



## **Use of ICT In Health Care Delivery Among Nursing And Midwifery Students In Bayelsa State**

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### **ABSTRACT**

This study assessed the use of ICT in health care delivery among nursing and Midwifery students in Bayelsa State. A cross-sectional descriptive research design was used with a population which included all nursing and Midwifery students in Bayelsa state. A sample size of 327 was selected using a multistage sampling procedure. Data was collected using questionnaire and analyzed using percentage, mean standard deviation and chi-square statistics. The result of the study showed that; the respondents had a low capacity of competency in the use of ICT, they were unable to apply the ICT in patients' management. On the other hand, the respondents demonstrated a good use of clinical information system to input all patient records however, there was a poor usage of ICT for checking vital signs, for ICT intravenous devices, mobile charts, drug retrieval, delivery system, and for interacting with patients. The study concluded that, both knowledge and use of ICT among nursing and Midwifery students in health care delivery in Bayelsa State was low and the factors which had high influence on the use of ICT were lack of ICT facilities, lack of affordable ICT equipment, and lack of electricity supply. Thus, the government should put the necessary ICT resources in place by making fund available for the procurement of such technologies.

**Keywords:** Communication, Healthcare, Information, Technology, Use

### **INTRODUCTION**

The health-care system is growing more reliant on technology. As a result, nurses in all parts of the globe are required to improve their information and communication technology (ICT) abilities (Shen et al, 2018). In this modern age, it is critical to develop the informatics abilities of nurses and midwives (Austria, 2017). To begin, ICT should be included into nursing curriculum and nursing and midwifery students should be computer savvy (Pilarski, 2010). Most areas of healthcare are accelerated and advanced by using information and communication technology (ICT) throughout the globe. These include the use of electronic medical records, virtual office visits, scheduling appointments online as well as paying for services, and getting medication prescribed electronically (Onu & Agbo, 2013). Studies revealed that health care providers largely find ICT advantageous for continuous professional development (Rouleau, Gagnon, & Cote, 2015). Health care providers, especially nurses and Midwives, are better able to communicate and relate with patients using ICT thereby increasing their access to healthcare, consolidating the relationship between the patient and the nurse culminating in a better care (Nilsson & Skar, 2010). According to Project reserves (2021) on the Use of E-Health in Nursing Practice among Nurses in Cape Coast. The study conducted aimed at identifying eHealth usage among registered nurses in Cape Coast. It opined that Most of the nurses (65.5%) had good knowledge and more than half of them (67.5%) generally demonstrated good attitudes towards eHealth. The majority (54.9%) of respondents also demonstrated a good skill in the use of ICT in health service delivery. Resources on

eHealth were available to most nurses. The study adopted a descriptive cross-sectional study using a quantitative approach. A multistage sampling technique was employed. Data collated from 206 registered nurses in Cape Coast revealed that respondents were predominantly female (61.7%) and 38.3% were males.

Today, health systems are more efficient and more responsive to client's need due to the incorporation of ICT. This is evident in the reduced healthcare costs, improved delivery and effectiveness of healthcare services and the increase in patient safety and decision support for clinicians (Remlex, 2007, O. Carroll, Yasnoff, Ripp & Martin 2007, Acheampong, 2012).

Nursing form the greatest percentage of health care professionals worldwide and so play a crucial role in championing health care reforms such as the adoption of ICT (Institute of Medicine, 2004). In high income countries, nurses interact most with ICT systems due to the demands of their work. They are indispensable when it comes to helping patients set up their own health records, or explaining to them how they can use a patient's portal (Onu & Agbo, 2013). In order to obtain the greatest benefit from ICT, nurses must play a leading role to its adaptation. However, studies have proven that nurses are dissatisfied with electronic health solutions provided for them due to lack of consultation. Other reasons were that the computer systems were laborious to use, illogical, slow, complex and undependable sometimes (Adams, Adams, Thorogood, Buckingham & Azza, 2015).

The use of ICT is getting special emphasis in the education of health workers, especially in nursing and midwifery education since they are with the patient 24 hours a day (Hallia et al, 2014). As a result, Nurse Educators must teach students skills that are suitable for the degree of competence needed at various phases of their careers. Surprisingly, information and communication technology (ICT) is changing the health-care sector and is now an essential component of health-care delivery (Canadian Nurses Association, 2006). According to studies, health care professionals see eHealth as a valuable tool for continuing their education (Rouleau, Gagnon & Cote, 2015).

The youths and students including student nurses and midwives tend to prefer the use of ICT in leisure and other social communication, with less regard on its use for education and health care delivery as their profession demands. They value its use in social activities and see it as boring and cumbersome in education and delivery of health care. With the emergence of Covid-19, with its associated precautions such as social distancing, avoiding unnecessary movements by staying at home, e-learning, tele nursing and tele-medicine has become imperative to both the students, lecturers and patients. It is therefore of utmost importance to ensure that student nurses and midwives are well equipped in the use of ICT in Health Care Delivery, to enable them to become relevant to the fast changing method of healthcare in the global world. According to Huges, Joshi, and Lipke (2014), despite the fact that ICT is quickly growing in the healthcare system and nurses make up the bulk of the healthcare team, studies indicate that nurses have not kept up with technological advancements.

