

Knowledge, Attitude, And Perception Of Health Workers Towards Electronic Health Record System (A Case Study Of Uduth, Sokoto)

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Abstract

Background: Electronic Health Records System (EHRS) has shown a lot of advantages over the conventional paper based medical records. Its use has grown rapidly in the developed world and yet most African nations are still lagging behind. In Nigeria, the penetration of EHRS is low with less than 10.0% of hospitals embracing it. Factors responsible for this low penetration or use of EHRS in Nigeria include interoperability issues, epileptic power supply, cost of installation, resistance to change, health providers' and patients' poor orientation. This study aimed to assess level of knowledge, attitude and perception of health care workers on the use of EHRS in Usmanu Danfodiyo University Teaching Hospital, Sokoto.

Methodology: Cross sectional study was conducted in June, 2023 among 132 healthcare workers that were randomly selected using stratified sampling technique. Pre-tested structured self-administered questionnaire was used for data collection. Data was cleaned and analyzed using IBM SPSS version 21.0. Univariate analysis to generate summary statistics, proportions and frequency tables was conducted. While Bivariate analysis was conducted to identify variables that were significantly associated with respondents knowledge, attitude and perception at a P-value of <0.05.

Results: Majority (70%) of the respondents had good knowledge of EMR and 30% had bad knowledge. 84% of the respondents had positive attitude towards EHRS while 86% of them had positive perceptions on EHRS. Doctors were 85.0% less likely to be knowledgeable about EMR than other healthcare workers (aOR 0.150; 95% CI 0.030 - 0.748). Respondents that were computer literate were 30.0% more likely to be knowledgeable than those who were not (aOR 1.297; 95% CI 3.885 - 4.330) and those that had computer training were 13.0% more likely to be knowledgeable than those who were not (aOR 1.126; 95% CI 0.032 - 0.501). A greater proportion of respondents with good knowledge 90(96.8%) had a good attitude, the result was statistically significant ($\chi^2 < 37.85$, $p = 0.01$) A greater portion of the respondents with good attitudes had good perception 108(95.6%) as compared to respondents, with poor attitudes 16(46.2%) the association was statistically significant ($\chi^2 = 77.39$, $p < 0.01$). A greater proportion of respondents with good knowledge had good practice compared to those with poor knowledge. However, the result was not statistically significant $\chi^2 = 2.330$, $p = 0.169$.

Conclusion: majority of the respondents had good knowledge 92(70%), good attitude 110 (84%) and good perception towards EHR 114(86%). As such government support and funding of electronic health system in health facilities is recommended.

Keyword: Knowledge, Attitude, Perception. Health Workers, Electronic Health Record System, Sokoto State.

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I. Introduction

Background: Electronic health records (EHRs) are defined as an electronic version of a patient's medical history including key administrative clinical data relevant to that person's care and have emerged as a promising tool to improve health care quality(1). Research indicates that EHRs can improve documentation, thereby increasing the accuracy and completeness of patient data. This improves health care providers' ability to appropriately diagnose and treat their patients. Furthermore, EHRs can facilitate timely and accurate patient risk assessments and quality measurements, allowing for more prompt intervention as needed. Finally, many EHRs include tools that support clinical judgment and decision making, as well as care coordination and health information exchange(2). The study object are to determine knowledge , altitude, perceptions and factors affecting adequate implementation of electronic health record system in the study area.

II. Materials And Method

Study Design: The study was a cross-sectional design.

Study Population: The study population is comprised of all health care professionals in UDUTH, Sokoto state, Nigeria

Inclusion Criteria: All health care professionals working in Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria.

Exclusion criteria: There was no criteria for exclusion, health workers belonging to the interested cadre who gave their consent were allowed to partake in the study.

Sample Size Determination: The minimum sample size was 132 determined using Cochran formula and selected from the study population of 1542

Sampling Technique: The study subjects were selected by a multi-stage sampling technique.

Stage 1: stratified sampling technique in which health professional were grouped into the following cadres; doctors, nurses, pharmacists, medical laboratory scientist and health record officers.

Stage 2: proportionate sampling was done so as to select participants based on the population of the cadre available.

