

**INSTITUTIONAL FACTORS AFFECTING THE USE OF NURSING INFORMATICS  
AMONG NURSES IN SELECTED HOSPITALS IN IMO STATE****Beatrice Amaka Ogu, C.C.N. Vincent<sup>1</sup>, Nkiru Okoroafor<sup>1</sup>, Emmanuel Ifeanyi Obeagu<sup>\*2</sup>, Adanma Nwagwu Solomon<sup>1</sup>, Anthonia Emesowum<sup>1</sup>, Josephine Egbuchelem<sup>1</sup> and Clementina Ezenwuba<sup>1</sup>**<sup>1</sup>Department of Nursing Science, Faculty of Health Sciences, Imo State University, Owerri, Imo State, Nigeria.<sup>2</sup>Department of Biomedical and Laboratory Science, Africa University, Zimbabwe.**\*Corresponding Author: Emmanuel Ifeanyi Obeagu**

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**ABSTRACT**

This study examined the factors affecting the use of nursing informatics among nurses in selected hospitals in Imo State. The study was carried out using a descriptive survey research design, having five research questions and four corresponding hypotheses. The population of the study comprised 1415 nurses from the selected hospitals and a sample size of 343 nurses were chosen from the population. The instrument used for data collection was a questionnaire sectioned in 6 parts to elicit information on demographic variables, extent of nursing informatics usage, individual, institutional, environmental and technological factors affecting use of nursing informatics among nurses. The reliability of the instrument was tested using test retest and calculated with Pearson R statistics which yielded coefficient of 0.82. The research questions were answered using mean scores and standard deviation while the hypotheses were tested using multiple linear regression at 0.05 level of significance. Majority of the nurses agree to the institutional factors affecting use of nursing informatics (mean=3.14,  $p<0.05$ ) and there is a significant relationship between demographic variables and responses of the nurses on institutional factors affecting use of nursing informatics ( $p<0.05$ ). It is concluded that by embracing nursing informatics, hospitals and various healthcare organisations can deliver more efficient and higher quality care. It is recommended among others that Nurses should use the informatics facilities made available to them so as to prevent errors and take medication orders.

**KEYWORDS:** *Nursing informatics, institutional factors, Nurses, nursing education, healthcare.***INTRODUCTION**

Lu *et al.*<sup>[1]</sup> explained that integrated health information technologies (HITS) have played an important role in the management of healthcare institutions, potentially improving the quality of care and services provided for patients. Approximately 95% of Taiwanese hospitals have already implemented computerized physician order entry systems, a major element of hospital information systems (HISS), to assist physicians in their clinical activities nursing staff are the major care providers, comprising the largest group of workers in any hospital. They represent "key collectors, generators, and users of patient/client information" in healthcare management.

Nursing informatics has been integrated into nursing education curricula to prepare nurses to be capable to use technology in the healthcare environment.<sup>[2]</sup> Nursing informatics competencies are essential in all aspects of nursing practice.<sup>[3]</sup> The literature indicates that the competencies in nursing informatics include computer skills, digital literacy (DL) and health information literacy (HIL), and eHealth literacy (eHL).<sup>[4]</sup> Integrating Nursing informatics into undergraduate nursing

education is instrumental in producing competent nurses who are capable of using technology to provide high-quality care. In addition, Nursing informatics has been reported to promote evidence-based practice, improve documentation and reduce medical errors.<sup>[5]</sup> Nursing informatics is also used as part of teaching and learning capabilities in nursing education.<sup>[6]</sup>

Nursing informatics is a subset of health informatics.<sup>[7]</sup> Health informatics is 'the integration of health science, information science and cognitive science to assist the management of healthcare information'.<sup>[8]</sup> American Medical Informatics Association [AMIA]<sup>[9]</sup> defined Nursing informatics as the 'science and practice that integrates nursing, its information and knowledge, with information and communication technologies to promote the health of people, families, and communities worldwide'. Both health informatics and Nursing informatics promote the use of technology in clinical settings.<sup>[6]</sup> The purpose of this study is to determine institutional factors affecting the use of Nursing Informatics among nurses in selected hospitals in Imo State.

