



## Awareness and Utilization of eLearning Resources in Clinical Teaching among Nurses Working at a Tertiary Health Facility in Northern Nigeria

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### Abstract

Use of information and communication technology (ICT) in health seeks to improve the quality of healthcare services rendered and provides to healthcare professionals the best available evidence for clinical decision making and clinical teaching. Thus this study examined the awareness and utilization of e-Learning resources in clinical teaching among nurses in Ahmadu Bello University Teaching Hospital, Shika, Zaria. A cross-sectional descriptive research design was adopted for the study, cluster sampling technique was used to select 231 respondents and a structured questionnaire self-administered to the respondents to collect data. A 74% (n=171) response rate was recorded. Findings from the study revealed that majority (97.1%) were aware of the internet and eLearning resources and 71.3% could use them .36% had formal training on information technology (IT). 64.3% possessed personal computers, 65.5% have access to the internet and 29.4% accessed eLearning resources daily, 22.3% weekly, 9.9% monthly and 30.4% occasionally; 25.7% indicated that they are aware and could use E-mail, 18.7%, Search engines, 9.9% websites, 8.8% E-journal/Books, 9.4% databases. Most (97.3%) use their findings from eLearning resource utilization in the teaching of nursing students where 51% used them regularly, 41.3% occasionally and 7.3% rarely. Factors affecting the use of e-Learning resources in clinical teaching include the poor speed of internet connection, login and subscription problems, lack of interest, information overload on the internet and lack of time due to work overload. It was recommended that awareness campaigns should be institutionalized to encourage nurses in using eLearning resources to update their knowledge, skills and competence and teach their students with up-to-date information. It was concluded that nurses were aware of eLearning resources and the internet with access to such resources.

**Keywords:** *Awareness, utilization, eLearning, Nurses, Clinical teaching*

### Introduction

Quick changes in the field of nursing occasioned by the ever-varying patient needs which continuously render some knowledge gained in school while on training or even from a seminar last week out-of-date, have made lifelong learning a necessity for nurses. The rapid development of information communication technologies (ICTs) and web-

based applications created unprecedented chances for such learning to update knowledge and clinical competence which is not only helpful to nurses in the direct delivery of nursing care but clinical teaching as well (Hayden et al. 2014).

Globally, technology is having a profound influence on education in the 21st century and nurse educators and/clinical teachers are being

challenged to integrate technological innovation to assist students in their learning (Mackay, Anderson and Harding, 2017). According to Hayden et al. (2014), in the clinical setting, the traditional model of nursing education has been one where students are assigned patients and work under the care of an instructor and the students are challenged to problem-solve through the recall of knowledge at the bedside. In addition, Bahrambeygi et al, (2018) suggest that eLearning is viewed as a more cost-effective, convenient, alternative to traditional methods while also increasing opportunities for lifelong learning.

However, recently and across the world, health technology is a rapidly developing area and an increasing number of e-learning resources including mobile devices are being incorporated into the clinical learning environment in nursing education (Doswell et al., 2013). This with other technologies enables more active learning in which the learner can actively construct knowledge through drawing on a wide range of internet-enabled resources (Mather and Cummings, 2015a). Nurse clinicians and educators are being challenged to integrate technological innovation to assist students to develop their knowledge base, critical thinking and clinical competencies.

Given the ubiquity of internet-powered communication devices which undoubtedly play a significant role in the teaching and learning arena, there is increasing recognition of their usefulness in guiding teachers in the discharge of their works and students' nurses learning at 'point of care' (Kenny et al., 2009; Mather and Cummings, 2015b). Along with mobile smart devices is a growing pool of smart applications with a plethora available to nurses and others working in health (Tuck and Sheets, 2014; Xu and Liu, 2015); in nursing, smart device applications can be used effectively in the clinical learning environment for a variety of purposes including the teaching of drug calculations; retrieving medication information, guides to

the interpretation of laboratory results; and guiding nursing management decisions as described by Innocent (2010). As noted by Trangenstein (2008) there have been efforts by nurse preceptors to incorporate them into their repertoire of teaching methods; however, the challenge has been to learn to use them and appropriately use them to their fullest capability.

As the internet has expanded and matured, so the range of information available and the means of accessing it has followed suit. Numerous databases accessible through mobile phones and other computers allow for easier searches for nursing and other medical science researches on databases as Cochrane Library, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL) or meta-searches through engines such as Ovid and google amongst others (Ward, 2004).