Stage 3: simple random technique so as to avoid being bias in selection of participants.

Category of staff	Calculations	Proportionate number sampled
Doctors	$416/1542*132$	35
Nurses	$799/1542*132$	68
Pharmacist	$85/1542*132$	8
Medical laboratory scientist	$142/1542*132$	12
Health record officer	$100/1542*132$	9

Data Collection

Instrument for data collection: Data were collected using interviewers administered, semi-structured questionnaire adapted from previous studies(27). The questions were modified where necessary to fit the socio-cultural context of the study area and population.

Method of data collection: Questionnaire method was used in data collection. The Questionnaire was created on Open Data Kit.

Personnel and Pretesting: Data was collected by the research group members; the questionnaire was pretested on 20 health care professionals in another tertiary health facility in Sokoto Metropolis. The necessary adjustments were made based on the observations made during the pretesting.

Statistical Analysis:

Completed forms were downloaded from ODK in excel format, data was then exported in IBM Statistical Package for Social Sciences (SPSS). Frequency runs were done for further editing and cleansing of the e-data. Quantitative variables (Age, income) were summarized using the mean and standard deviation and for categorical variables (sociodemographic variables) were summarized using frequencies and percentages. The Chi-square test was used to assess the association between sociodemographic features and level of awareness, knowledge and attitude of the respondents to perinatal depression. The results were presented in form of table and charts. Level of significance was set at 0.05, thus, any statistical test with $p < 0.05$ was considered to be statistically significant.

Ethical Considerations:

Ethical approval was obtained from the Ethical Committee of Ministry of Health Sokoto State. Permission to administer the questionnaires was obtained from the commissioner of health and informed written consent was also obtained from the study subjects before the administration of the questionnaires.

Limitations: Limitations to the study include non-response and misinformation by the respondents which could have led to social desirability bias despite getting informed consent and confidentiality assured.

III. Results

In table 1 majority of the correspondents 61(46.2) fall within the age group of 20-30years with a mean age of 32.99 and standard deviation of 6.52. Majority of the correspondents (68(51.5%) are nurses and a majority 61(46.2%) have a working experience of 1-5 years. The mean working experience of 7.52 and a S.D of 5.32.

Table 1: Socio-Demography

Socio-demography	Frequency	Percentage
Age		
20-30	61	46.2
31-40	57	43.2
41-50	12	9.1
>50	2	1.5
Mean ± S.D	32.99 ± 6.525	
Sex		
Male	54	40.9
Female	78	59.1
Marital Status		
Single	35	26.5
Married	94	71.2
Divorced	2	1.5
Widowed	1	0.8
Religion		
Islam	54	40.9
Christianity	78	59.1
Professional cadre		
Doctor	35	26.5
Nurse	68	51.5
Pharmacist	7	5.3
Medical Laboratory Scientist	2	1.5
Health Information Officer	20	15.2
Working experience		
1-5years	61	46.2
6-10 years	40	30.3
11-15 years	20	15.2
16-20 years	6	4.5
>20years	5	3.8
Mean ± S.D	7.52 ± 5.37	
Attendance of training on HER		
Attended training	41	31.1
Never attended training	91	68.9

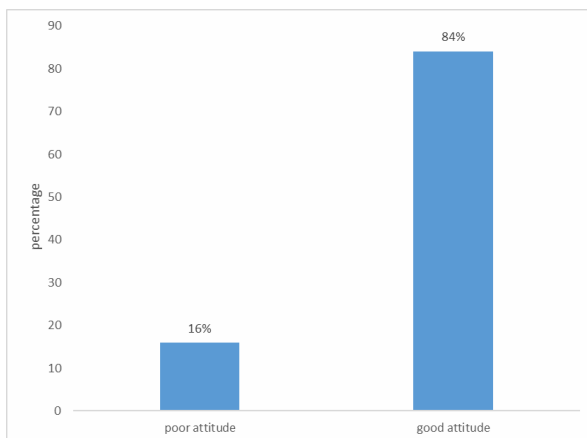


Figure 1: Attitude Towards Electronic Health Record System

Majority of the respondents 84% have an overall good attitude towards the use of EHR

In table 2 majority of the correspondents believe use of EHR (117) will make patient management and follow-up better and (118) believes when introduced will make faster patient care. More-so, majority say a ‘no’ to the question “Health care workers should resist the introduction of EHR” signifying it healthcare workers should welcome the use of EHR as well as think EHR will not be detrimental to health care. As shown in the table above.