The researcher observed that student nurses and midwives in Bayelsa state are uninterested in using information and communication technology in health care delivery. The development of ICT skills among student nurses and midwives in Bayelsa state has been hampered by a variety of obstacles. According to Bello and colleagues (2017), this is due to a lack of understanding about how to use it, the absence of ICT equipment, restrictions on its usage to prevent damage and improve maintenance, a lack of power supply, and a lack of information seeking abilities. It is on this note that this study was aimed at investigating the use of ICT in healthcare delivery, among student nurses and midwives in Bayelsa State.

### **Objectives**

1. To find out how student nurses and midwives use ICT in Health Care Delivery in Bayelsa State.
2. To determine the resources available for use of ICT in Health Care Delivery among student nurses and midwives in Bayelsa State.
3. To identify the factors that influence the use of ICT among student nurses and midwives in Health Care Delivery in Bayelsa State.

### **Research Questions**

1. What are the ways student nurses and midwives use ICT in Health Care Delivery in Bayelsa State?

2. What are the resources available for the use of ICT in Health Care Delivery among nursing and midwifery students in Bayelsa State?
3. What are the factors that influence the use of ICT among student nurses and midwives in Bayelsa State?

**Hypothesis**

The null hypothesis below was stated to guide the study:

**H<sub>0</sub>:** There is no significant association between the resources available and use of ICT in health care delivery among nursing and midwifery students in Bayelsa State.

**METHODOLOGY**

The study adopted a cross-sectional descriptive study. The population of the study included all nursing and Midwifery students in Bayelsa State. The instrument for data collection was a structured questionnaire and data collected were analysed with the aid of the statistical product for service solution (SPSS) software version 25 using percentage, mean, standard deviation and chi-square statistics. The sample size for the study was 327 which was selected using the multistage sampling procedure which included three procedures.

First Stage: Systematic sampling method was first used to select students by skipping the first-class level and picking from the second and then subsequently in an alternate manner. This made us to have four (4) groups as follows; School of Nursing Level 200; School of Midwifery- Final year students, Niger Delta state University students – 200 level and 400 level.

Second stage: Simple random sampling method was used to select two (2) groups out of the four groups and the two groups selected were School of Midwifery Tombia Bayelsa State and Niger Delta University, Wilberforce Island - 400 Level students.

Third Stage: Simple random sampling method was again used to select the students at random until the required sample size which is 327 respondents was reached. This final selection was done by writing numbers from 1 to 428, after which the students were asked to pick the papers at random. After picking the papers, the first 327 students who picked the papers were selected for the study. They were educated and instructed on how to answer the questionnaire. They were then grouped in sections for the distribution of the questionnaire in order to ensure orderliness and maximum retrieval of the research instruments. Each section of participants given questionnaire were collected same day.

**RESULTS**

The results of the study are presented below:

**Table 1: Ways in which respondents use ICT**

SN	Items	Available & Functioning	Available but Not Functioning	Not Available	Don't Know	Mean	Std Dev
1	Student nurses/midwife can use ICT equipment (medical devices) for checking vital signs	167	4	133	13	3.02	1.05
2	Students can use clinical information system to input all patient records	167	0	150	0	3.05	1.00
3	Students have competency in the use of intravenous devices, mobile charts, drug retrieval and delivery systems	22	0	150	145	1.68	.79
4	Capable of interacting with patients through the use of ICT as it relates to their health	9	0	162	146	1.59	.64
<b>Grand mean</b>						<b>2.33</b>	<b>0.87</b>

**Criterion mean = 2.50. Decision: <2.50 is poor, ≥2.50 is good.**

Table 1 showed the ways in which respondents used ICT. The result showed that the use of ICT among the respondents was poor as the grand mean of  $2.33 \pm 0.87$  was lesser than the criterion mean of 2.50 indicating a poor usage. On the other hand, the respondents demonstrated a good use of clinical information system to input all patient records however, there was a poor usage of ICT for checking vital signs, poor use of ICT intravenous devices, mobile charts, drug retrieval, delivery system, and use of ICT for interacting with patients.

**Table 2: Availability of Resources for the use of ICT among respondents**

SN	Items	SA	A	D	SD	Mean	Std Dev
1	Health care workers are using the ICT adequately in patients' care	13	145	156	3	2.04	1.05
2	Computers are available and in good working condition	0	145	4	168	2.44	.52
3	There is enough funding on the use of ICT in healthcare delivery	94	146	16	61	3.00	.83
4	There is a constant internet connection in the hospital for the use of ICT in patient care	94	1	148	74	2.12	1.28
<b>Grand mean</b>						<b>2.40</b>	<b>0.92</b>

**Criterion mean = 2.50. Decision: <2.50 is low extent, ≥2.50 is high extent**

Table 2 showed the availability of resources for the use of ICT among respondents. The result of the study showed that the extent to which resources are available for the use of ICT among the respondents was low as the grand mean of  $2.40 \pm 0.92$  was lesser than the criterion mean of 2.50 indicating a low extent. However, there was enough funding on the use of ICT in healthcare delivery as indicated by the respondents.