Furthermore, most research on the use of eLearning resources/technologies in clinical nursing education often focuses on the students' experiences with less emphasis on the perspectives of the clinical teachers (Lane and Stagg, 2014). Hence, there is a dearth of empirical evidence which focuses on the experience of the clinical nurse preceptors. As mentioned by Weston (2017), sometimes clinical teachers wonder if they have anything worthwhile to teach students and residents as they feel that young people seem to know so much and maybe more up to date. This the author suggests could be due to students access to a plethora of resources including eLearning resources more than the teachers. This claim supported Farrell and Rose (2008) assertions who also found that students felt some clinical teachers were not prepared to use or support students in the use of eLearning resources and mobile technology in their clinical practice. Based on the foregoing, this study was set out to examine the use of eLearning resources by nurses in clinical teaching at Ahmadu Bello University Teaching Hospital, Shika, Zaria.

### **Theoretical Framework**

To understand the role of technologies in human action including clinical teaching, a model of technology use was adopted to help understand the human-computer/technology interaction. As such the Technology Acceptance Model (TAM) developed by Davis in 1989 (Ladan, et al. 2018) seen as more relevant in this regard. TAM is the most well-known of all the intention-based theories and commonly employed of IT usage, receiving considerable empirical support. TAM consistently explains a substantial proportion of the variance in usage intentions and behaviour (Ladan, et al. 2018). According to Shih (2004), the major contribution of TAM is the identification of two key factors: Perceived Ease of Use (PEU) and Perceived Usefulness (PU). TAM postulates that an individual's intention to use a system is determined by PU, defined as the degree to which a person believes that using a system will enhance his or her job performance and PEU, defined as the degree to which a person believes that using the system will be free of physical and mental effort. The TAM model proposes that the more perceived usefulness and perceived ease of use, the more positive the user's attitude will be. In such cases, the actual IT use is more likely than when the user perceives less usefulness and ease of use and her or his attitude is negative (Venkatesh and Davis, 2000; Samaradiwakara and Gunawardena, 2014; Ladan, et al. 2018).

Registered nurses will use the Internet eLearning resources if they find it to be easy to navigate and easily accessible (PEU) and not complicated or difficult (complexity). According to TAM, PU is also influenced by PEU because the easier the system is to use the more useful it can be; it has been a consistent and strong driver of usage intentions. Thus, the nurse clinician will use the eLearning resources if they perceive that it is easy to use and free of effort. The constructs within the model also informed the construction and design of the research tool.

### **Materials and Methods**

#### **Study Design:**

A descriptive cross-sectional design was used for the study.

#### **Setting**

The study was conducted at Ahmadu Bello University Teaching Hospital (ABUTH), Zaria Kaduna State, Nigeria.

#### **The population of study**

This comprises of all the Nurses involved in clinical teaching of Nursing students working across the various units and wards of ABUTH, Zaria. 546 nurses were working in ABUTH at the time of the study.

#### **Sample and sampling technique:**

An estimated sample size of 231 respondents was reached using the Yamane (1967) formula for sample size estimation. Questionnaires were proportionately distributed across all wards/units within the study area where student nurses were posted and clinically supervised by nurses.

#### **Instrument and Methods for data collection**

A structured questionnaire was self-administered to the respondents to collect data for the study.

#### **Method of Data Analysis**

The data was analyzed using Statistical Package for the Social Sciences version 23.0. Data analysis was done in accordance with the objectives of the study. The data were analyzed with descriptive statistics; frequencies and percentages. Out of the questionnaires (n= 231) distributed, there were 171 respondents, representing a 74% response rate, hence the result presented was based on this response rate.

#### **Ethical Consideration**

Ethical clearance for the study was obtained from ABUTH Scientific and Health Research Ethics Committee (HREC) with reference number *ABUTH/HREC/TRG/36*. Full disclosure of information and purpose of the study to respondents was done. Study

respondents' anonymity was ensured as no names were used on the questionnaires. Consent was obtained from the respondents. The respondents were informed of their choice to participate and withdraw from the

study and confidentiality of all information divulged to the researcher. No compensation/incentives were given to the respondents as research was conducted during their normal routine working hours.