Table 2: Attitude Towards Electronic Health Record System

Attitude Towards Electronic Health Record System	Response Frequency		
	Yes	No	I don't know
EHR will make patient management and follow up easier	117	1	14
EHR when introduced aids faster patient care	118	1	13
Health care workers prefer EHR than paper based type	67	40	25
EHR should be introduced into health care system in Nigeria	120	12	0
Training health care workers on EHR should be mandatory.	91	29	12
Health care workers should not be boEHRd about EHR	4	113	15
Health care workers should resist the introduction of EHR	118	14	0
EHR is detrimental to health care in the long run	1	112	19

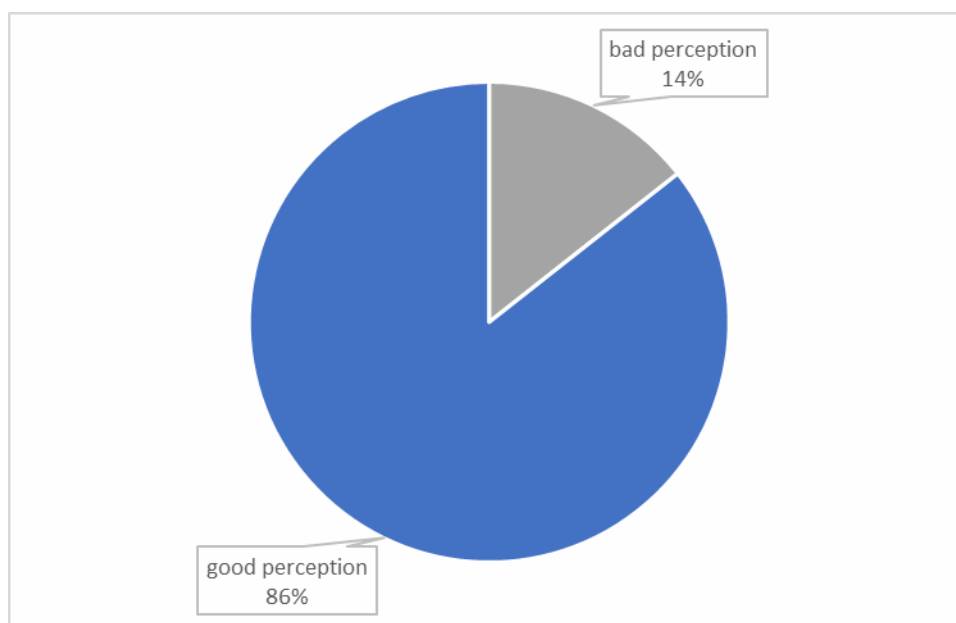


Figure 2: overall Perception Towards Electronic Health Record System

Majority of the correspondent (86%) have an overall good perception towards the use of EHR in the hospitals in Sokoto metropolis.

In table 3 below majority of the health workers 116 feel EHR would make patient care faster than paper-based record and that it will lead to better patient care (114), almost at equal range 55(41.7%) of the health care workers think it affect doctor-patient relationship as shown in the table above.

Table 3: Perception Towards Electronic Health Record System

Perception Towards Electronic Health Record System	Response frequency (%)		
	Yes	No	I don't know
I believe that EHR would make patient care faster than paper-based record	116(88.5%)	7(5.3%)	8(6.1%)
I feel EHR would lead to better patient care and safety	114(86.4%)	3(2.3%)	15(11.4%)
I feel EHR requires too much time for training of hospital staffs on its use	82(62.1%)	36(27.3%)	14(10.6%)
I believe EHR increases cost of care for the patient	5(3.8%)	111(84.1%)	16(12.1%)
I feel EHR affects doctor- patient relationship negatively	55(41.7%)	58(43.9%)	19(14.4%)
I feel EHR doesn't protect against patient's privacy	2(1.5%)	112(84.8%)	18(13.6%)
When in use, I believe EHR will have poor cultural acceptability	16(12.1%)	96(72.7%)	20(15.2%)
I believe EHR should be used in the routine care of patients in our hospitals	116(87.9%)	8(6.1%)	8(6.1%)
I think EHR should only be used for specialized care	6(4.5%)	115(87.1%)	11(8.3%)