## RESEARCH METHODOLOGY

### Research Design

The research design adopted for this study is a descriptive design.

### Study Area

The study was carried out in selected hospitals in Imo state.

### Target Population

The population targeted was all nurses in seven (7) hospitals in Imo State, Nigeria. The total population one thousand four hundred and fifteen.

### Inclusion criteria

Must be a nurse in Imo State.

Must be readily present at the time of the study.

Must have the willingness to participate in the study.

No sick respondent was used as all the respondents were well enough to participate in the study.

### The Exclusion Criteria include the following

Nurses who are on sick leave maternity leave and annual leave.

### Sample Size and Sampling Technique

The sample size for the study was determined using Taro Yamane which gave a sample size of 343 (10% attribution included).

### The formula

$$n = \frac{N}{1 + N(E)^2}$$

Where n = Sample size

N= Target population

1 = Constant

E = Level of significance which is 0.05

Thus:

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

$$n = \frac{1415}{1 + 1415(0.0025)}$$

$$n = \frac{1415}{1 + 3.5375}$$

$$n = \frac{1415}{4.5375} = 311.8$$

$$\simeq 312$$

$$10\% \text{ attrition} = 312 + 31 = 343$$

which is 24.24%

### Sampling Technique

The researcher used sample random sampling technique to sample 343 respondents from the total population of nurses who work at the selected hospital in Imo State during the period of the study. This was done by writing Yes or No on papers put inside the basket for picking,

same done and those who picked “yes” were as documented above.

### Instrument for Data Collection

The data was collected using the questionnaire which was constructed by the researcher based on the study. The questionnaire was reviewed in line with relevant literature, and approved by the research supervisor. It was constructed to allow respondents choose and tick answers which they feel are most appropriate to their lived experience.

The questionnaire is in six sections of A B, C, D, E and F. Section A is demographic data containing four (4) items. Section B contains 12 items on extent of utilization of nursing informatics. Section C contains 10 items on institutional factors affecting the utilization of Nursing Informatics. Section D contains 10 items on the individual factors affecting the utilization of Nursing Informatics, Section E 10 items on environmental factors affecting the utilization of Nursing Informatics and section 10 contains 6 items on technological factors affecting the utilization of Nursing Informatics. A total of 56 questions test items were in the questionnaire which are closed ended questions. The respondents were expected to respond to the options provided. The response pattern was the modified four-point Likert Scale. The responses were given values as shown below.

The scale will be weight as follows,

Always	=	4 points
Sometimes	=	3 points
Rarely	=	2 points
Never	=	1 point

### Method of Data Collection

The researchers presented copies of the ethical clearance introductory letter from the Head of department of Nursing Science, Imo State University, Orlu, to the HOD, Nursing Services of the selected hospitals as to obtain their permissions and allow her access to the different units. Two (2) research assistants were recruited in each of the selected hospitals used for the study by the researcher. They were instructed on how to assist in the administration and retrieval of the questionnaires. Thus, a total of 12 research assistants were used for the study. The research assistants were community health extension workers (CHEWS) and health attendants working at the selected hospitals. These categories of health care workers were used because they are staff of the various health facilities. To reduce bias of the hospital selection, the visits started from the first hospital and this was done by assigning numbers to the hospitals. This ensured orderly visits to the hospitals. The respondents from each of the selected hospitals were briefed on the purpose of the study and the items in the instrument explained prior to the administration of the questionnaire.

The researchers used three weeks for Collection of data. The completed copies of the questionnaires were

retrieved on the spot, those not filled on the spots were later retrieved. The return rate was 99% as a total of 340 copies were retrieved.

#### Method of Data Analysis

The data was coded, entered and cleaned using EPI Data version 3.1 and then exported into SPSS statistical

software version 26 for analysis. Using descriptive statistical analysis, responses were determined item by item and subscale by subscale. The multiple linear regression analysis was used to determine the significant relationship between the variables. This enabled the researcher to either accept or reject the research hypotheses.