## Results

**Table 1:** Demographic characteristics of the Respondents N=171

Variables	f	%
<b>Sex:</b>		
– Male	46	26.9
– Female	125	73.1
<b>Age:</b>		
– < 25	6	3.5
– 26-35	56	32.7
– 36-45	47	27.5
– 46-55	46	26.9
– >55	16	9.4
<b>Mean±SD</b>	<b>42.9±5.9</b>	
<b>Marital status:</b>		
– Married	108	63.2
– Single	58	33.9
– Widowed	5	2.9
<b>Qualification (Nursing):</b>		
– RN only	98	57.3
– RN/RM	68	39.8
– BNSc	5	2.9
<b>Additional qualification:</b>		
– Advance Diploma in Public Admin.	28	82.4
– Advance Diploma in Health Education	2	5.9
– Bachelor of Law	3	8.8
– National Diploma in Banking and finance	1	2.1
<b>Length of service in years</b>		
– 1-5	61	35.7
– 6-10	40	23.4
– 11-15	13	7.6
– 16-20	24	14.0
– >20	33	19.3

Rank		
– Staff Nurse	64	37.4
– Staff Nurse-Midwife	9	5.3
– Nursing officer	26	15.2
– Principal Nursing officer	9	5.3
– Senior Nursing officer	13	7.6
– Assistant Chief Nursing Officer	30	17.5
– Chief Nursing Officer	20	11.7

Table 1 presents the socio-demographic characteristics of the respondents. Majorities (73.1 %, n=125) were females, 63.2% (n=108) were married, 32.7%, n=56 were within the age range of 26 to 35 years; The table also revealed that all the respondents (100%) were RNs, among them 68 (39.8%) possessed both nursing and midwifery certificate, and only

2.9% (n=5) had a Nursing Science degree. 31.6% (n=54) of the respondents had undergone a specialty (post-basic) programme, 37.4% (n=64) were staff Nurses by rank and 17.5 % (n=30) were Assistant Chief Nursing Officers, 35.7% (n=61) had practiced for a period of 1 to 5 years and 23.4% (n=40) had practiced for 6 to 10 years.

**Table 2:** *Awareness and accessibility of the internet by the respondents'* N=171

Variables	f	%
<b>Awareness regarding the internet and eLearning resources</b>		
– Yes	166	97.1
– No	5	2.9
<b>Ability to use the internet and eLearning resources</b>		
– Yes	122	71.3
– No	49	28.7
<b>Formal training in IT</b>		
– Certificate	44	25.7
– Diploma	18	10.5
– No formal training	109	63.8
<b>Ability to use eLearning resources</b>		
– Email	44	36.1
– Search engines	32	26.2
– Websites	17	13.9
– E-journal/books	15	12.3
– Databases	14	11.5
<b>Ability to download material from the internet</b>		
– Very confident	24	19.7
– Confident	58	47.5
– Little confident	32	26.2
– Not confident	8	6.6
<b>Computer ownership</b>		
– Yes	110	64.3
– No	61	35.7
<b>Have internet accessibility</b>		
– Yes	112	65.5

– No	59	34.5
<b>Frequency of access to eLearning resources</b>		
– Daily	33	29.4
– Weekly	25	22.3
– Monthly	20	17.9
– Occasionally	34	30.4
<b>Place of access</b>		
– At workplace/office	10	8.9
– At home	39	34.8
– Cybercafé	27	24.1
– Others	36	32.1
<b>Mode of internet access</b>		
– Private subscription from laptop	30	26.8
– Mobile phone	41	36.6
– Cybercafé	22	19.6
– Others	19	17.0
<b>Type of Internet device used</b>		
– Modem	22	19.6
– Wireless/mobile phone	48	42.9
– Broadband	10	8.9
– LAN/Intranet	6	5.4
– Others	26	23.2
<b>Quality of internet network</b>		
– Reliable	56	50
– Unreliable	12	10.7
– Fair	44	39.3
<b>Internet speed</b>		
– Very good	16	14.3
– Good	27	24.1
– Average	69	61.6