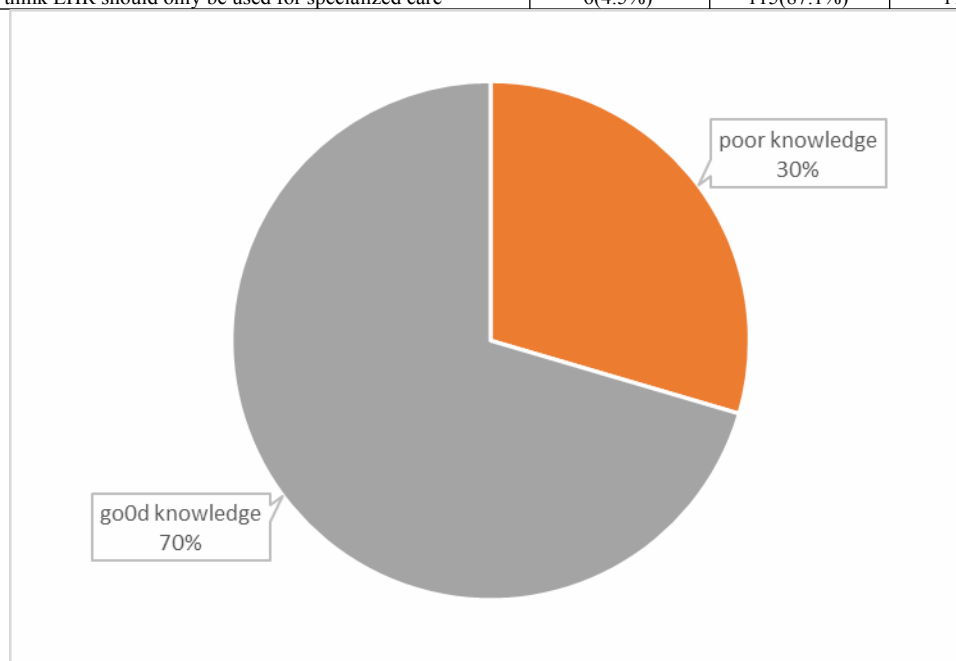


Figure 2: Overall knowledge of electronic health record system

As shown in figure 3, majority of the health care workers in Sokoto metropolis have good knowledge of EHR.

In table 4 shows that majority of the correspondents within the age group 20 -30 and 31 -40years have better knowledge than other age groups, however the difference is not statistically significant (p= 0.284). There is a significant relationship on gender, professional cadre , working experience and attendance of training as evidenced by p-value p=0.021, 0.003, 0.037 and 0.001 respectively.

Table 4: knowledge * socio-Demography

variable	Overall Knowledge category		Test statistic
	Poor knowledge	Good knowledge	
Age			FiscEHR exact = 3.641 p = 0.284
20-30	21(34.4%)	40(65.6%)	
31-40	17(29.8%)	40(70.2%)	
41-50	1(8.3%)	11(91.7%)	
>50	0(0%)	2(100%)	
Sex			$\chi^2=5.338$ p = 0.021
Male	10(18.5%)	44(81.5%)	
Female	29(37.2%)	49(62.8%)	
Marital Status			