## RESULTS

**Table 1: Demographic data of respondents.**

Variable	Category	Frequency =343	Percentage (%)
Age (years)	21-30	69	20.10
	31-40	96	27.90
	41 -50	112	32.70
	51- 60	66	19.30
Gender	Male	63	18.30
	Female	280	81.70
Years of practice	0-4	69	20.10
	5-9	129	37.40
	10-14	66	19.30
	More than 14 years	79	23.20
Qualification	RN, RM,RNE, RPHN etc	102	29.80
	BNSc	191	55.80
	MSc	30	8.60
	Ph.D	20	5.80

Data on table 1 show the demographic characteristics of the respondents. It is shown that majority of the nurses are aged 41-50 years (32.70%). There are more female

nurses in the sampled selection (81.70%). Majority of the nurses have 5-9years working experience (37.40%) and majority are BNSc holders (55.80%).

**Table 2: institutional factors affecting the utilization of Nursing Informatics among nurses in selected hospitals in Imo State.**

S/N	ITEMS	SA	A	D	SD	Mean	Std	Remark
1	Lack of management support	96	171	63	13	3.01	0.78	Agree
2	Insufficient funding from the institution	205	96	26	16	3.42	0.83	Agree
3	No laid down rules and regulation to enforce use of nursing informatics	211	96	36	0	3.51	0.66	Agree
4	Non-involvement of nurse managers	106	122	115	0	2.97	0.80	Agree
5	Lack of rewards from the institution	69	224	50	0	3.05	0.98	Agree
6	Lack of support from the institution to train nurses on nursing informatics	106	148	73	16	3.00	0.84	Agree
7	Poor leadership support in advocating for nursing informatics	251	0	79	13	3.42	0.54	Agree
8	Lack of institutional reports/feedbacks on benefit of use of nursing informatics	106	122	115	0	2.97	0.80	Agree
9	Failure of institution to involve nurses in the design and implementation phase of using nursing informatics	69	224	50	0	3.05	0.98	Agree
10	Non prioritization of innovation and technological advancement	120	129	94	0	3.07	0.96	Agree
	<b>Cumulative mean</b>					<b>3.14</b>		

The responses of the nurses on the individual factors affecting utilisation of nursing informatics is shown on table 2. The data show that majority of the nurses agree that lack of management support, insufficient funding from the institution, lack of laid down rules to enforce use of nursing informatics, non involvement of nurse managers, lack of rewards from the institution, poor leadership support etc. are institutional factors affecting

utilisation of nursing informatics. The cumulative mean is 3.14 also implying wide acceptance of the factors stated in the scale.

## DISCUSSION

Findings from research show that majority of the nurses agree that lack of management support, insufficient funding from the institution, lack of laid down rules to

enforce use of nursing informatics, non involvement of nurse managers, lack of rewards from the institution, poor leadership support etc. are institutional factors affecting utilisation of nursing informatics (mean=3.14) and there is a significant relationship between demographic variables and responses of the nurses on institutional factors affecting use of nursing informatics ( $p<.05$ ).

In line with the study's finding are the findings of Ademuyiwa *et al.*<sup>[10]</sup> who recorded in their study that the major institutional factors influencing use of informatics among nurses are management interest and ICT infrastructural deficit. This is also in line with the findings of Sewell and Thede<sup>[11]</sup> who assessed the institutional factors influencing the adoption and use of informatics among nurses and recorded that institutional factors found to be associated with efficiency in informatics use include non-adoption and use of ICT include lack of management interest, ( $x= 3.7 \pm 1.2$ ), and poor ICT Infrastructure, ( $x= 3.6 \pm 1.3$ ). Also, their study recorded a significant relationship between age ( $p = 0.001$ ), designation of the nurses ( $p = 0.001$ ), gender ( $p = 0.011$ ), years of experience ( $p = 0.001$ ) and factors influencing nurses' use of informatics.

## CONCLUSION

Nursing informatics is very crucial to modern day health care delivery. It fuses nursing science with ICT in a bid to improve patients' care. Nursing informatics ensures accurate and complete patient information, reduces error due to medications, provide secure messaging platforms and ensures remote patient monitoring and virtual consultations. ICT is currently considered the new wave and every personnel in various works of life are expected to be abreast with technological developments. It is important that health institutions address the factors that affect uses of nursing informatics in their institutions. By embracing nursing informatics, hospitals and various healthcare organisations can deliver more efficient and higher quality care.

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