Table 2 depicts awareness and accessibility of the internet by the respondents. Majority (97.1%) revealed that they were aware of the internet and eLearning resources and 122 (71.3%) stated that they knew how to use the internet and eLearning resources, 36% stated that they received formal training on information technology (IT) and of these 25.7% had a certificate and 10.5% had a diploma. On their ability to use eLearning resources; 25.7% (n=44) indicated that they are aware and could use E-mail, 18.7% (n=32) Search engines, 9.9% (n=17) websites, 8.8% (n=15) E-journal/Books, 9.4% (n=16) databases. Majority of the respondents (64.3%, n = 110) stated that they possessed a personal computer, 65.5% (n=112) identified that they

have access to the internet and of these; 29.4% (n=33) reported accessing the eLearning resources daily, 22.3% (n=25) weekly, 9.9% (n=11) monthly and 30.4% (n=34) stated accessing them occasionally while 17% (n=19) never accessed eLearning resources at all. Home is the common place (34.8%, n = 39) where nurses had accessed the internet and eLearning resources, followed by Cybercafé (24.1%, n=27), workplace/office (9%, n=10), on access to the internet connectivity infrastructure, 42.9% (n = 48) connect to the internet using wireless/mobile phones, 19.6% (n=22) modem, 8.9% (n=10) broadband, only 5.4% (n=6) have access via LAN/intranet. 50% (n=56) described the internet connection as

reliable, 10.7% (n=12) unreliable while to good, 24.1% (n=27) good while 61.6% (n=69) 39.3% (n=44) was fair. Only 14.3% (n=16) described it as average. described that the internet speed was very

**Table 3:** Nurses' eLearning resource utilisation in clinical teaching of students N=112

Variable (s)	Frequency	percentage
<b>Use of findings from eLearning resource utilization in teaching</b>		
Yes	109	97.3
No	3	2.7
<b>Frequency of use</b>		
Regularly	56	51.4
Occasionally	45	41.3
Rarely	8	7.3
<b>Area of application of findings in teaching</b>		
Nursing theory	14	12.8
Nursing practical	33	30.3
Both theory and practical	62	56.9

From Table 3, an overwhelming majority (97.3%, n=109) of the respondents reported that they use their findings from eLearning resource utilization in the teaching of nursing students; 51% (n = 56) of them stated that they use the internet-based findings for

teaching nursing students regularly, 45 (41.3%) occasionally used it, and 8 (7.3%) rarely use it. By application, 56.9% (n = 62) taught students both theory and practical aspect of nursing, 31 (28.4%) practical, 14 (12.8%) theory.

**Table 4:** Factors that affect clinical nurses' utilization of eLearning resources in clinical teaching

S/N	Variable (s)	Always		Sometimes		Rarely		Never	
		f	%	f	%	f	%	F	%
1	<b>Lack of internet connection</b>	14	8.2%	51	<b>29.8%</b>	50	29.2%	56	32.7%
2	<b>Poor speed of connection</b>	59	<b>34.5%</b>	61	35.7%	37	21.6%	14	8.2%
3	<b>Login problems</b>	30	17.5%	76	<b>44.4%</b>	33	19.3%	32	18.7%
4	<b>Lack of computer/ internet skills</b>	40	23.4%	52	30.4%	49	28.7%	30	17.5%
5	<b>Inadequate searching skills</b>	46	26.9%	43	25.1%	50	<b>29.2%</b>	32	18.7
6	<b>Language content</b>	7	4.1%	7	4.1%	77	45%	80	<b>46.8%</b>
7	<b>No computer access</b>	24	14.0%	30	17.5%	42	24.6%	75,	<b>43.9%</b>
8	<b>No internet access</b>	15	8.8%	38	22.2%	50	<b>29.2%</b>	68	<b>39.8%</b>
9	<b>High cost of access</b>	28	16.4%	42	<b>24.6%</b>	35	20.5%	66	<b>38.6%</b>
10	<b>No training in computer usage</b>	36	21.1%	37	21.6%	34	19.9%	64	<b>37.4%</b>
11	<b>User's age</b>	25	14.6%	21	12.3%	39	22.8%	86	<b>50.3%</b>
12	<b>Fear and anxiety (technophobia)</b>	24	14.0%	36	21.1%	20	11.7%	91	<b>53.2%</b>
13	<b>Lack of interest</b>	24	14.0%	35	20.5%	44	25.7%	68	<b>39.8%</b>

14	<b>Information overload</b>	39	22.8%	56	<b>32.7</b>	42	24.6%	34	19.9%
15	<b>Not able to find information</b>	22	12.7%	24	14%	39	22.8%	86	<b>50.3%</b>
16	<b>Power outage</b>	40	23.4%	72	<b>42.1%</b>	27	15.8%	32	18.7%
17	<b>Lack of time</b>	45	26.3%	73	<b>42.7%</b>	23	13.5%	30	17.5%