Single	15(42.9%)	20(57.1%)	FiscEHR exact = 11.341 p=0.003
Married	21(22.3%)	73(77.7%)	
Divorced	2(100%)	0(0%)	
Widowed	1(100%)	0(0%)	
Religion			
Islam	16(29.6%)	38(70.4%)	$\chi^2=0.00$ p= 0.986
Christianity	23(29.5%)	55(70.5%)	
Professional cadre			
Doctor	16(45.7%)	19(54.3%)	$\chi^2=15.742$ p = 0.003
Nurse	13(19.1%)	55(80.9%)	
Pharmacist	0(0%)	7(100%)	
Medical Laboratory Scientist	0(0%)	2(100%)	
Health Information Officer	10(50%)	10(50%)	
Working experience			
1-5years	25(41%)	36(59%)	$\chi^2=10.20$ p= 0.037
6-10 years	8(20%)	32(80%)	
11-15 years	6(30%)	14(70%)	
16-20 years	0(0%)	6(100%)	
>20years	0(0%)	5(100%)	
Attendance of training on EHR			
Attended training	4(9.8%)	37(90.2%)	$\chi^2=11.189$ p = 0.001
Never attended training	35(38.5%)	56(61.5%)	

Table 5. shows that at level of significance of $p < 0.05$, majority of the individuals with good knowledge 90(96%) showed good attitude towards the use EHR which is significant ($p < 0.01$) and also majority 108(95.6%) had good perception towards EHR, still had good attitude towards the use of EHR with significance of $p < 0.01$.

Table 5: factors affecting effective establishment of EHR

Variable	Attitude		Test statistic
	Bad attitude (%)	Good attitude (%)	
Knowledge			
Good knowledge	3(3.2%)	90(96.8%)	$\chi^2=37.85$ p<0.01
Poor knowledge	18(46.2)	21(52.8%)	
Perception			
Bad perception	16(84.2%)	3(15.8%)	$\chi^2=77.39$ p< 0.01
Good perception	5(4.4%)	108(95.6%)	

IV. Discussion

This study was conducted at Usmanu Danfodiyo University Teaching Hospital, Sokoto to assess the knowledge, attitude, and perception of Health care workers towards electronic health record system.

In this study, the age of the *respondents ranged from 20 to 55 years with a mean age of 32.99±6.525 years*. This is similar to a study conducted in Benin city (31.5±7.1 years)(3) A large proportion of the respondents 61(46.2%) were in the 20-30 years age group this is because the respondents are more of the working and productive age group of the society. Males accounted for approximately 2/5th of the respondents 54(40.9%) while females accounted for 3/5th 78(59.1%). This is in contrast with other Nigerian studies carried out in Zaria (71.9%) (4) and Jos (53.1%) (5) states where males were the majority of respondents. This may be partly attributed to the fact that nurses carried greater percentage of the respondents and in most cases nurses are often females.

Most of the respondents were married 94(71.2%). This was similar to a study done in a tertiary hospital in Jos, Nigeria (70.6%) (5) and in contrast to a study conducted in Zaria where 53.9% of the respondents were single (4). Because of the large population of Nurses, the majority of our responses were from this category 68(51.5%) followed by doctors 35 (26.5%) followed by Health information officer (15%), followed by pharmacist 7(5.3%) and medical laboratory scientist 2(1.5%), this is in line with studies carried out in Jos (Nurses 53.3%, Doctors 43% and Pharmacist 3.5%) (5). Majority of the respondent (46.2%) had 1 to 5years working experience, this may be because a majority of the respondents were within the age range of 20-30 years.

Most of the respondents have never had a training EHR 91(68.9%) and 41 respondents (31.1%) attended a training. This is similar to a study in Jos, where 84.6% had no training (5). It can be because not all sections of the hospital have fully accepted EHR.

Majority of the respondents 92(70%) have good knowledge as against 40(30%) with poor knowledge. This is similar to the study conducted in Bangladesh 85(76%)(6) and also in a study conducted in Jos where 163(71.5%) had good knowledge (5). The finding of this study could also be a reflection of the level of access to information e.g. through the internet and its utilization in this era of unlimited access to medical information. However, this is in contrast to the study conducted in Zaria where only one third 43(33.3%) had good knowledge(4). Respondents between 30-40 years 40(70.2%) had better knowledge and also males 44(81.5%) had better knowledge.

