 380-7.
<https://doi.org/10.1097/PHH.0000000000000366>
- [30] Chima-Oduko, A. A., Maduafokwa, B. A., Abdulraheem, K. S., Roberts, A. A., Obua, V. C. Prevalence, Patterns, and Determinants of Artificial Intelligence Use among Healthcare Professionals in Lagos, Nigeria, A Cross-Sectional Study.
<https://doi.org/10.21203/rs.3.rs-7284091/v1>
- [31] Kuek, A., Hakkennes, S. Healthcare staff digital literacy levels and their attitudes towards information systems. *Health Informatics Journal*, 2020, 26(1), 592-612.
<https://doi.org/10.1177/1460458219839613>
- [32] Edeki, B. O., Okeke, K. U., & Musa, H. Project management capacity and health informatics implementation in Nigeria: An assessment of workforce readiness. *Nigerian Journal of Health Information Management*, 2021, 19(1), 17-26.
- [33] Jarahi, L., Akbari A., Kaheni, A. H., Amiri, M., Ghosooni, M., M. Digital Literacy among Medical Sciences Students: A Systematic Review and Meta-Analysis. *Future of Medical Education Journal*. 2024, 14(3).
<https://doi.org/10.22038/fmej.2024.80358.1595>
- [34] Gholampour, A., Jamshidi, M., Habibi, A., Motamedi Dehkordi, N., Ebrahimi, P. The impact of hospital information systems on nurses' satisfaction in Iranian public hospitals: the moderating role of computer literacy. *Journal of Information Technology*. 2020, 12(4).
<https://dx.doi.org/10.22059/jitm.2020.299802.2491>
- [35] Olaleye, O., Afolabi, B. Personal characteristics and ICT adoption. *Journal of Global Health Rep*. 2021, 5: e2021073.
- [36] Liu D, Wang H, Zhang W, Chen P, Lin Y, Xie Y, Zou M, Li D, Fang M, Hu B, Shi L. Sociodemographic characteristics, occupational characteristics, motivational factors, and job satisfaction among primary health service practitioners. *BMC Primary Care*. 2025, 26(1), 24.
<https://doi.org/10.1186/s12875-025-02714-3>
- [37] Qazi, A., Hasan, N., Abayomi-Alli, O., Hardaker, G., Scherer, R., Sarker, Y., Kumar Paul, S., Maitama, J. Z. Gender differences in information and communication technology use & skills: a systematic review and meta-analysis. *Education and information technologies*. 2022, 27(3), 4225-58.
<https://doi.org/10.1007/s10639-021-10775-x>
- [38] Zhao, Y., S áchez G ámez, M. C., Pinto Llorente, A. M., Zhao, L. Digital competence in higher education: Students' perception and personal factors. *Sustainability*. 2021, 13(21), p. 12184. <https://doi.org/10.3390/su132112184>
- [39] Tolera, A., Oljira, L., Dingeta, T., Abera, A., Roba, H. S. Electronic medical record use and associated factors among healthcare professionals at public health facilities in Dire Dawa, eastern Ethiopia: A mixed-method study. *Frontiers in digital health*. 23; 4: 935945.
<https://doi.org/10.3389/fdgth.2022.935945>
- [40] Matsunaga, M. The role of digital literacy in leadership. In *Employee Uncertainty Over Digital Transformation: Mechanisms and Solutions 2024* (pp. 139-188). Singapore: Springer Nature Singapore.
https://doi.org/10.1007/978-981-99-8409-1_4
- [41] Muthuri, R. N. D. K., Senkubuge, F., Hongoro, C. Determinants of motivation among healthcare workers in the East African community between 2009-2019: a systematic review. In *Healthcare*. (2020, June), (Vol. 8, No. 2, p. 164).
- [42] Nicol ás-Agust ín, Á., Jim énez-Jim énez, D., Maeso Fern ández, F., Di Prima, C. ICT training, digital transformation, and company performance: an empirical study. *European Journal of Innovation Management*. 2025, 28(4), 1687-1708.
<https://doi.org/10.1108/EJIM-11-2022-0622>
- [43] Megbowon, E. T., Emeka, V. ICT resource availability in Nigerian hospitals. *African Journal of Information Systems*. 2020, 12(2), 155-64
- [44] Awosiku, O. V., Gbemisola, I. N., Oyediran, O. T., Egbewande, O. M., Lami, J. H., Afolabi, D., Effiong, F. Role of digital health technologies in improving health financing and universal health coverage in Sub-Saharan Africa: a comprehensive narrative review. *Frontiers in Digital Health*. 2025, 7, 1391500.
<https://doi.org/10.3389/fdgth.2025.1391500>
- [45] Van Dijk, J. A. Digital Divide Research, Achievements, and Shortcomings. *Poetics*. 2006, 34(4-5), 221-235.
<https://doi.org/10.1016/j.poetic.2006.05.004>
- [46] Soltovets, E., Chigisheva, O., Dmitrova, A. The role of mentoring in digital literacy development of doctoral students at British universities. *Eurasia Journal of Mathematics, Science and Technology Education*. 2020, 16(4).
- [47] Ahammad, N., Islam, M. S. The role of digital literacy: assessing its impact on university students. *Digital Policy, Regulation and Governance*. 2025.