From Table 4, the factors that serve as barriers to use of eLearning resources in clinical teaching are lack of internet connection which was identified as a barrier to 8.2% (n=14) always and 29.8% (n=51) sometimes, poor speed of connection was a barrier to 34.5% (n=59) always and sometimes to 35.7% (n=61), login problems was sometimes a barrier to 44.4% (n=76) and always to 17.5% (n=30), lack of computer access affects 14.0% (n=24) always and 17.5% (n=30) sometimes, lack of interest affect 14.0% (n=24) always and 20.5% (n=35) sometimes, information overload affect 22.8% (n=39) always and 32.7% (n=56) sometimes, not been able to find contextual information from internet affect 12.7% (n=22) always and 14% (n=24) sometimes, power outage affects 23.4% (n=40) always and 42.1% (n=72) sometimes, lack of time is one of the noticeable barriers 26.3% (n=45) always and 42.7% (n=73) sometimes.

**Discussion**

The study findings showed that internet eLearning resources are very popular among the respondents as the majority of them submitted that they were aware and as well know how to use the internet eLearning resources with over half of them having personal computers. This finding is consistent with the report of another study regarding the ownership of computer by Dee & Stanley (2005) and Moule et al (2015) whose work suggests that nurses have positive attitudes towards using the internet and eLearning resources in the clinical area. This also suggests that the proliferation of web-based information has impacted the practice of this group of health professionals.

Also, the results from the study suggest that the respondents’ home, cybercafé and workplace were the commonplaces where

nurses access the internet and eLearning resources. Bahrambeygi et al. (2018) also emphasize the importance of access to both the internet and the eLearning resource as important for nurse clinical teaching. In the current study, findings suggest that the respondents have few concerns regarding accessibility to eLearning infrastructure both within and outside the work environment which might contribute to building their individual professional capacity.

Awareness and ability to use various eLearning resources shows that majority of the respondents were aware and could use E-mail, Search engines, websites, e-journals and databases with the bulk of them reporting that they are having internet access and they make use of some if not all of the resources with E-mail, Search engines and websites have a high accessibility rate. These are similar with findings from a study on nurses’ preparedness of computerization of nursing services at Kenyatta National Hospital conducted by Kivuti-Bitok & Chepchirchir (2009) and Bahrambeygi et al (2018) in Iran. Both studies highlighted the literacy and competence of nurses in the clinical area in utilizing internet-based resources in carrying out their clinical roles.

However, despite respondents’ ability to utilize the eLearning resource, study findings revealed only were confident in downloading content from the internet/databases. This might be due to the signal strength is within the area of study which respondents highlighted as poor. In addition, it might also be due to the poor coverage of individual user network as respondents reported that they use their personal devices more often to “go online”. In the same regard, it might also contribute to the nurses’ low engagement with

the internet within the wards as only a quarter of them reported using the internet daily for their work at the workplace.

Despite the above, however, the nurses identified that they use most of the new information and eLearning resources in the teaching of the students. This is what Khatoni et al (2011) emphasized in their work that web-based information is as important and likely more effective when compared to traditional educational methods. Notwithstanding, researchers such as Lahti et al. (2014) argue that there is no difference in the impact of information on students derived either from eLearning or traditional teaching methods among nurses.

Furthermore, respondents identified certain factors that often impede on their full utilization of eLearning such as subscription fees, irregular power and availability of technical support. These factors mimic those discussed by researchers such as Granja et al. (2018) and Gagnon et al. (2012;2014). These factors often categorized as those related to ICT, individual and professional, human environment and institutional/organizational environment need to be addressed to appropriately impact of the benefits of eLearning utilization by the nurse for students.

### Conclusion and Recommendations

The result indicated that nurses were aware of eLearning resources and the internet with access to such resources. In terms of utilization, the majority of the nurses accessed the internet and many utilized their internet-based findings in clinical teaching of students even though the majority do so on an occasional basis. Many factors affect nurses' use of eLearning resources with the predominant reason being login problems, power outage and lack of access at work and lack of time due to work overload.

Based on the findings, it was recommended that:

1. eLearning infrastructures including a Learning Management System (LMS) with a good and reliable source of the

internet should be made accessible to nurses and nursing students in the clinical setting.

2. Awareness campaigns should be institutionalized to encourage nurses in using eLearning resources to update their knowledge, skills and competence and teach their students with up-to-date information.
3. There should be a hospital policy in place to ensure the utilization of such technologies for student teaching and learning.

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