All the pharmacist 7(100%) and medical laboratory scientist 2(100%) had good knowledge on EHR, next to them were nurses 55(80.9%) similar finding was seen in a study conducted in Benin city(7) where all pharmacist, physiotherapist and other health attendants had good knowledge on EHR. This could be because EHR has already been partly implemented in the above areas. Respondents with more than 15years working experience 11(100%)had better knowledge. This is similar to a study conducted in Ado-Ekiti (8) and in contrast to the study in Zaria were younger respondents with few years working had better knowledge(4). It may be that experience played a role, staffs with more experience would likely have come in contact with different methods and techniques and may be likely willing to learn new trends.

Larger proportion of the respondents have a good attitude, regarding electronic health record system 110(84%). Over 3/4 of respondents 117(88.6%) believe that EHR will make patient management and follow up easier , 118(89.4%) they also believed that when EHR is introduced it would aid faster patient care. Most of the respondents 120(90.9%) think EHR should be introduced into health care system in Nigeria. A similar result was obtained by a study conducted in Zaria were 135(100%) had good attitude (4) and in Bangladesh were 87(78%) had good attitude(6).

Most of the correspondents 114(86%) have an overall good perception towards the use of electronic health record system. This is similar to the studies conducted in Zaria 124 (96.9%) (4) and Benin city 336(98.8%)(3). This could be as a result of the respondents knowledge on EHR which has been known to influence perception ..Most respondents 116(88.5%) believe that EHR would make patient care faster than paper-based record, majority 114(86.4%) feels EHR would lead to better patient care and safety and this is similar to the study conducted in Zaria were two third believes it would lead to better patient care and safety (4). 111(84.1%) respondents believe EHR would not increase the cost of care for the patient . Most correspondents 112(84.8%) agree to EHR protecting patient's privacy. The positive perception corroborates the fact that EHR would be easily accepted and utilized by health workers

There are some potential limitations to note when interpreting the result of this research one of which is the fact that this research is a cross-sectional study and only circumstantial evidence for the relationships has been observed. Another limitation of note include non-response and misinformation by the respondents which could have led to social desirability bias.

V. Conclusion /Recommendation

The majority of the respondents (Usmanu Danfodiyo University Teaching hospital, Sokoto) had good knowledge, good attitude and good perception towards EHR (electronic health records). Knowledge and attitude was found to have statistically significant relationship as well as attitude and perceptions.

I therefore recommend that government should support and fund electronic health record system in health facilities.

References

- [1] Bjarnadottir Ri, Herzig Ct, Travers JI, Castle Ng, Stone Pw. Implementation Of Electronic Health Records In Us Nursing Homes. Computers, Informatics, Nursing: Cin. 2017;35(8):417
- [2] Bowles Kh, Dykes P, Demiris G. The Use Of Health Information Technology To Improve Care And Outcomes For Older Adults. Research In Gerontological Nursing. 2015;8(1):5-10.
- [3] Owweye Go, Nwaogwugwu Jc, Ehinze Es. The Knowledge, Perception And Utilisation Of E-Health Among Health Workers In Benin City, Nigeria: Knowledge, Perception And Utilisation Of E-Health. Nigerian Medical Journal. 2022;63(3):226-35.
- [4] Hoelscher Dm, Ranjit N, Pérez A. Surveillance Systems To Track And Evaluate Obesity Prevention Efforts. Annual Review Of Public Health. 2017;38:187-214.
- [5] M, Digby G, Mackinnon M, Morra A, Barber D, Queenan J, Et Al. Primary Care Asthma Surveillance: A Review Of Knowledge Translation Tools And Strategies For Quality Improvement. Allergy, Asthma & Clinical Immunology. 2023;19(1):1-11.
- [6] Jayaraman Pp, Forkan Arm, Morshed A, Haghighi Pd, Kang Yb. Healthcare 4.0: A Review Of Frontiers In Digital Health. Wiley Interdisciplinary Reviews: Data Mining And Knowledge Discovery. 2020;10(2):E1350.
- [7] Sundermann Aj, Miller Jk, Marsh Jw, Saul Mi, Shutt Ka, Pacey M, Et Al. Automated Data Mining Of The Electronic Health Record For Investigation Of Healthcare-Associated Outbreaks. Infection Control & Hospital Epidemiology. 2019;40(3):314-9.