**Table 3: Factors that influence the use of ICT among respondents**

SN	Items	SA	A	D	SD	Mean	Std Dev
1	Lack of interest on the use of ICT in healthcare delivery	0	168	149	0	2.05	.99
2	Lack of ICT facilities	61	252	0	4	3.17	.41
3	Prohibition of students on the use of ICT by senior colleagues	7	0	309	1	1.06	.44
4	Resistance to new technology	8	168	141	0	2.13	1.02
5	Poor training on the use of ICT	22	168	120	7	2.29	1.05
6	Lack of affordability of ICT equipment by the hospital	143	171	3	0	3.43	.55
7	Lack of electricity supply	118	65	113	21	2.59	1.30
8	Failure of equipment	3	65	134	115	1.80	.79
<b>Grand mean</b>						<b>2.32</b>	<b>0.82</b>

**Criterion mean = 2.50. Decision: <2.50 is low, ≥2.50 is high influence**

Table 3 showed the factors that influenced the use of ICT among respondents. The result showed that the factors which had high influence on the use of ICT among the respondents were lack of ICT facilities (3.17), lack of affordable ICT equipment (3.43) and lack of electricity supply (2.59).

**Table 4: Chi-square test showing significant association between the availability of ICT resources and use of ICT in health care delivery in Bayelsa State**

Availability	Use of ICT		Total	df	X <sup>2</sup> -value	p-value*	Decision
	Yes F(%)	No F(%)					
Available	146(85.4)	25(14.6)	171(100)	1	231.09	0.00	H <sub>0</sub> rejected
Not avail.	0(0.0)	146(100)	146(100)				H <sub>a</sub> accepted
Total	146(46.1)	171(53.9)	317(100)				

\*Significant

The Chi-square test of the relationship between the availability of ICT resources and the usage of ICT in health care delivery in Bayelsa State is shown in Table 4.8. Because the p-value was less than 0.05, the results indicated that there was a significant relationship between availability of ICT resources and ICT usage ( $X^2$ -value = 231.09; df = 1; p = 0.00). As a result, the null hypothesis was rejected, and the alternative hypothesis was accepted, stating that there is no significant relationship between the availability of ICT resources and the usage of ICT in health care delivery in Bayelsa State.

### **DISCUSSION OF FINDINGS**

The finding of this study showed that the use of ICT among the respondents was poor as the grand mean of  $2.33 \pm 0.87$  was lesser than the criterion mean of 2.50 indicating a poor usage. On the other hand, the respondents demonstrated a good use of clinical information system to input all patient records however, there was a poor usage of ICT for checking vital signs, poor use of ICT intravenous devices, mobile charts, drug retrieval, delivery system, and use of ICT for interacting with patients. This finding of the study is in line with that of Baridam et al., (2019) which showed that, poor use of information and communication technologies probably because, as early reported, they were old and obsolete. The finding of this study is also in line with that of Irinoye et al., (2013) which showed that close to half of the respondents indicated that they had never used information technology in patient management.

The research also revealed that close to half the respondents stated that they had not utilised information technology for patient care. The findings from this study are in accordance with Irinoye et al., (2013). The findings of the study showed that the extent to which resources are available for the use of ICT among the respondents was low as the grand mean of  $2.40 \pm 0.92$  was lesser than the criterion mean of 2.50 indicating a low extent. This finding of the study is in line with that of Baridam et al., (2019) which showed that, the information and communication technologies available were obsolete and old and should be recycled, invariably, information and communication technologies were not available.

The result showed that the factors which had high influence on the use of ICT among the respondents were lack of ICT facilities (3.17), lack of affordable ICT equipment (3.43) and lack of electricity supply (2.59). The result showed that there was a significant association between availability of ICT resources and use of ICT ( $X^2$ -value = 231.09; df = 1; p = 0.00). It was found that the defective infrastructure in hospitals was responsible for the lack of efficiency in the delivery of medicine in the area and was substantially agreed by the Baridam etc. (2019),  $t(246)=5.041$ ,  $p < .0005$ ). The findings of this study were equally consistent with that of Afoayan, et al (2014), which showed that, in areas such as increased efficiency, better doctor/patient relations, faster medical diagnosis and easy collaboration among health professionals, most healthcare professionals claimed that ICTs had a good impact on their work functions and productivity.

### **CONCLUSION**

Based on the research results, it was concluded that the nursing and midwifery students in Bayelsa State had low level of use of information and communication technology which was influenced by the absence of ICT facilities, a lack for affordable ICT equipment and a lack of electricity.

### **RECOMMENDATIONS**

The following recommendations were made based on the findings of the study:

1. The government should ensure that funds should be accessible through the ministry of Information and Technology yearly, at the health system by providing the needed ICT equipment, as this will reduce the stress of patients getting quality care via telemedicine. Distance will no longer be a barrier.
2. The nursing and midwifery institutions should incorporate information and communication technology training into the academic programme in each semester time table to equip them with the needed knowledge about ICT.

3. The nursing and midwifery students should also make conscious efforts to get themselves acquainted with current information and communication technology by enrolling for such programmes in professional training centres.

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